Strengthening national capacity to manage industrial POPs within the framework of national and international guidelines on chemical substances and hazardous waste management

Part I: Project Information

GEF ID
10202

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
☐CBIT
☐NGI

Project Title
Strengthening national capacity to manage industrial POPs within the framework of national and international guidelines on chemical substances and hazardous waste management

Countries
Colombia

Agency(ies)
UNDP

Other Executing Partner(s)
Ministry of Environment and Sustainable Development

Executing Partner Type
Government

GEF Focal Area
Chemicals and Waste

Taxonomy

Focal Areas, Chemicals and Waste, Disposal, Emissions, Waste Management, Sound Management of chemicals and waste, Plastics, Persistent Organic Pollutants, Polychlorinated Biphenyls, New Persistent Organic Pollutants, Best Available Technology / Best Environmental Practices, Influencing models, Transform policy and regulatory environments, Demonstrate innovative approache, Convene multi-stakeholder alliances, Strengthen institutional capacity and decision-making, Stakeholders, Local Communities, Communications, Public Campaigns, Awareness Raising, Behavior change, Type of Engagement, Partnership, Participation, Consultation, Information Dissemination, Civil Society, Community Based Organization, Non-Governmental Organization, Academia, Private Sector, Large corporations, SMEs, Capital providers, Gender Equality, Gender Mainstreaming, Beneficiaries, Gender-sensitive indicators, Sex-disaggregated indicators, Gender results areas, Access to benefits and services, Participation and leadership, Knowledge Generation and Exchange, Capacity Development, Capacity, Knowledge and Research, Innovation, Knowledge Generation, Seminar, Workshop, Training, Learning, Theory of change, Indicators to measure change, Adaptive management, Enabling Activities

Rio Markers

Climate Change Mitigation

Climate Change Mitigation 1

Climate Change Adaptation

Climate Change Adaptation 1

Submission Date

4/2/2019

Expected Implementation Start

2/1/2021

Expected Completion Date

2/28/2026

Duration

60In Months

Agency Fee($)

492,765.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount($)	Co-Fin Amount($)
CW-1-1	Strengthen the sound management of industrial chemicals and their waste through better control, and reduction and/or elimination	GET	5,187,000.00	26,677,351.00
		Total Project Cost($)	**5,187,000.00**	**26,677,351.00**

B. Project description summary

Project Objective

To reduce the releases of industrial POPs and other Hazardous Chemicals, such as PCB, SCCP, PFOS and Brominated POPs, in an integral approach to promote compliance of Stockholm Conventions, in Colombia.

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 1: PCB Management and Elimination in Priority Sectors	Technical Assistance	1.1 Power sector, state entities and individual PCB holders capacitated to meet 2025 PCB phase-out deadline.	1.1.1 Identify, label and classify 6,000 electrical transformers owned by individuals (located in poor rural and urban areas) and set-up financial and technical support programmes for disposal 1.1.2 Support the disposal of 1,500 tons of equipment and waste contaminated with PCBs 1.1.3 Technology / approaches established to extract PCBs from porous materials/waste for ultimate disposal through existing installed capacity 1.1.4 Assessment undertaken to identify the extent/amount of PCBs used in open applications and an elimination plan prepared.	GET	1,740,000.00	11,883,812.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 2: Identification of feasible alternatives to Industrial POPs and improved management of wastes containing such POPs	Technical Assistance	2.1 National capacity in place to identify Industrial POPs (in products) and suitable alternatives, in support of the phase-out of industrial POPs.	2.1.1 National capacity built to conduct an in-depth inventory of Industrial POPs contained in products and wastes 2.1.2 Feasible alternatives recommended by Stockholm Convention to Industrial POPs promoted 2.1.3 An elimination plan for products and wastes containing Industrial POPs developed 2.1.4 Industrial POPs containing waste treated.	GET	1,750,000.00	8,904,377.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 3: Development of National Capacity to avoid the use of Industrial POPs and promote the use of alternative substances, as established by the Stockholm Convention	Technical Assistance	3.1 National capacity developed to replace industrial POPs by using alternative substances as established by the Stockholm Convention	3.1.1 Four (4) demonstration Projects carried out to introduce four (4) substances identified as alternatives to Industrial POPs 3.1.2 Industrial Chemicals Registry established (covering import, trade, production and use of industrial POPs and their substitutes) 3.1.3 Capacity for GHS implementation built and GHS implementation completed for four (4) potential alternatives to industrial POPs (linked to Output 2.2 and 3.2) 3.1.4 Pollutant Release and Trabsfer Register (PRTR) established 3.5 Standard / guidelines developed on POPs limits in wastes and the sound storage, collection and final disposal of POPs	GET	950,000.00	3,834,004.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 4: Raising awareness, ensuring project monitoring and evaluation and collecting and disseminating project results and experiences on best practices for the LCM of Industrial Chemicals and POPs.	Technical Assistance	4.1 Awareness of project stakeholders raised on the management of Industrial (POPs) Chemicals, related wastes and safer alternatives. 4.2. Project results sustained and replicated.	4.1.1 Awareness raised of 7,000 people (3,640 female and 3,360 male) on the sound management of Industrial (POPs) chemicals and related wastes through tailored training and awareness raising activities. 4.2.1 Results, lessons-learned and best practices captured in knowledge products and disseminated at national, regional and global level to support replication 4.2.2 M&E and adaptive management applied in response to needs and Mid-Term Evaluation findings	GET	500,000.00	1,805,158.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
				Sub Total ($)	**4,940,000.00**	**26,427,351.00**
Project Management Cost (PMC)						
				GET	247,000.00	250,000.00
				Sub Total($)	**247,000.00**	**250,000.00**
				Total Project Cost($)	**5,187,000.00**	**26,677,351.00**

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Ministry of Environment and Sustainable Development (MinAmbiente)	In-kind	Investment mobilized	1,368,000.00
Other	IDEAM, SENA, UniValle	Grant	Investment mobilized	623,740.00
Private Sector	MEXICHEM COMPUESTOS COLOMBIA S.A.S (Alphagary), ENEL-Codensa, EPM, EBSA, IPSE, Avianca, Cromotec S.A.S, Haceb Industries, Opain, EcoC?mputo, Red Verde.	Grant	Investment mobilized	24,685,611.00
			Total Co-Financing($)	**26,677,351.00**

Describe how any "Investment Mobilized" was identified

The investment mobilized makes reference to investments that will be done in the future and does not include any past investments. Activities involve the reduction of releases of industrial POPs and other Hazardous Chemicals that are aimed to be eliminated during the project's implementation Period. Among the activities that have been identified there are namely: Power Transformer oils dechlorination (PCB), Elimination of PCB containing materials, Identification and an Elimination Plan of PCBs used in open applications, the Development of National Capacities to avoid the use of other Industrial POPs and promote the use of alternative substances, among others.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)
UNDP	GET	Colombia	Chemicals and Waste	POPs	5,187,000	492,765
				Total Grant Resources($)	**5,187,000.00**	**492,765.00**

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required

☐

PPG Amount ($)

150,000

PPG Agency Fee ($)

14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)
UNDP	GET	Colombia	Chemicals and Waste	POPs	150,000	14,250
				Total Project Costs($)	**150,000.00**	**14,250.00**

Core Indicators

Indicator 9 Reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern and their waste in the environment and in processes, materials and products (metric tons of toxic chemicals reduced)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
491.70	491.70	0.00	0.00

Indicator 9.1 Solid and liquid Persistent Organic Pollutants (POPs) removed or disposed (POPs type)

POPs type	Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
SelectPolychlorinated biphenyls (PCB)	480.00	480.00		
SelectShort-chain chlorinated paraffins (SCCPs)	10.00	10.00		
SelectPerfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride	1.00	1.00		
SelectHexabromobiphenyl	0.70	0.70		

Indicator 9.2 Quantity of mercury reduced (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.3 Hydrochloroflurocarbons (HCFC) Reduced/Phased out (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.4 Number of countries with legislation and policy implemented to control chemicals and waste (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
1	1		

Indicator 9.5 Number of low-chemical/non-chemical systems implemented, particularly in food production, manufacturing and cities (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 9.6 Quantity of POPs/Mercury containing materials and products directly avoided

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
3,500.00	3,500.00		

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	3,640			
Male	3,360			
Total	7000	0	0	0

Part II. Project Justification

1a. Project Description

1a. Project Description.

1. Activities carried out during the PPG phase were aimed at complementing information and validating the assumptions underlying the Project Identification Form (PIF), as well as defining the role of project counterparts. After an extended participatory process (please refer to Table 1 of Annex 9 of the ProDoc: *Summary of previous Stakeholders engagement activities*), some adjustments were made to the original project strategy (as outlined in the PIF) in order to respond to changes in project institutional context and the identified stakeholders. The Table below shows an overview of stakeholder additions made in alignment between the project design at the ProDoc stage and the original PIF.

Changes in Project?s Strategic Results Framework between PIF and CEO ER	
Additional stakeholders integrated at the PPG stage	**Comments / Rational for additions**
Beneficiaries	For the purposes of the project, the FSP beneficiaries have been split in two categories, i.e.: Relevant Groups and Other Beneficiaries. Table 8 of the ProDoc now describes the meaning of these stakeholders for this FSP.
Private sector and sectors to intervene	During the PPG, a wide range of stakeholders will be actively engaged during the execution of the different activities to achieve the foreseen outcomes, depending on the natura of the participating sector. These now include: ●Petrochemical sector ? Power Utility Companies ●Aeronautical Sector ? Producers and Traders of Electrical and Electronic Equipment ●Manufacturers and Distributors of Plastic, Rubber and Paint ●Metal & Mechanical Industries ? Waste management and disposal companies
Academy	As indicated by the STAP reviewers, during the PPG a group of well recognized stakeholders from the academy is now considered to implement in the foreseen activities. These include two universities, UniValle and University of Antioquia, that manage institutional capacity for the treatmen of POPs contaminated material and analytical methodologies, respectively. Besides, SENA, a large national technical institution, will contribute to the execution of the activities under Component 1.

Non-governmental Organizations	Also, a wide range of Corporate Associations/technological Civil Society Organizations (CSOs) has been involved during the PPG, representing the sectors of the national economy that the this FSP will intervene. Table 8 of the ProDoc now describes these stakeholders and their role in the project.

2. In addition, there is some deviations between PIF and the CEO Endorsemente, that are presented in the following Table:

Component	Original PIF	Adjusted in CEO Endorsement	Justification
Indicative Project description summary Page 5 PIF	3.1 Industrial Chemicals Registry established (covering import, trade, production and use of industrial POPs and their substitutes). 3.2 Four (4) demonstration Projects carried out to introduce four (4) substances identified as alternatives to Industrial POPs (linked to Output 2.2).	3.1 Four (4) demonstration Projects carried out to introduce four (4) substances identified as alternatives to Industrial POPs (linked to Output 2.2) 3.2 Industrial Chemicals Registry established (covering import, trade, production and use of industrial POPs and their substitutes).	There is a switch in the presentation of the outcomes. It was found, during the PPG that it is more cost-effective to carry out the demonstration projects (now Output 3.1) to derive lessons-learned during the execution of the FSP and afterwards, to consolidate the national registry for industrial chemicals (3.2 in the new sequence).
Section F Project Core Indicators Page 6 PIF	Core Indicator 9 491.70 metric tons Core Indicator 9.1 PCB=480 metric tons PFOS=1 metric ton Hexabromobiphenyl=0.70 metric tons SCCP=10 metric tons	Core Indicator 9 491.70 metric tons Core Indicator 9.1 PCB=480 metric tons PFOS=1 metric ton Hexabromobiphenyl=0.70 metric tons SCCP=10 metric tons	It was found that according to the analyzes that were carried out during the PPG phase, the expected goal of 0.7 tons does not correspond to Hexabromobiphenyl but to the Brominated POPs group, highlighting in particular the presence of HBCD and PBDEs in products and waste.

PROGRAM/PROJECT GEOGRAPHIC COORDINATES Pages 44 and 46 PIF	Activities related to PCB contaminated equipment owned by individuals will be carried out in the rural areas of the departments of Antioquia, Cauca, Valle del Cauca, Boyac?, Cundinamarca, Santander, Nari?o, Bol?var, Magdalena, Guajira and Norte de Santander, and in socially deprived areas of the following cities: Bogot?, Medellin, Cali, Barranquilla, Cartagena, Bucaramanga and Pereira.	Activity for Output 1.1 Identification of the owners (small holders) and location of the devices (transformers) associated to the power distribution grids of the companies linked to the project, in the following departments: Antioquia, Cauca, Huila, Boyac?, Cundinamarca, Santander, Quind?o, Caldas, Risaralda and Norte de Santander, as well as in the vulnerable and low-income communities of the cities of Bogot?, Medellin, Cali, C?cuta, Bucaramanga and Pereira.	The departments located in the Atlantic Coast of Bol?var, Magdalena and Guajira, as well as the cities of Cartagena and Barranquilla, initially considered in the PIF, had to be substituted during the PPG phase since no response was obtained from the power company that operates in this region; added to the fact that this utility is currently in the process of liquidation and sale. In the case of the departments of Nari?o and Valle del Cauca, no expressions of interest were received from the power companies servicing these regions, while the utilities servicing the departments of Huila, Quind?o, Caldas and Risaralda, as well as for the City of C?cuta are committed to participate.

PROGRAM/PROJECT GEOGRAPHIC COORDINATES Page 44 PIF	With respect to PFOS, FSP activities that will support the replacement of fire fighting foams containing these Industrial POPs will be carried out at the airports of Bogot?, Medellin, Cali, Barranquilla, Bucaramanga, Cartagena, and Pereira.	The new arrangements of FSP intervention related to PFOs are the airports located in the cities of: Bogot?, Medell?n, Cali, Armenia, Bucaramanga, Riohacha and Santa Marta.	After analyzing the information available and supplied by some of the airport operators throughout the country, it was found that airports such as those located in the cities of Armenia, Riohacha and Santa Marta should be prioritized, because current stocks of fire fighting foams are important, as well as references and brands with a greater probability of containing PFOS, compared to other airports with low probability of holding this chemical substance and with minor interest in participating in the project.
PROGRAM/PROJECT GEOGRAPHIC COORDINATES Page 44 PIF	Regarding brominated POPs, SPPCs and other Industrial POPs, project interventions will be undertaken in the industrial zones of the country such as Barranquilla, Cartagena, Bogot? (Soacha), Cali (Yumbo), and Medellin (Itagui and Copacabana).	The proposed industrial zones now to be intervened are Cartagena, Bogot?, Popay?n and Medell?n.	During the PPG phase, more than 30 meetings were held with different private companies in the productive sector that could potentially produce or use POPs for industrial use. As a result, it was possible to identify companies highly interested in participating in the project in the industrial areas of Cartagena, Bogot?, Popay?n and Medell?n.

1) The global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description);

The global environmental problem

3. The Republic of Colombia signed the Stockholm Convention on Persistent Organic Pollutants in May 2001, which was later ratified by Law 1196 in 2008. The country has also enforced several Multilateral Environmental Agreements related to other chemicals. Since the Stockholm Convention was signed, substantial progress has been made to achieve the objectives this Convention has foreseen, related to the identification, prevention, reduction and elimination of POPs and their waste, as well as to guide the actions of the different stakeholders involved for its integral management[1][1], in a harmonized manner with the Basel Convention, when hazardous wastes need to be mobilized to other countries for their treatment.

4. The country is not recognized as a significant producer or exporter of chemical products. Although some of this kind of products are manufactured domestically, most of the chemicals consumed in the different productive activities are imported. In 2012, a total of 18,332,600 tons of chemical products were consumed[2][2]; an important fact taking into account that one of Colombia's most relevant concerns regarding chemical products is precisely their inadequate handling.

5. The industrial manufacturing sector includes all processes and activities that have as their main purpose the transformation of raw materials into processed products and this involves the use of chemical products. The industry in Colombia is made up of large companies as well as small and medium enterprises (SMEs). According to official statistics[3][3], the distribution in 2016 of the sample for SMEs in Colombia shows that only 10% of this group produce chemical products, which means that the vast majority of companies dedicated to the manufacture of chemical products in general -such as paints, varnishes, pesticides and industrial and household cleaning products- are large companies.

6. Specifically, the country has conducted various activities aimed at improving the management and elimination of Polychlorinated Biphenyls (PCBs). These chemical substances are one of the most common and widely dispersed organic pollutants, mainly used for transformer oil, small capacitors and in other electrical components, i.e.: technically named as ?closed applications?. According to Annex A (Elimination), Part II of the Stockholm Convention, Parties of the Convention are required to phase out on electrical equipment and oils containing PCBs from use by 2025 and to manage and eliminate those wastes using environmentally sound practices by 2028.

7. On the other hand, the same Annex A requires that efforts should be made to identify other products and articles containing more than 0.05% PCBs including uses in ?*open applications*? and also to manage them in an environmentally sound manner, a fact that has been given relatively little attention by most developing countries. The management of PCBs in open applications is important because of the high levels of human exposure and environmental releases compared to closed systems and their associated health effects[4][4]. The largest open application of PCB have been caulks/sealants in

buildings, paints and anti-corrosion coatings in metal pipes and machinery, flame retardants and impregnating agent, among others. It is expected that by accessing international support, it would help to address the current context of PCBs in open applications in Colombia, as well as to serve as a knowledge-management platform for other Parties of the Stockholm Convention.

8. Colombia has developed its *?National Implementation Plan?* (NIP) in 2010 and published its update in 2017. The improved management and disposal of PCBs was among the main priorities listed in this Report. This triggered the implementation of a GEF financed project (UNDP COL/84851-71268) *"Development of National Capacity for the Environmentally Sound Management and Disposal of PCBs"* in order to improve the management and elimination of PCBs in Colombia. The project started its implementation in 2013 and was completed in 2018 with very successful results such as the elimination of 1,373 tons of PCB electrical contaminated equipment, owned by large power companies.

9. The 2017 NIP identified activities that are in accordance with specific actions and recommendations, and in particular with a ?National Action Plan for PCBs? and a ?National Action Plan for Industrial POPs?, including alternatives focused on the substitution and the environmentally sound management of items of equipment contaminated with PCBs owned by other stakeholders that are not part of the power sector, strengthen personnel capacity at the laboratories and facilities that manage this substances, establish the guidelines for the sound environmental management of waste containing or contaminated with POPs used for industrial purposes, among others. Most of these and other priorities have not yet been addressed and provide the reasoning for this project. The main advances so far with respect of the Stockholm Convention obligations have been achieved on PCB management and destruction of equipment by the large power industry.

10. Colombia approved the Basel Convention through Law 253 of 2005 assuming the liability to give environmentally rational and efficient management of these wastes, and that it can be carried out in a way that protects human health and the environment from the harmful effects that may arise from transboundary movements of hazardous wastes and their disposal. The actions proposed through the implementation of this FSP ensure the application of the provisions of the protocols approved under the Basel Convention, with the understanding that at the end of its life cycle, all elements that contain or are contaminated with POP substances must be managed in an environmentally sound manner as hazardous wastes, either within the country if there is an adequate management capacity, or by mobilizing them to other countries that have developed this capacity.

11. The proposed project is fully aligned with the GEF-7 Programming Directions of April, 2018 within its Chemicals and Waste Focal Area Strategy, aiming at eliminating / restricting / controlling emissions of the chemicals listed in annexes A, B and C of the Stockholm Convention as well as supporting the objectives of the ?Strategic Approach to International Chemicals Management? (including building capacity for management and disposal of e-waste and eliminating chemicals of global concern from the supply chain of commercial and domestic products).

12. From the gender perspective, Colombia needs more gender and sex disaggregated information related to the level and frequency of exposure to toxic chemicals and their impacts on human health, as well as on developing indicators to measure hazardous chemical?s impacts on women and men; especially data gathering in the labor market and health sector, because gender-determined occupational roles have a direct impact on the exposure to this kind of chemicals and is urgently needed to launch specific policies focus on gender and hazards of polluting substances. Even though women are not strongly represented in the activities (less than 34%) related to phase-out or significantly reduce chemicals subject to better management, protection of women from hazardous chemical needs to be strengthened.

13. In daily life, men, women, and children are exposed to different kinds of chemicals in varying concentrations. Biological factors ?notably size and physiological differences between women and men and between adults and children? influence susceptibility to health damage from exposure to toxic

chemicals. Social factors, primarily gender-determined occupational roles, also have an impact on the level and frequency of exposure to toxic chemicals, the types of chemicals encountered, and the resulting impacts on human health. For example, in the power sector, men have a greater risk of exposure to toxic chemicals because the proportion of men working in this sector is more than 65%, while women are exposed constantly with hazardous chemical in the health care sector that use medical devices and materials in clinical laboratories.

Root causes and barriers that need to be addressed

14. The development challenge is to overcome a national context, which leads to a series of institutional, capacity, financial and environmental gaps that delay the national capacity to manage industrial POPs of great significance for human health, environment and sustainable growth; in order to follow the existing national regulation and international guidelines on chemical substances and hazardous waste management, specifically, to comply in due time with the commitments signed by the GoC under the Stockholm and Basel Conventions.

15. This set of shortfalls are summarized in Figure 1 below.

Figure 1. ?Theory of Change- Problem Tree Analysis Diagram

Barriers to overcome for the strengthening of national capacity to manage industrial POPs

16. During the analysis of the development challenge carried out at the PPG stage for the preparation of the problem tree above, three different levels of causes were distinguished for managing PCB and industrial POPs within the framework of national and international guidelines on chemical substances and hazardous waste management, i.e.: immediate causes, underlying causes and structural/root causes.

17. Five immediate causes identified were:

PCBs

i. Approximately 60,000 units (electric transformers) have not yet been included in the National PCB Inventory, nor have they been tested and labelled according to their PCB content.

ii. The lack of a technical solutions (and facilities) for the elimination or treatment of different types of PCB porous wastes that are generated during the process of disassembling PCB containing equipment, such as wood, textiles and waste paper.

iii. The country does not have the technical capacity to identify and eliminate other types of PCB-related wastes used in open applications for other industrial uses, which are currently resulting in a risk to release them into the environment.

Industrial POPs

iv. Colombia lacks of an inventory to assess the uses of industrial POPs in Colombia, neither the technical knowledge about phase-in alternatives for their substitutes and the corresponding risk management.

v. Lack of technical capacity for the sustainable management and elimination of industrial POPs stockpiles.

18. Four major underlying causes were also identified as the basis of the immediate causes mentioned above. These were as follows:

PCBs

vi. The group of stakeholders ??the terceros?- does not have enough information and financial capacity to assume the responsibility and to face the high upfront costs for sampling, labelling and eliminating the electrical transformers containing PCBs, in accordance with Resolution 0222 as well as the corresponding update Resolution 1741 in order to comply with the Stockholm Convention goals.

Industrial POPs

vii. Colombia does not dispose of an efficient official registry for imports, trade and use of chemical substances used in industrial processes.

viii. The country does not have the analytical capacity to identify and monitor Industrial POPs (except PCBs), nor the installed capability to destroy materials, products or wastes containing these substances.

ix. The industrial sectors in Colombia do not acknowledge the restricted use or banned POP substances, their public health and environmental risk, nor the available alternatives; so there are no other reasons than economic ones that motivate the industries to seek their replacement.

19. Four structural/root causes were identified as follows:

PCBs

x. Local environmental authorities lack of technical and institutional capacities to enforce national PCB regulations, especially in those socially-depressed regions, in compliance with National Resolutions 0222 and 1741.

Industrial POPs

xi. Lack of institutional capacity ?at the national level- to control imports, production, trade and use of Industrial POPs listed under the Stockholm Convention, as well as their sustainable disposal.

xii. Lack of information on the amounts used, applications, people exposure and the impact on the environment of industrial chemical substances. As such there is an urgent need to establish and develop an official registry on the import, trade, production and use of industrial chemical substances.

xiii. Colombia faces the need to launch a system for the assessment and management of risks related to Industrial chemical substances, based on the full implementation of the Globally Harmonized System of Classification and Labeling of Chemical Products (GHS).

20. Based on the Theory of Change analysis, the immediate cause related to 60,000 units have not yet been included in the National PCB Inventory, is due to fact that ?the *terceros*? are unable to make sound and informed decisions on the sustainable management of PCBs because they lack information and education on the existing national environmental regulations, the negative impacts of these high-risk chemical substances for human health and the environment, as well as of their very limited

financial capacity. This is a significant meaning of this problem faced by the project in terms of poverty reduction and addressing inequality and exclusion in Colombia.

21. On the other hand, the lack of a technical treatment solutions for the elimination of PCB porous wastes, is due to the lack of technical knowledge and potential investors in the private sector, since this sort of investments is relatively new in Colombia. Many possible entrepreneurs lack a full understanding of the business opportunities and paybacks of investments in environmental sound management and disposal of POP projects, perceiving it as a task of high complexity.

22. Linked to other industrial POPs in Colombia, the lack of an inventory to assess the uses of industrial POPs in Colombia is due to the insufficient (or absent) regulation for these chemical substances as well as the lack of technical knowledge and capacities to introduce the substitution of alternatives and the corresponding risk management. These two immediate causes are interrelated so this UNDP-GEF project will attempt to build the relevant capacity to enable the national and local authorities to ensure that the conditions for the sustainable management of industrial POPs in Colombia are created and sustained over time.

23. The baseline does not reflect any gap of major concern amid the coronavirus (COVID-19) for the elaboration and review of the Theory of Change, however, an analysis carry out during the PPG has identified critical risks due to this global pandemic which are fully considered in Section IV, under the Risk sub-section. Five key risks have been identified which may threat the project?s activities and the management strategy to seize them while minimizing harm.

2) The baseline scenario and any associated baseline projects;

The baseline scenario

24. The Republic of Colombia, with a population of almost 50 million, has a very diverse social, cultural and geographical composition. The country has 32 territorial departments, where the Capital District of Bogot? stands out and concentrates the greatest socio-economic activity (25.6% of the Gross Domestic Product ?GDP-) followed by the departments of Antioquia (14.5%), Valle del Cauca (9.7%) and Santander (6.5%), where the cities of Medellin, Cali and Bucaramanga are located, respectively. In the composition of Colombia's GDP, mining, energy, agriculture, manufacturing, construction and transport sectors, are the pillars of the economy[5][5].

25. In Colombia, public policies are harmonized with various Multilateral Environmental Agreements (MEAs) of which the country is a signatory. Likewise, through the implementation of this Full Size Project (FSP), these policies seek to facilitate and promote compliance with the provisions of the Stockholm Convention whose purpose is to protect human health and the environment of Persistent Organic Pollutants ?POPs- taking into account that the substances[6][6] to be addressed are classified as such because they have toxic properties, are resistant to degradation, bio accumulate and are transported by air, water and migratory species across international borders and deposited away from the place of their release, accumulating in terrestrial and aquatic ecosystems.

26. The environmental sector is led by the *Ministry of Environment and Sustainable Development* (MinAmbiente), as the entity responsible for formulating and monitoring the national environmental policy and renewable natural resources; with the support of the national and local environmental authorities to enforce the regulations together with five institutes dedicated to environmental research, of which, the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM) stands out as the core coordinator of the Colombian Environmental Information System. All together respond to the different commitments made by Colombia under multilateral environmental treaties, of which, the Stockholm Convention is specifically the one related to the hazardous chemicals and waste that may contribute to the management of POPs.

27. MinAmbiente has led from 2013 the process of review and update of the "*National Implementation Plan of the Stockholm Convention on POPs"*, which includes actions formulated for the 28 POP substances regulated so far by the Convention (listed until 2017), a plan that is complemented with normative instruments that contribute to the integral management of POPs in Colombia, in accordance with *?the Environmental and Sustainable Development Decree 1076 of 2015?* which includes the regulatory instruments and regulations applicable to POPs related to:

a. Comprehensive management of hazardous waste and wastes,

b. Environmental licenses,

c. Prevention and control of air pollution, and

d. Environmental monitoring and control.

28. This Decree 1076 also contains several sections to ensure the environmentally sound management of these and other hazardous wastes in accordance with the *?Environmental Policy for the Integral Management of Hazardous Waste?* promulgated in Colombia in 2005 and currently being updated, including those related to stocks, whose competence also reaches the local environmental authorities[7][7]. MinAmbiente -through *Resolution N? 0222* enacted in 2011 and its modification, *Resolution N? 1741* of 2016- has established the requirements for the environmentally sound management of equipment and wastes that consist, contain or are contaminated with Polychlorinated biphenyls (PCBs). Equipment owners must present the total inventory and waste related for the purpose of quantifying and monitoring the progress achieved in the identification and disposal of equipment and waste contaminated with PCBs.

29. The IDEAM manages the information captured in the PCB Inventory at national level and performs the processing, analysis, generation of reports and dissemination of consolidated information at the national level. Since 2011, the *"Normative Resolution 222"* prohibits the production and import of PCBs or equipment or waste contaminated with this substance, among other actions. Subsequently, the *"Normative Resolution 1741"* of 2016 prohibits the disposal of PCB waste in landfills and waste safety cells.

30. MinAmbiente sets the minimum standards for national environmental protection -through decrees and specific resolutions- while local authorities ?in each of the 32 departments- have the responsibility

to implement, control and monitoring these requirements and consequently, enforce compliance in their territories.

31. Under the leadership of MinAmbiente, Colombia has advanced towards the implementation of the Stockholm and Basel Conventions with a political support in order to meet international commitments and guidelines related to the management, disposal/treatment and phase-out of PCBs, as well as improving knowledge about industrial POPs. However, in order to continue responding to these commitments, this project addresses another key recommendation of the Stockholm Convention, i.e.: binders the management of PCBs used in *open applications*, as well as multiple applications of Short-chain chlorinated paraffins (SCCPs), Chlorinated Naphthalene (CN), Perfluorooctanesulfonate (PFOs) and Brominated POPs (PBDE, PBB and HBCD) in different industrial sectors.

32. In addition, the country still faces certain difficulties, especially related to the elimination of PCBs and the management, disposal/treatment and phase-out of industrial POPs. POPs related challenges require to be addressed to ensure that environmental and human exposure to these chemicals is further minimized. In accordance with this context, in 2016 the Government of Colombia (GoC) issued a *?Policy on the Risk Management of Chemical Substances*[8][8]*?* with the objectives to establish technical and regulatory elements for risk management; to prevent major accidents; and to develop cross-cutting instruments to strengthen the institutional, financial and legal capacity associated with the consumption of chemical substances for industrial use.

33. It has been observed ?in recent years- that the enforcement capacities of the local environmental authorities at the national level are very limited. For example, the number of inspectors is very low. Furthermore, inspectors require training in the sound management of chemicals, to be able to assess technologies used for the disposal/elimination of POPs. Improved enforcement capacity would potentially allow the country to make better use of the existing operating disposal facilities at the national level and minimize the need for hazardous waste export. This could reduce the long storage time for hazardous waste that is currently being observed. In the case of PCBs some tools have been developed to facilitate the application and compliance with regulations, such as technical manuals, verification criteria and specific training, however such technical instruments are not available for other types of hazardous chemicals and wastes. In addition to that, there is currently no systematic assessment of chemicals in Colombia, except for PCBs.

PCBs contained in electrical equipment -Baseline Scenario-

34. One of greatest advances in the area of ??POPs in Colombia is the one concerning the integral environmental management of PCBs, which has been leveraged in recent years through the implementation of the UNDP/GEF PCB Project (UNDP COL/84851-71268), which was formulated in accordance with the specific action plan for these substances established in the NIP of the year 2010. This project allowed the strengthening of the legal, administrative and regulatory framework for the appropriate management of PCBs, the development of national capacity and demonstration projects for the environmentally sound management of PCBs.

35. One of the substantive contributions that this national effort with GEF support has provided is the strengthening of the national inventory of PCBs, mainly for closed applications, such as electrical

equipment using dielectric oils, whose owners and operators must present and update the total inventory annually, as well as waste contaminated with PCBs; for which compliance goals are established for the withdrawal from use of equipment contaminated with PCBs, whose maximum term is the year 2025, as well as in compliance with the goals of disposal of equipment, contained discarded liquids and other waste and/or waste contaminated with PCB by 2028, in accordance with the *?National PCB Elimination Plan?*, enacted by the GoC in 2010 and updated in 2017.

36. Since 1998, the GoC has made significant efforts to know and properly manage PCB stocks in the country. Since 2012 power utility companies in Colombia, owning approximately 95% of the equipment that might potentially contain PCBs (about 499,920 units, mainly electric transformers[9][9]), have undertaken activities to provide information to the National PCB Inventory, including key parameters such as location, weight, liquid content, PCB content, manufacturer, country of origin, year of manufacturing and other data required by the national regulation on PCBs.

37. This National PCB Inventory requires that each piece of equipment (in service or out of use) either owned by utility companies or individuals, should have an analytical identification of its PCB content by an accredited laboratory and must have a label that differentiates it from others. Procedures and capacity for the identification and labelling are in place and fully certified[10][10]. Based on the national PCBs inventory, it is estimated that over 4,300 metric tons[11][11] of equipment and wastes contaminated with PCB (equivalent to more than 1,000 metric tons of PCB contaminated oils[12][12]) still exist in the country, which means that an average rate of at least 500 tons of PCBs will need to be annually disposed from now until 2028. Therefore, it is important to further strengthen and continue with the activities that were started under the UNDP/GEF PCB Project (COL/84851-71268), which would allow Colombia to comply with its obligations under the Stockholm Convention by the year 2028.

38. Table 1 below provides an overview of the status of the equipment that contains dielectric oil, which is listed in accordance with the national electrical system and which must be reported in the National PCB Inventory, according to the regulation stated in the "Normative Resolution 0222".

Table 1. PCB Electrical Equipment Context (as December 31st, 2018)

N?	Classification according to PCB content	Status of Equipment				Total	
		In service		Out of service			
		Number of equipment units	Total mass of equipment [tons]	Number of equipment units	Total mass of equipment [tons]	Number of equipment units	Total mass of equipment [tons]

1	**Group 1** Equipment containing more than 10% (100,000 ppm) of PCBs	607	560.25	59	51.85	666	612.10
2	**Group 2** Equipment containing between 0.05% and 10% (500 ppm and <100,000 ppm) of PCBs	14	8.97	6	1.18	20	10.15
3	**Group 3** Equipment containing between 0.005% and 0.05% (50 ppm and <500 ppm) of PCBs	190	320.72	99	155.84	289	476.56
4	**Total equipment tested and found to be contaminated with PCBs (4) = (1+2+3)**	811	889.95	164	208.87	975	1,098.82
5	**Group 4 (NO PCB)** Uncontaminated equipment or containing less than 0,005% (<50 ppm) of PCB	202,506	137,618.45	17,625	13,305.49	220,131	150,923.94
6	**Total equipment tested (6) = (4+5)**	**203,317**	**138,508**	**17,789**	**13,514**	**221,106**	**152,022**
7	Equipment that has not been tested for PCBs	269,236	125,910.45	9,578	5,603.71	278,814	131,514.16
8	**Grand Total (8) = (6+7)**	**472,553**	**264,418.84**	**27,367**	**19,118.07**	**499.920**	**283,536.91**

Source: IDEAM (October 2019)

39. To date, up to 44% of the units has been tested for PCB content and has been labelled, especially for equipment associated to large power companies. Out of the total number of tested units, about 1,100 tons (less than 2%) have been indicated to be contaminated with PCBs and therefore need to be eliminated or disposed in an environmentally sound manner. Based on this assumption, of the 278,814 units that have not yet been tested, approximately 5,600 units might be found to be contaminated

(equivalent to 3,200 metric tons[13][13]). Pursuant to the *National PCB Elimination Plan* these units would have to be eliminated by 2028 by their owners (mainly the power utility companies and private industries).

40. Thanks to the highly satisfactory implementation of the UNDP/GEF PCB Project (COL/84851-71268), two key outcomes have enabled a foundation to extent actions geared at the full elimination of PCBs nationwide by 2028. First, the preparation of guidelines and technical manuals for PCBs management and their respective wide dissemination and adoption by the power sector in response to well-established national policies. Second, the development of a national infrastructure for the chemical elimination of PCBs, besides the destruction of 1,373 tons of materials with PCBs by the power utility companies (almost 128% over the established target of 600 tons).

41. This was accomplished in response to the implementation of Resolutions 222 and 1741 that indicate that electricity generation, transmission, and distribution companies will also assume responsibility for all equipment linked to the power network that are not of their property, are operative in their concessional territories, but their owner information is not provided to the local environmental authorities. There is a need to enforce the PCB regulation in a harmonized manner with the regulation of the whole power sector.

42. Colombia has sufficient installed capacity at national level for the treatment and elimination of equipment and oils contaminated with PCBs. There are currently three privately-owned companies in the country which are registered for PCB management: a facility located in the City of Cali that has the capacity to decontaminate metal surfaces while two other facilities -located in the cities of Medell?n and near Bogot?- have declorination processes in place to treat PCB contaminated oils. However, in Colombia does not exist the capacity to treat ?*Askarel* oils? (with the highest concentrations). In addition the country has at its disposal 16 laboratories that are accredited (ISO/IEC Standard 17025) for the sampling and analysis of PCB in dielectric oils[14][14]. However, there is no installed capacity in the country for testing of Bromides, PFOs, PCN and SPCC.

43. All these plants are privately-owned facilities which require payments for their services and some have received financial support thanks to the incremental funds provided by the GEF under the UNDP/GEF PCB Project (COL/84851-71268) as well as significant investments from national financiers. Thanks to this incremental support; approximately 1,373 tons of PCB contaminated equipment were eliminated in these facilities during the past 5 years (2013?2018).

44. These private companies have reported ?in overall- that 2,373 tons of electrical equipment and waste containing PCBs have been eliminated[15][15]; and at the same time, creating the capacity at national level for PCB elimination. However, these companies currently still owe an estimated additional quantity of more than 4,000 tons of PCBs that require elimination. Thanks to this installed capacity, power utility companies and large industries are willing to cover the costs to identify, label and dispose of the PCB equipment and wastes they own. The cost of dielectric oil testing and classification activities for each piece of equipment (mainly transformers and in less degree condensers)

is around USD180 to USD200 / unit[16][16]. To date, this cost has been assumed by the power utility companies. In terms of PCB elimination, the market value for treatment at national level is USD3,500 per ton of waste, which is lower than the cost of exporting this waste to an accredited country near to USD5,000 per ton.

45. In addition to the equipment owned by companies from the power industry, there is still a large group that will require additional external assistance, approximately 60,000 units owned by small electricity consumers located in urban and rural settings (called *terceros**[17]***[17] in Spanish, as a meaning for third market players) which for the most part have not yet been included in the National PCB Inventory but are located along the distribution lines of the power companies, neither analyzed/tested for PCB content.

46. Local environmental authorities currently have information provided by companies in the electricity sector of around 45,000 *terceros*, located specially in the departments of Cundinamarca, Antioquia, Caldas and Valle del Cauca; however, this information needs to be reviewed to improve its quality to be able to advance an effective management with the true owners of these units. In these four departments the power companies with the largest number of equipment (transformers) owned by the *terceros* associated with their distribution networks are: EPM (25,214 units), CHEC (7,852 units), EMCALI (3,407 units), CEO (2,211 units) and EPSA/CELSIA (451 units). On the other hand, the information corresponding to the power utility ENEL-Codensa is being reviewed, as another company with a significant number of owners with this type of equipment linked to their power distribution lines. The main risk is that the potentially PCB contaminated oil contained in these transformers might be drained so that this and other PCB contaminated wastes would not be properly disposed of, resulting in PCBs being released into the environment.

47. Specific attention needs to solve PCBs elimination for these third market players, a group made up mainly by natural persons and public organizations, such as municipalities, public service supply organizations, and other *terceros* classified as sensitive sites, like public hospitals and schools. These units are also electric transformers owned by small farmers and marginalized groups living in socially deprived areas (mainly located in the cities of Bogot?, Medellin, Cali and Manizales) and rural towns, or are installed in rural farmhouses located in areas with very high poverty levels that do not have the same technical and financial capacity of the large power utility companies to label, classify and decommission equipment containing PCBs.

48. A conservative estimation is that approximately 2% of this electrical equipment is expected to be contaminated with PCBs without any type of control over their management, which corresponds to about 1,200 units, equivalent to 670 tons of PCBs wastes (based on the assumption that each unit weights about 560 kilograms).

49. Other than the national capacity to dispose of PCB existing in oils and non-porous parts of electric equipment used by the power industry, Colombia does not have the capacity to eliminate other types of PCB-related wastes. A particular challenge in the country is the disposal of multiple porous wastes derived to washing the metal parts, such as wood, textiles or waste paper that are generated when PCB contaminated electrical equipment is disassembled.

50. Because the total weight amounts of these porous wastes are low and volumes are high, export becomes challenging and expensive, impacting the potential for their environmentally sound management. Colombia has been storing porous waste for export, while identifying new alternatives for them, due to the fact the country still does not have the disposal capacity. However, currently there are more restrictions for the transboundary movements of these wastes. It is for this reason that materials should be assessed during the execution of this FSP and alternatives will be identified in order to eliminate this kind of waste at the national level.

51. According to the national PCB inventory, approximately 27 tons of porous materials were reported for the year 2018, such as elements for staff use and operational instruments, clothing and soil contaminated which are stored for subsequent export so that they can be treated in other countries that have the capacity to eliminate this type of waste.

Open applications of PCB -Baseline Scenario-

52. Open applications of PCBs include some uses as additives in construction materials (caulks, sealants, anti-corrosion paints, flame retardants, specific paper, cable insulation, among others), used in large infrastructure facilities, such as pipelines, ports, airports and military facilities. An assessment of several applications of PCBs in order to identify where they are being used, their concentrations and potential exposure levels in Colombia, would be an essential step in order to prepare and establish an elimination plan to comply with the Stockholm Convention. A major challenge -in this regard- is the lack of information since Colombia has not yet conducted an inventory of open applications that may contain POPs.

53. In relation to open applications of PCBs, Colombia does not have specific information or has not made progress in identifying them according to the recommendations provided by the Stockholm Convention. In this sense, the information available so far is limited to international references such as the working document recently published by this Convention, called *"Consolidated Guidance on PCB in Open Applications"* in which it is indicated that about 25% of the production of PCBs worldwide since 1920 was used in open applications, which amounts to approximately 375,000 tons[18][18].

54. In accordance with the guidelines set forth in this document, in many of the public and private buildings constructed between the 1950s and the beginning of the 80s, it has been found that there are important PCB contents. Likewise, they were widely used in hydroelectric plants, military and water treatment facilities, in the construction of ships and vehicles and in the mining industry. It has not been ruled out that some buildings and sectors in question may have used them in Colombia.

55. The general lack of knowledge about the presence of PCBs in this type of applications in Colombia implies risks associated with the inadequate disposal of waste derived from this type of applications, so it is presumed that in most cases it ends up being released into the environment without any control.

Industrial POPs -Baseline Scenario-

56. As described above, environmental and human exposure to PCBs associated with electrical equipment is a major challenge including their elimination and still remains a high priority for Colombia, especially for the group of stakeholders called ?*terceros*?. However, greater attention must also be paid to other Industrial POP applications, which are also covered by the Stockholm Convention, including the following chemicals and some of its main expected applications in the country:

a. Short-Chain Chlorinated Paraffins (SCCPs), specially used in metal molding operations and as a secondary plasticizer and flame retardant in plastics, especially Polyvinyl Chloride (PVC).

b. Polychlorinated Naphthalene (PCN), associated to PCBs applications.

c. Perfluorooctanesulfonic Acid (PFOS), specially used in industrial products such as firefighting foams.

d. Polybrominated diphenyl ethers (PBDEs), Polybrominated biphenyls (PBBs) and Hexabromocyclododecane (HBCD), also used as a flame retardant in plastics.

57. In relation to POPs for industrial use (except PCB), in recent years the country has not presented significant progress in terms of its approach and knowledge of the national context associated with these chemicals. Colombia is not a large manufacturer of Industrial POP substances. However, being an importer of a wide variety of products, it is very likely that this type of substances have entered the country and probably, they are currently contained in industrial products of daily consumption, which need to be properly managed due potential contents of substances such as SCCPs, PCNs, PFOs, PBDE, PBB and HBCD.

58. Given the shortfalls in the control of the import, production, trade and use of chemical substances in the Colombia?s industry, especially the lack of information about amounts used, different applications, people exposure and the impact on the environment; MinAmbiente has elaborated a regulation on the comprehensive management of industrial use chemical substances and other provisions by which the integral management of chemical substances for industrial use is regulated, which was reviewed by the World Trade Organization (WTO) in 2018 and it is currently under further revision for official issuance by the GoC. This regulation intends that, as of its upcoming publication date, a group of chemical substances used by the industry or a group of chemicals used to manufacture certain products, requires evaluations and programs to reduce and manage their environmental and health risks. Moreover, the regulation stipulates the setting up of an import, trade and use-registry for certain chemical substances required in industrial processes. This registry is currently in the testing phase for the optimization of the platform and it is expected that in 2022, the registry will be implemented in order to have an inventory of chemical substances for industrial use in the country, including some alternatives to industrial POPs.

59. Furthermore, through Decree 1496 (August 6th, 2018), Colombia has adopted *the Globally Harmonized System of Classification and Labeling of Chemical Products* (GHS). In concordance with this public policy, MinAmbiente has published five documents, including: i. analysis, ii. strategy, iii. classification guide, iv. Communication guide and v. intelligibility tests[19][19]. The manufacturers and

importers of chemical products are responsible for classifying the hazards, labeling and generating the respective Safety Data Sheet.

60. In line with the ?*Policy on the Risk Management of Chemical Substances?* of 2016, which aims to meet international commitments and guidelines related to chemical substances, MinAmbiente is setting up a *?Pollutant Release and Transfer Register ?PRTR-?*. Currently, this Ministry is developing the PRTR?s Information and Technology (IT) platform to include the list of substances to be included in the PRTR, in close coordination with the Ministry of Health and Social Protection (MinSalud), the Colombian Agricultural Institute (ICA), and the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM) which will manage this platform and also, will be the national institution in charge of the required reporting.

a. Short-Chain Chlorinated Paraffins (SCCPs)

61. Worldwide, chlorinated paraffins have been used as an additive for lubricants and refrigerants in metal molding operations. The second most common use for chlorinated paraffins was as a secondary plasticizer and flame retardant in plastics, especially Polyvinyl Chloride (PVC), as well as a flame retardant in the manufacturing of certain textiles. Chlorinated paraffins are also used to produce lubricants for the leather industry, chlorinated rubbers, bituminous coatings and sealants.

62. Colombia does not have any information available on the national consumption of SCCPs or the products that might contain them. In 2017, an amount of 1,235 tons of unidentified chlorinated paraffins were imported without properly identifying if they were SCCPs. It is possible that chlorinated paraffins have been (or are being) used in the production of PVC in the country. In 2017, 418,128 tons of PVC were produced by the Colombian Industry. Worldwide, 85% of the PVC produced goes to the construction industry (pipes, floors, ceilings, window profiles, etc.) and another percentage to manufacturing of medical products. The articles containing SCCPs are mainly soft plastic items made of PVC, considering all these facts, the consumption of SCCP in PVC industry in Colombia is estimated around 62 tons in 2017[20][20].

63. In 2017, 1,780 tons of hydraulic fluids (potentially containing SCCPs) were imported for various uses including metal cutting. Chlorinated paraffins are in particular used as extreme pressure additive in metal working. Considering that a reasonable middle bound estimate for CP mixtures of unknown homologue composition might be an average SCCP content of 20%, and Chlorinated Paraffin (CP) concentration in emulsion-based Metal Working Fluids (MWF) in the final emulsified fluid is normally <1%, the SCCP content in emulsion-based metal working fluids containing CPs is in average <0.2%. Then, in Colombia the consumption of SCCP in MWF would be estimated between 2 to 22 tons[21][21].

64. 53. Considering that Colombia imported in 2017 the amount of 1,214 tons of unidentified chlorinated paraffins from countries with a current production of CP of various length (including

SCCP)[22][22] and that the average content of SCCPs in global CP production is estimated to be at least 16.5%[23][23], the imports of SCCP for industry applications in Colombia could be estimated from 12 to 200 tons for that year. However, these preliminary estimates have a high degree of uncertainty.

b. Polychlorinated Naphthalene (PCN)

65. Colombia does not have information available on the past consumption or current use of Polychlorinated Naphthalenes in the national production processes or its presence in products. It is assumed that this substance is no longer being used in manufacturing processes as their worldwide production has been virtually eliminated. The potential releases of Polychlorinated Naphthalenes in Colombia to the environment are assumed to be associated with the presence of traces in PCBs, their presence in electrical and electronic equipment or in preserved wood. However, as the country has never monitored this chemical, the extent of these releases are currently unknown.

66. However, in the past, lower chlorinated PCN congeners might have been used as heat exchange fluids and as wood preservatives as they have fungicidal and insecticidal properties. Higher chlorinated congeners might have been also used as additives for motor and gear lubricants, galvanoplastic compounds, waterproof sealants, dielectric impregnators for capacitors/condensers and refractive index oils.

67. During the PPG phase of the project it has not been possible to identify if these substances have entered the country in recent years, due to the fact that the analysis of import amounts presented in Table 4, shows too general tariff subheadings, so at this stage it is not feasible to make this estimate; In addition to the fact that their production has stopped since the Second World War[24][24], so it is presumed that their identification (if they indeed exist in Colombia), would be jointly carried out with the studies carried out for PCB in open applications, taking into account that the latter were used at some time as a substitute for PCNs.

c. Perfluorooctanesulfonic Acid (PFOS)

68. In Colombia, there is no accurate information available on the use of PFOS, nor information on imports of this substance or its byproducts. However, the assumption according to the global usage is that PFOS have been used in a variety of industrial products such as firefighting foams, photographic products, photolithography, semiconductors, hydraulic fluids and materials for metal plating/coating.

69. In 2016, Colombia looked into the possibility of undertaking an inventory of products and articles that could contain PFOS making use of the Convention?s criteria presented in the ?*Guidance for the Inventory of perfluorooctane sulfonic acid (PFOS) and related chemicals listed under*

the Stockholm Convention on Persistent Organic Pollutants[25][25]?. At that time, the country aimed to undertake an Initial Assessment (Level I), but it was not possible to come up with a preliminary list of suppliers, consumers, exporters and importers of products containing PFOS and related chemicals since the specific tariff headings were not sufficiently disaggregated. Furthermore, private companies that supplied products that contain PFOS did not specify its content, and importers did not request this information.

70. According to the Colombian National Implementation Plan (NIP 2017), national production of 15,439,975 square meters were identified from 2002 to 2007 in the local manufacture of synthetic rugs and mats. Assuming that products with POP substances were used in their manufacture, it is estimated that they contained 4.4 tons of PFOs that would have entered the country?s wastes currents by 2015, considering a 10-year useful life for this type of products.

71. Airports in Colombia use firefighting foams with fluorosurfactants from synthetic sources. In 2017, 372 tons of preparations and charges for fire extinguishers were imported, but it is unknown whether these fire extinguishers are PFOS-free. Up to date, using the information of 27 airports made available by *Aeron?utica Civil* and the Stockholm Convention guidance[26][26], it is now estimated that the existing quantity of PFOS in firefighting foam in Colombia may be around 4.6 metric tons.

72. Based on the difficulties faced in gathering information about the products that could contain PFOS, the Government of Colombia in 2017, through the Ministry of Commerce, Industry and Tourism (MinCit), included the following Tariff Heading: 2904.31.00.00 "*Sulphonated, nitrated or nitrosated derivative organic chemical products of hydrocarbons, including halogenates, perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride, perfluorooctane sulfonic acid?;* however, no imports of this substance were recorded in 2017. In the same year, under Tariff Heading 2904.99.00.00: "*Other sulphonated, nitrated or nitrosated derivatives of hydrocarbons, including halogenates*", an amount of 50 tons of these compounds were imported, as well as 690 tons of chemical preparations for photographic use. Some of these imports might have contained PFOS.

73. An updated assessment using Central Product Classification Code (CPC)[27][27], during the time period 2015-2017 suggests that, according to the metal plating liquid production, and reported concentrations of PFOS in the Report No. (UBA-FB) 002369/ENG[28][28], about eight tons of PFOS may be used each year in chromium plating.

d. PBDE, PBB and HBCD

74. In 2013, Colombia issued Law 1672 ?*through which the guidelines for the adoption of a comprehensive public policy on the management of Waste Electrical and Electronic Equipment (WEEE) and other provisions are dictated*?. Furthermore, in 2017 the country published the *?National Policy on the Comprehensive Management of Waste Electrical and Electronic Equipment?*. Later, in

2018, the Executive Decree #284 established official guidelines for the *?Comprehensive Management of Waste Electrical and Electronic Equipment?*.

75. These regulations have led to the identification of a greater quantity of WEEE that may hold plastics containing brominated flame retardants, and as such, this sort of equipment should be properly identified, separated, managed and disposed.

76. The Government of Colombia is also receiving support from EMPA (the Swiss Federal Laboratories for Materials, Science and Technology) through its Sustainable Recycling Industries (SRI) programme. The objective of this programme is to engage and work with SMEs from developing countries and countries with economies in transition in terms of the global recycling of secondary resources. In Colombia, the SRI programme has worked with MinAmbiente on developing the legal and regulatory framework pertaining to WEEE, as well as the development of policies regarding WEEE management to launch the elimination of brominated flame-retardant plastics. Furthermore, the SRI programme is supporting the preparation of projects that will undertake the gathering, separation and differentiated handling of brominated flame-retardant POPs, in partnership with various stakeholders who are implementing mandatory WEEE recollection programmes. Funding for these recollection programmes is co-financed by the manufacturers and importers of products that contain toxic substances and which fall under the country?s Extended Producer Responsibility Law (EPR).

77. According to MinAmbiente, the total mass of WEEE that is foreseen to be generated during the next 8 years could reach about 4 million tons, as presented in Table 2. Estimations indicate that by 2019 the WEEE generation per capita is almost 5 kg/year and by 2026 it is expected to further increase to 5.3 kg/year.

Table 2. Estimated tons of WEEE generation in Colombia (2018 ? 2026)

Category	**WEEE to be generated (tons)**			**Weight share (%)**
	2018	2019	2018 ? 2026	
Large household appliances	25,672	26,950	482,058	12.0
Cooling and freezing appliances	26,386	28,359	441,282	10.9
Audio & video appliances (including TV)	23,240	24,826	357,429	8.9
Computers and other ICT equipment	20,463	20,985	335,073	8.3
Small domestic appliances	28,315	29,147	510,611	12.7
IT and telecommunications	31,121	31,994	588,703	14.6
Lighting equipment (including Lamps)	20,388	21,014	363,181	9.0
Other categories	52,177	112,882	951,746	23.6
TOTAL	**227,762**	**296,157**	**4,030,083**	**100.0**

Source: Ministry of Environment and Sustainable Development (2019).

78. The estimated amounts of decaBDE used in the different WEEE categories is shown in Table 3 below. The calculation was made by MinAmbiente based on data presented by Drague, et al

(2018)[29][29]. It is also important to highlight that half of the WEEE mass is expected to come from five categories[30][30]. As shown in Table 3, the preliminary assessment of the consumption of HBCD and PBDE, in WEEE since 2018 to 2026, has estimated an amount of 3.86 tons and 271tons (POP-BDE + DecaBDE), respectively.

Table 3. DecaBDE estimated mass (2018-2026) associated with Colombian WEEE categories

Category	WEEE Generated (tons)	% Br-containing plastic	Br-containing Plastic (tons)	Mean HBCD (mg/kg)	Mean POP-BDE (mg/kg)	Mean DecaBDE (mg/kg)	HBCD (kg)	POP-BDE (kg)	DecaBDE (kg)
Large household appliances	482,058	0.29%	1,398	0	0.15	19.00	0.00	0.21	27.00
Cooling appliances (fridges/freezers)	441,282	10%	44,128	0	0.02	0.46	0.13	0.75	20.00
Audio & video appliances (including TV)	692,502	18%	124,650	14	38.00	1,900.00	1,745.00	4,737.00	236,836.00
Computers and other ICT equipment									
Small domestic appliances	510,611	0.75%	3,830	0	0.11	0.02	0.01	0.41	0.07
IT and telecommunications	588,703	18%	105,967	20	17.00	260.00	2,119.00	1,801.00	27,551.00
						Totals	**3,864.14**	**6,539.37**	**264,434.07**

Source: Estimates made by MinAmbiente based on factors presented by Drague et.al.

79. Considering that the main use of HBCD is as EPS and XPS flame retardant; the revision of tariff subheadings related to these products is included as well as their national production. In 2017, 11,314 tons of flexible foam plastic and hard foam plastic were produced by the Colombian industry. Nevertheless, this amount could include other plastic as PVC foam. Therefore, an estimate is made assuming that half of this amount corresponding to PS, and in the worst-case scenario, all of PS is manufacturing using HBCD as flame retardant. Considering these assumptions, the amount of HBCD present in the PS industry in Colombia could be estimated in about 28 tons in 2017[31][31]. However, considering the information reported by some companies during the PPG phase, in Colombia HBCD is not currently used as flame retardant in this sector. On other hand, taking into account that HBCD is currently likely produced only in China[32][32] and assuming that all the amount of PS imported from

this country may have flame retardant, the average annual amount of HBCD imported in 2017 could be about 39 tons. However its not any certain about the amount of HBCD consumed in the local manufacturing industries in the country or imported..

80. On the other hand, in the framework of the ongoing UNDP/GEF Project (GEF ID: 6928) ?*Reducing UPOPs and Mercury Releases from Healthcare Waste Management, e-Waste Treatment, Scrap Processing and Biomass Burning*?, Colombia is developing its capacity for the environmentally sound management of brominated flame retardants included in Annex A of the Stockholm Convention, with a particular focus on PBDE, PBB and HBCD.

81. As part of this UNDP/GEF UPOPs project, the presence and content of POPs in plastic computers parts, end-of-life vehicles and polyurethane foam from end-of-life refrigerators is being analyzed. In order to determine if such products contain brominated flame-retardant plastics, the total bromine content is determined using a portable fluorescent x-ray device[33][33]. As Colombia does currently not have the analytical capacity for these tests, a laboratory from abroad has been contracted to conduct the tests, at a very high price, approximately US$500 per analyzed sample.

82. Colombia has only waste incineration facilities, and thus currently does not have the capacity to destroy brominated flame-retardant plastics. As part of the above mentioned UNDP/GEF UPOPs project, alternative technologies to soundly dispose of waste containing flame retardants will be assessed and put in place with the objective to dispose of 1,500 tons of plastics containing brominated flame retardants, resulting in the elimination of 43 tons of these substances. The UPOPs project is also assessing the possibility of making use of the waste disposal facility that uses ?supercritical fluid technology?, as a treatment option or to generate intermediate products that could support the production of other substances, located in the City of Cali.

83. In terms of the overall national policy, MinAmbiente is one of leading partners of the *?Circular Economy Strategy ?*ENEC 2019-*?*, a proactive public policy to be implemented within the next four years (2019-2023). From the global perspective, this course of action emerges from the Sustainable Development Goals; and from the national perspective, on the following principles: i. systems optimization, ii. emphasis on added value of materials, and iii. finding opportunities to share and collaborate by closing and adding value to the productive circles; in which support to the sound management of materials and wastes containing industrial POPs, is of high priority.

84. One of the strategic objectives of this Circular Economy Strategy is the recycling and reuse of materials (such as WEEE plastics) into productive cycles within the next four years (2018-2022) in accordance with the National Development Plan. In line with the Colombian environmental regulations, companies, for instance, that trade in, distribute and/or manufacture electrical and electronic equipment, must establish collection and disposal programmes for generated waste (e-waste). As well, airport facilities are expected to make the necessary investments to replace PFOS containing foams with suitable alternatives, while the power companies would make the necessary investments in order to be able to recycle the metal components of the transformers, copper residues and bioelectric oils containing PCBs.

85. In summary, a preliminary analysis on the amount imported of substances or products that could be related to Industrial POPs in Colombia is presented in Table 4. The amount of POPs related with the tariff subheading is an estimates calculated with the levels of the substance contained at product or

good indicated at the corresponding Stockholm Convention?s guidance, and making some general assumptions (considering the lack of specific data about POP in the country).

Table 4. Import of substances that could be related to industrial POPs

in 2017 and 2018

Substance	***Tariff subheading***	***Tariff subheading details***	***Import amount (tons)***		***Estimated amount of POPs (tons)***			
			2017	***2018***	***2017 Low***	***2017 Up***	***2018 Low***	***2018 Up***
SCCP	3812.20.00.00	Compound plasticisers for rubber or plastics	2979.31	5,302.69	29.79		53.03	
	3824.99.99.00	Prepared binders for foundry moulds or cores; chemical products and preparations of the chemical or allied industries (including those consisting of mixtures of natural products), not elsewhere specified or included. Other	42,426.66	47,160.56	127.28		141.48	
	3913.90.10.00	Chlorinated rubber	15.04	14.00	0.15	0.60	0.14	0.56
	3819.00.00.00	Hydraulic brake fluids and other prepared liquids for hydraulic transmission, not containing or containing less than 70% by weight of petroleum oils or oils obtained from bituminous minerals[34].	890.01	1.116.92	1.78	22.25	2.23	27.92
	3824.99.21.00	Chloroparaffins[35][35]	1,214.00	1,103.84	12.14		200.31	

Substance	*Tariff subheading*	*Tariff subheading details*	*Import amount (tons)*		*Estimated amount of POPs (tons)*			
			2017	*2018*	*2017 Low*	*2017 Up*	*2018 Low*	*2018 Up*
PFOS	3707.90.00.00	Chemical preparations for photographic uses (other than varnishes, glues, adhesives and similar preparations); unmixed products for photographic uses, put up in measured portions or put up for retail sale in a form ready for use. - Other	689.21	620.52	0.07		0.06	
	3813.00.19.00	Preparations and charges for fire-extinguishers; charged fire-extinguishing grenades. - Other	371.81	291.66	0.00		0.00	
	3813.00.20.00	Charged fire-extinguishing grenades	4.59	0.70	0.00		0.00	
	3819.00.00.00	Hydraulic brake fluids and other prepared liquids for hydraulic transmission, not containing or containing less than 70% by weight of petroleum oils or oils obtained from bituminous minerals.	890,01	1.116,92	0,45	0,89	0,56	1,12

Substance	*Tariff subheading*	*Tariff subheading details*	*Import amount (tons)*		*Estimated amount of POPs (tons)*			
			2017	*2018*	*2017 Low*	*2017 Up*	*2018 Low*	*2018 Up*
	8424.10.00.00	Mechanical appliances (whether or not hand-operated) for projecting, dispersing or spraying liquids or powders; fire extinguishers, whether or not charged; spray guns and similar appliances; steam or sandblasting machines and similar jet projecting machines. - Fire extinguishers, whether or not charged (*Its reported in units. For this report, an average weight per unit of 4kg was considered)*	2,489.64	2,782.40	0.00		0.00	
	2904.99.00.00	Sulphonated, nitrated or nitrosated derivatives of hydrocarbons, whether or not halogenated. - Other	50.02	89.07	ND	ND	ND	ND
PCN	2903.99.10.00	Halogenated derivatives of hydrocarbons. - Other	64.10	35.20	ND	ND	ND	ND
	3817.00.20.00	Mixed alkylanaphthalenes	0.18	1.87	ND	ND	ND	ND
	3817.00.90.00	Mixed alkylbenzenes and mixed alkylnaphthalenes, other than those of heading 27.07 or 29.02. - Other	22.74	54.94	ND	ND	ND	ND

Substance	*Tariff subheading*	*Tariff subheading details*	*Import amount (tons)*		*Estimated amount of POPs (tons)*			
			2017	*2018*	*2017 Low*	*2017 Up*	*2018 Low*	*2018 Up*
HBCD[36][36]	3903.11.00.00	Polymers of styrene, in primary forms. - - - Expansible	4,757.27	4,705.15	23.79	47.57	23.53	47.05
	3903.19.00.00	Polymers of styrene, in primary forms. - - - Expansible - - - Other	171.41	51.00	1.37	4.29	0.41	1.28
	3903.90.00.00	Polymers of styrene, in primary forms. - - - Other	9.37	5.57	0.07	0.23	0.04	0.14
	3915.20.00.00	Waste, parings and scrap, of plastics - - Of polymers of styrene	0.00	0.00				
	3921.11.00.00	Other plates, sheets, film, foil and strip, of plastics. - - - Of polymers of styrene	252.66	76.32	2.53	17.69	0.76	5.34

Source: Prepared by the PPG Phase Project team with data obtained from BACEX. The estimating of the amount of POP present in tariff headings was calculated considering the concentration of POP at the kind of product, good or substance indicates at the corresponding Stockholm Convention?s Guidance on preparing inventories.

Associated baseline projects

86. There is a group of GEF-financed projects and other initiatives in Colombia currently under implementation related to the development challenge this project is also addressing, which could provide some additional support to strengthening this institutional partnership approach. Thanks to the involvement of the institutional partners in some of them (under the leadership of MinAmbiente), it seems of mutual benefit the achievement of the outcomes for this FSP. Specifically, this FSP will ensure coordination and count on the capacity built and knowledge gathered from the concurrent projects that are already in progress, as shown in Table 5 below:

Table 5. Other on-going projects related to this FSP

Project	Agency	Main relevance for this FSP

?Reducing UPOPs and Mercury Releases from Healthcare Waste Management, e-Waste Treatment, Scrap Processing and Biomass Burning?	GEF/UNDP	Capacity building at the national level for the environmentally sound management of brominated flame retardants included in Annex A of the Stockholm Convention, in particular PBDE, PBB and HBCD.
?Action Plan of Policy on the Risk Management of Chemical Substances?	MinAmbiente	Setting up technical and regulatory elements for risk management to: prevent major accidents and to develop cross-cutting instruments to strengthen the institutional, financial and legal capacity associated with the consumption of chemical substances for industrial use; including the establishment of Pollutant Release and Transfer Register (PRTR) and the Globally Harmonized System of Classification and Labeling of Chemical Products (GHS) in Colombia.
?National Policy for the Integrated Management of Waste Electrical and Electronic Equipment (WEEE)?	MinAmbiente	Awareness of the Colombian society to change the paradigm that involves "buying, using and disposing of" electrical and electronic devices for everyday use (some of them containing POPs) and think about the negative impacts that this consumption entails for human health and the environment; and to reassess the concept of waste for that they are not more, but that they remain within the productive and economic cycle, generate value and allow the desired environmental sustainability.

3) The proposed alternative scenario with a brief description of expected outcomes and components of the project;

The proposed alternative scenario

87. Colombia offers great prospects for successfully demonstrating how a growing economy, with a well-diversified industrial sector, could comply with the commitments agreed under the Stockholm Convention, specifically, the management of industrial POPs within the framework of national and international guidelines aligned with the Sustainable Development Goals and the National Development Plan. In accordance with its national policy indicated in the provisions stated in the ?*National Implementation Plan of the Stockholm Convention on POPs*?, the contributions expected from this UNDP/GEF project should facilitate the implementation of this policy framework.

88. The project's strategy is based on three principles:

Principle 1: The proposed PCB related project interventions in priority sectors will build on the national capacity already in place, which includes increasing capacity for labelling, classification and PCB analysis, as well as treatment/disposal plants, in order to comply with the Stockholm and the Basel Conventions;

Principle 2: encouragement of reliable innovation, accompanying decision makers to foster the necessary structural changes in public policies and among key private stakeholders and practitioners for the substitution of other Industrial POPs in articles and products, in order to comply with the Stockholm Convention; and

Principle 3: fostering a more resilient policy environment by adopting an integrated approach and coherent strategy, including the implementation of demonstration projects as an effective way to remove barriers to change, to learn from experience, to accelerate the adoption of alternative and safer substances to Industrial POPs and best practices at all levels, from regulators to market traders to end users, over the long run.

89. Colombia has taken important steps to comply with the provisions of Laws 253 of 1996 and 1196 of 2008 related with the implementation of the Stockholm and Basel Conventions, as presented throughout Section II. Nevertheless, it should be taken into account that there are substantial aspects that need to be explicitly established, complemented or in circumstances even regulated, in order to improve the provisions to protect human health and the environment against POPs.

90. The first challenge to be addressed by this project is to phase-out on, by 2025, all PCB-containing equipment and PCB disposal and waste in an environmentally sound manner by 2028, as per the Stockholm Convention. The conclusions and recommendations from the Terminal Evaluation of the GEF/UNDP PCB project (2013-2018) were: i) implement a strategy to eliminate PCBs nationwide; ii) standardize regulations and enforcement at the local level in coordination with MinAmbiente; and iii) reinforce surveillance and enforcement through a more effective strategy.

91. The second challenge is related to the full implementation of Resolution 0222 and the corresponding update Resolution 1741. The regulatory context sets up the timeline for the implementation of PCB elimination, a tough step for the small holders (*terceros*) of PCB-contained equipment, besides the large companies from the power sector, in order to comply with the disposal goals established in those regulations and the Stockholm Convention. Specifically, it is critical to plan in advance all the identification, labelled and disposal activities in accordance with the national context in Colombia (spread management and disposal out over time), in order to assure that sufficient installed capacity is in place for several kinds of PCB?s wastes when the demand from destruction needs to completed.

92. The third challenge refers to the adoption of public policies and measures to identify, reduce or eliminate releases derived from intentional use of PCB in *?open applications?* and of other Industrial POPs in products and articles that do not have specific regulations in Colombia, but its management is covered in a very general way by Law 1196. Therefore, these substances and their wastes must be addressed within the framework of the regulatory actions provided for in the action plans of Chapter 5 of the *?National Implementation Plan ?NIP-?* in accordance with the Stockholm and Basel Conventions. These substances are: PCBs used in non-electrical equipment, Short-Chain Chlorinated Paraffins (SCCPs), Polychlorinated Naphthalene (PCN), Perfluorooctanesulfonic Acid (PFOS), Polybrominated diphenyl ethers (PBDEs) and Hexabromocyclododecane (HBCD).

93. Lastly but not least, a fourth challenge has recently emerged in response to the pandemic crisis due to the COVID-19. The GoC has proposed an integrated strategy for economic takeoff to mobilize the industrial sector towards the circular economy and the implementation of incentives to accelerate the transition to the sustainability of the productive sectors, which will cover with specific actions most of the industries already engaged in the FSP in order to overcome the crisis. Specifically, under this national approach of public policy, with a key role of MinAmbiente, strategic actions will develop new production and operation models to incorporate circular economy schemes aimed at the use of materials, increased competitiveness and job creation. The strategy proposed thereof aims to support this emergent national policy to overcome the impacts of the COVID-19 emergency in Colombia. The foregoing constitutes an opportunity to advance in the actions planned in the development of the project, as well as to harmonize the expected results with the strategic lines of this national initiative, taking into account that the implementation of complementary and synergistic actions between them, will allow a positive impact and promote the transition of project stakeholders in the power, industrial and aeronautical sectors, towards more sustainable models.

94. This FSP aims at providing a significant impulse for strengthening the national capacity to manage industrial POPs within the framework of a friendly national context ?politically speaking- and international guidelines on chemical substances and hazardous waste management ?technically speaking-. It will bring about integrated institutional support and coordination of ground-breaking technology interventions aligned with national policy regulations and their enforcement at the local level. Despite programs and policy initiatives being undertaken in Colombia at the moment for PCB-containing equipment in the regulated power industry, mainly for dielectric-oil transformers, their long-term successful continuance remains challenged due to the need to support a holistic approach with the implementation of an alternative path for low-income users, ?*the terceros*?, as well as the need to manage feasible alternatives to replace Industrial POPs and improved management of wastes containing such POPs.

95. This FSP will build upon ongoing efforts of the Government of Colombia to fulfil its global environmental commitments through the implementation of two legal instruments, looking synergies between the implementation of the Convention of Stockholm and the Convention of Basel, in accordance with the ?National Implementation Plan?. This public plan has provided policy guidance for the development of an appropriate administrative and legislative framework, in harmony with other sectoral policies, for the pursuance of an alternative development path through suitable and relevant strategies and actions to address national capacity to the environmentally sound management of industrial POPs.

96. Under this guidance, two main purposes emerged, i.e.: the first one is to protect human health and the environment of POPs while strengthening collateral socioeconomic and environmental sustainability actions over *?the terceros?,* in order to comply with the country?s commitments to phase out on all electrical equipment containing PCBs from use by 2025, and to manage those oils and wastes using environmentally sound practices by 2028. The second purpose is to trigger innovative actions for replication the project?s outcomes for industrial POPs in order to manage them in an environmentally sound manner, a topic that needs immediate attention by most parties of both conventions. However, the baseline actions on this front have significant limitations; one of these is the need to ensure ?jointly-the maximum delivery of global environmental benefits with prevention, reduction and elimination because of the high levels of human exposure to these substances while boosting the national development in Colombia; considering the context of the wide variety of sectors in the domestic and industrial economy that already used these chemicals in multiple applications.

Theory of Change for this FSP

97. The project?s vision is to strengthen national capacity to manage industrial POPs within the framework of national and international guidelines on chemical substances and hazardous waste management, which will deliver multiple benefits at -global, national and local levels- through the management and elimination of PCB in priority sectors, the identification of Industrial POPs contained in products and articles and their feasible alternatives, improved management of waste, the development of the national capacity to avoid the use of Industrial POPs and promote the use of alternative substances, as established by the Stockholm Convention.

98. The country?s aim is to achieve a reduction objective of 1,500 tons of PCB contaminated wastes, 1,000 kg of PFOS, 2,000 tons of waste containing Brominated POPs and 10 tons of Short-Chain Chlorinated Paraffins (SCCPs), while increasing the country?s economic competitiveness. The project also aims at introducing an innovative approach for outreach information for broad dissemination with other parties of the Convention on reduction, disposal/destruction, phase out, elimination and avoidance of industrial POPs.

99. This vision is achieved by direct interventions on the immediate, underlying and root causes identified in the previous section. The project will provide institutional and capacity-building support, incorporating a break-through experience for UNDP in Colombia by contributing to the development challenge, i.e.: to overcome a national context, which leads to a series of institutional, capacity, financial and environmental gaps that delay the national capacity to manage industrial POPs of great significance for the human health, economic growth and the environment.

100. As summarized from the Theory of Change analysis, Figure 2 shows the alternative pathway and solutions to address on the causal chain analysis shown in Section II, based on the entries proposed by the project:

Figure 2. The Theory of Change Diagram

The project approach

101. As indicated in Figure 2, the objective of this project is to strengthen the national capacity for environmentally sound and safe management, as well as to reduce the releases of industrial POPs and other hazardous chemicals. This impact is clearly aligned with the UNDAF/CPD Outcome *?Resilient livelihoods strengthened by implementing conservation actions, sustainable use of biodiversity, adaptation to climate change, reduction of environmental degradation, and risk management?*. Additionally, this FSP is aligned with UNDP Strategic Plan Output 2.1.1 ?*Low emission and climate resilient objectives addressed in national, sub-national and sectoral development plans and policies to promote economic diversification and green growth?*.

102. This project has four components. The aim is to face the development challenge to protect human health and the environment not only in Colombia but also in other regions of the world, in the face of the possible inappropriate handling of elements, articles, products and wastes, with POPs contents exceeding the limits that are identified as safe, based on this innovative FSP approach launched by the GEF and UNDP in Colombia.

103. Component 1 addresses the limitations related to PCBs in terms of management by individual owners or third parties (the *terceros*), the lags of some of the power utility companies to advance in the fulfilment of PCB management goals, some limitations in the installed capacity in the country for the proper management of these substances and their residues, added to the recent barriers that arise for the transboundary movement of PCBs and the lack of knowledge of the magnitude of the use of this and other POPs in open applications and their stocks in Colombia. This component aims to ensure that the electricity sector, third-party owners of PCBs, as well as maintenance and service companies related to PCB management, under the guidance of public entities, including environmental policy-makers, have sufficient capacity to meet the withdrawal deadline for the use of equipment that is contaminated with PCB by 2025 and are aware of the importance of advancing with the proper management -including disposal- of contaminated elements and waste with PCB by 2018.

104. Key stakeholders, both at the national and local levels, will be strengthened in their capacity through the implementation of a technical training program, taking into account the gender dimension, to advance an adequate management and disposal of 1,300 tons of equipment and waste contaminated with PCBs, allowing cofinancing of their own budgets in the power sector. This will be added to the incremental funds that the project will contribute to intervene 6,000 transformers (for identification and labelling) belonging to individual equipment owners (third parties or *terceros*), who do not have enough resources to fulfil their management responsibilities related to PCB management or are in socially depressed areas, allowing in turn to eliminate 200 tons of these equipment and their waste that

are contaminated. The above together represents a total of 1,500 tons (near to 480 tons of PCBs) that will be eliminated during the execution of this FSP.

105. In addition, Colombia's current capacity for handling oils and non-porous parts of equipment will be expanded through the project to treat also porous materials and waste, through the design and implementation of a pilot project to extract PCBs from this type of materials, enabling in turn to the opportunity of eliminating them through at least one of the three facilities currently operating in the country for the treatment or elimination of PCBs.

106. Component 1 of the project will also allow Colombia to advance in the knowledge of the magnitude of the problem associated with the possible presence of PCBs and other POPs in *?open applications?* such as pipelines, ports, airports, military and government infrastructure, among others, from the development of an assessment and monitoring to estimate to what extent PCBs and other POPs are used in this sort of applications, as well as their stock at the national level; which later will allow to prepare the corresponding elimination plan.

107. Outcomes under Component 1 would directly attack the immediate causes i., ii., iii and vi; as indicated in Figure 1. ?Theory of Change- Problem Tree Analysis Diagram and the section *Barriers to overcome for the strengthening of national capacity to manage industrial POPs*.

108. Components 2 and 3 will focus mainly on overcoming the lack of available information on production, imports, trade and consumption of POPs for industrial use in Colombia, and on the articles, products and residues that could contain them, their environmental and health exposure by sex, their levels of environmental and health exposure, the current mechanisms of elimination or release, the regulatory gaps, the improvement of technological capacities, their replacement in some sectors with safer alternative substances, as well as for the environmentally adequate elimination of industrial POPs and their waste.

109. The synergy between these two components (2 and 3) will strengthen the country's capacity to identify the presence of POPs for industrial use in articles and products, as well as viable alternatives for their replacement, taking gender needs into account. As a result of this action, the national capacity will be developed aiming at replacing POPs for industrial use with alternative substances in accordance with the recommendations of the Stockholm Convention and viability for the national interest, while in parallel the stakeholders involved ?both from the private and public sectors- will become aware of the importance of advancing an adequate management of industrial POPs and their waste, as well as using safer alternative substances.

110. Based on the strengthening of two laboratories for the identification of industrial POPs and the design and implementation of monitoring programs in articles, products and waste, and also in biological and environmental matrices, an tailored inventory will be advanced later of industrial POPs and derived from it, a plan with strategic actions for the treatment or elimination of stocks of products or waste with these substances regulated by the Stockholm Convention, of which 2,000 tons of products or waste contaminated with brominated POPs, 1 ton of PFOS and 10 tons of SCCPs, will be the main global impact of the execution of the project.

111. In addition to this inventory, the identification of cost-benefit assessments, hazards, risks, technological requirements and impacts associated with the possible substitutes for the identified POPs, will allow defining criteria for the selection of the most viable substitution alternatives for these

substances and their promotion, in accordance with the guidelines of the Stockholm Convention, but within the structural context of the national industry.

112. Based on this strengthened initial capacity for the identification of industrial POPs and the alternatives of substitution that are feasible; national capacity will be developed by the FSP to implement the substitution of at least four alternatives, through the design and implementation of four demonstration projects, for which technical training (including awareness raising and gender sensitive training materials) will be previously provided to 1,000 professional and workers in the industrial sector and environmental authorities (of which at least 50% will be women). Of these, 200 professionals and 750 workers will be trained to introduce the selected substitutes in their organizations, and 50 environmental authority professionals trained to do environmental control related with these substances.

113. Likewise, training will be provided in relation to other aspects to be implemented for alternative substances, considering activities related to the *Globally Harmonized System* (GHS) and the *Pollutant Release and Transfer Register* (PRTR), which will be collateral outputs to the implementation of the demonstration projects taking into account the risk of exposure by sex, as well as other actions focused on strengthening information systems for industrial chemicals and on environmental interests, complemented with a hazard and risk communication system.

114. Based on the above, for both Components 2 and 3, there will be sufficient technical inputs for the definition of limits for Industrial POPs on products and waste, as well as for defining guidelines that facilitate the integral management of Industrial POPs in accordance with the guidelines of the Stockholm and Basel Conventions, providing at the same time the appropriate technical background for the issuance of new regulations that would allow the adequate management of wastes of industrial POPs, including handling, storage and disposal.

115. Outcomes for Component 2 and 3 would remedy causes iv, v, vii., viii. and ix; as indicated in Figure 1. ?Theory of Change- Problem Tree Analysis Diagram and the section *Barriers to overcome for the strengthening of national capacity to manage industrial POPs*.

116. Lastly, Component 4 of this FSP will capture lessons-learned, monitor the project?s activities and provide the required feedback, through an awareness raising campaign and information strategy, which includes dissemination at the local, national, Latin America and the Caribbean and global levels. Annual workshops will be organized to create awareness, allow request for and capture of feedback. Information on the benefits of an adequate integral management of POPs and their waste, its benefits and available options would also now reach stakeholders and the general public through information and outreach; acting directly on causes x., xi., xii. and xiii; as indicated in Figure 1. ?Theory of Change- Problem Tree Analysis Diagram and the section *Barriers to overcome for the strengthening of national capacity to manage industrial POPs*.

Key assumptions

117. The project?s approach is based on various assumptions that will be critical for achieving the expected changes as per the Theory of Change analysis:

- ? A collaborative approach to policy making that is sustained and continuously improves, integrating gender related issues across the implementation of the proposed activities.

? Increased attention to gender and social equity, since there is a growing concern regarding fairness and opportunities for marginalized groups in society, like those third-parties (the *terceros*), located in socially-depressed rural areas.

? Effective synergies created between the public authorities at the national and local levels and private industries, will enable a favorable environment with a wide range of different stakeholders in the national economy.

? Collecting the lessons learnt would foster continuous improvement during the implementation phase and assisting in the development of innovative demonstration approaches and testing for other similar implementations elsewhere after the project?s completion.

? Stakeholders provide true, reliable and accurate information about these substances and are willing to participate freely in their substitution process; likewise, the Colombian industry is in pursuit of environmentally friendly processes and is interested in implementing them.

? Impacts for the Colombian economy amid the coronavirus situation (COVID-19) will be timely mitigated to guarantee successful completion of the proposed activities and achievement of outcomes in the framework of the implementation of the integrated strategy for economic takeoff, proposed by the GoC.

Expected outcomes and components of the project

118. The project has four substantive components aligned with five main outcomes, embracing the regulatory, institutional and technological dimensions needed to reach the proposed structural change in order to strengthen the national capacity in Colombia to the environmentally sound management of industrial POPs within the framework of national and international guidelines, on chemical substances and hazardous waste management.

Component 1: PCB Management and Elimination in Priority Sectors

119. The PCB component of this project will assist Colombia with the planning of the management and disposal of remaining stocks of PCB contaminated equipment in the country and would put

Colombia well on track to comply with its obligations under the Stockholm Convention on PCBs for the year 2025 (remove from use, equipment containing PCBs) and 2028 (environmentally sound waste management). As a result, the country would not require additional assistance from the GEF for PCB management and disposal after that.

120. The activities proposed under the Component 1 for PCB will put special attention into the small holders (*terceros*), that will not be able to comply with its obligations under the Stockholm Convention -without external assistance- in order to meet the 2028 deadline due to the fact that they do not have the financial resources neither the technical capacity to properly dispose of PCB-containing equipment; it is necessary to mobilize financial resources to support testing, labeling and classification activities for dielectric oils and the elimination of identified PCB wastes. Private companies from the power industry are willing to contribute with some technical resources required to identify, label, classify and eliminate the contaminated equipment owned by those individuals who obtain their electricity supply from those companies, but for most part of the *terceros*, there is a need to assist them with incremental funding.

121. The Outcome of this Component is: *?Power sector, state entities and individual PCB holders capacitated to meet 2025 PCB phase-out deadline?.*
It will support the identification, labeling, classification and elimination of a total of 6,000 units of equipment and wastes that may contain PCBs and which are owned by low-income individuals (who do not have the technical and financial capacity to ensure environmentally sound PCB disposal), and which therefore, are not considered under the responsibility of the power industry. Accordingly, the GoC will enforce this regulation through the integration of a variety of stakeholders strengthening its compliance. The implementation of this regulation should be aligned with the multilateral environmental agreements to which Colombia is a signatory, particularly the Stockholm Convention signed on 2001 and ratified, as Law 1196, by the National Congress in 2008.

122. The rationale to explain this outcome and the following four closely-interrelated outputs is that without the GEF, the technological transition to the management and disposal of remaining stocks of PCB contaminated equipment will probably progress at a much slower rate. Effectively improving actions for this transition would demand of strengthening the regulatory enforcement and compliance, innovative financing through private sector participation and ground-breaking technical methods. Developments related to porous materials and wastes, as well as identification of PCB amounts used in open applications would not happen at the desired speed without GEF resources due to the lack of technical knowledge in the country.

123. Output 1.1 *?Identify, label and classify 6,000 electrical transformers owned by individuals (located in poor rural and urban areas) and set-up financial and technical support programmes for disposal*[37][37]*?*.
Synergies between national-government policy makers and local environmental authorities, will facilitate significantly advancement of the various initiatives with respect to the management and disposal of remaining stocks of contaminated electrical transformers with PCB nation-wide. This output will enable local environmental authorities to conduct inspection and surveillance activities required to enforce the proper disposal of PCB-containing equipment by owners and to identify, label and classify 6,000 potentially PCB contaminated electrical equipment owned by individuals in order to include those electrical units in the national PCB inventory, and ultimately, to eliminate them; which represent a volume of about 200 tons of PCB contaminated equipment and wastes owned by low-income individuals and some public institutions, i.e: ?the *terceros*?.

124. In partnership with the power industry, the project will establish a support programme for individual financially retrained PCB owners taking into account genders needs, which will be provided with technical and financial support to substitute and eliminate 200 tons of PCB-containing equipment. Co-financing provided by the Colombian power utility companies will contribute technically and logistically to the processes related to the identification, classification, testing and labelling of electrical equipment owned by individuals who purchase their electricity from these companies.

125. The following incremental activities will be carried out to achieve Output 1.1:

i. Identification Identification of the owners (small holders) and location of the devices (transformers) associated to the power distribution grids of the companies linked to the project, in the following departments: Antioquia, Cauca, Huila, Boyac?, Cundinamarca, Santander, Quind?o, Caldas, Risaralda and Norte de Santander, as well as in the vulnerable and low-income communities of the cities of Bogot?, Medellin, Cali, C?cuta, Bucaramanga and Pereira.

ii. Implementing a programme -in partnership with the territorial power utility companies- to conduct awareness raising and transfer of knowledge (outreach national regulations and their requirements) to the owners of the equipment.

iii. Supporting a capacity building program for the local environmental authorities through the implementation of a training programme to identify PCB individual owners, and to establish a monitoring and control programme in their jurisdictions (sub-regions, large urban cities, and local municipalities).

iv. Designing and implementing of a training programme on best practices for labelling, sampling and disposal, targeting the maintenance staff and service companies located in the prioritized above departments and regions, in order to furnish them with the tools for the identification and tracking of PCB owners and for the development of procedures properly and safely.

v. Technical staff training to achieve labor competence in the sampling of dielectric oils in equipment in use and disuse, as well as in waste management.

vi. Identification and labelling of devices owned by small holder?s (*terceros*), in association with power companies.

126. Output 1.2 *?Support the disposal of 1,500 tons of equipment and waste contaminated with PCBs?*.
Small holders (*terceros*) are also require to comply with the national regulation stated in Resolution 0222 and the corresponding update Resolution 1741, as it establishes the timeline to comply with the disposal goals established in those regulations and the Stockholm Convention spread management and disposal out over time, besides the power utility companies. It is critical to plan in advance the activities for the environmentally sound disposal in order to assure the optimization of the installed capacity in a distributed manner over time, avoiding accumulating most of the demand for PCB elimination in the last years of meeting the goals, in line with the guidelines established by MinAmbiente.

127. The power utility companies ?subsequently- are expected to apply their own financial resources to identify, replace/phase-out and eliminate/dispose of additional 1,300 tons of equipment and waste contaminated with PCBs. This FSP will support the elimination and environmentally sound disposal of about additional 200 tons of electrical transformers and waste contaminated with PCBs that are currently located in vulnerable and low-income communities in the Departments of Antioquia, Cauca, Huila, Boyac?, Cundinamarca, Santander, Quind?o, Caldas, Risaralda and Norte de Santander, as well as in the vulnerable and low-income communities of the cities of Bogot?, Medellin, Cali, C?cuta, Bucaramanga and Pereira. Considering the wide distribution of the power distribution grids, it is not excluded that would be necessary to intervene equipment located areas with the presence of indigenous peoples. However, the local communities (Afro-Colombian communities, community action boards, indigenous peoples, potentially marginalized groups, among others) through the social managers of the companies in the power sector, will be the ones who decide their participation in the project and eventual activities within their territories. This decision will be expressed through a prior informed consent in written form in accordance with the existing protocols set up by the local power companies. However, in many cases the prioritized areas for activities related with PCBs, will be located far away from indigenous territories and for industrial POPs, the interventions will be focused on industrial areas and airports that are located in areas that are not indigenous territories..

128. The following incremental activities will be carried out to achieve Output 1.2:

i. Technical and financial assistance for the elimination of PCB-contaminated devices owned by prioritized small holders in partnership with power companies.

ii. Providing technical assistance to power sector companies nationwide to close the cycle between the identification and classification of the devices in property of these companies, and the elimination of PCB contaminated wastes.

iii. Implementing a training and knowledge updated program for companies in the electricity sector on the environmentally sound management of PCBs, in accordance with the guidelines set up by the MinAmbiente for the fulfilment of PCB disposal goals.

129. Output 1.3 *?Technology/approaches established to extract PCBs from porous materials/waste for ultimate disposal through existing installed capacity?*.

In order to further support the PCB disposal work carried out by the power industry and support Colombia to put in place a full life-cycle approach for PCB management and disposal, it is necessary to establish technologies/approaches that allow for the extraction of PCBs from porous materials (wood, textiles and paper) so that these can subsequently be disposed by using the installed capacity of the final disposal plants already in place, i.e.: the Lito Treatment Plant, located in the City of Cali, the EPM Treatment Plant located in the City of Medellin, and the Ocade PCB Treatment Plant located near the City of Bogota. Additionally, University of Valle (UniValle), in alliance with EMCALI, has a semi-industrial scale plant for the destruction of PCBs through supercritical fluid technology, located in the City of Cali.

130. The project therefore aims to assess potential, viable and cost-effective technologies that can extract PCBs from these porous materials and after careful cost- effective considerations, to launch and operationalize the most suitable alternatives.

131. The following incremental activities will be carried out to achieve Output 1.3:

i. Developing a technical and economic feasibility analysis of technological alternatives for the extraction of PCBs in porous materials and their subsequent elimination.

ii. Implementing a pilot test for the treatment of contaminated PCB porous materials, considering feasible decontamination, cleaning and removal techniques incorporating safeguards for workers by sex and the environment.

iii. Optimizing the installed capacity for management and elimination of porous materials stocks contaminated with PCBs.

132. Output 1.4 *?Assessment undertaken to identify the extent/amount of PCBs used in open applications and an elimination plan prepared?*.
PCBs are often used as additives in construction materials and elements (such as sealants, paints, coatings, cables, etc.). As such they can be found in industrial and institutional infrastructure, including pipelines, ports, airports, military and government facilities, but also in construction debris. Yet, there is no an inventory available in Colombia of open applications of this kind that may contain PCBs.

133. The following incremental activities will be carried out to achieve Output 1.4:

i. Designing and implementing a monitoring plan for the identification of open PCB applications in: oil pipelines, seaports, airports, government facilities and waste related to coatings, cables and sealants.

ii. Developing a preliminary study to identify some of the open PCB applications in Colombia.

iii. Preparing an elimination plan of PCB in open applications and the necessary inputs for the NIP update.

Component 2: <u>Identification of feasible alternatives to Industrial POPs and improved management of wastes containing such POPs</u>

134. Given the shortfalls in the control of the import, trade, production and use of chemical substances in Colombia?s industry, especially the lack of information about amounts used, applications, population exposure and the impact on the environment; the GoC elaborated in 2018 a regulation on the comprehensive management of industrial chemical substances and other provisions. This regulation was submitted for consultation to the World Trade Organization (WTO) in 2018 and it is currently under analysis by the environmental authorities, for official issuance. The draft establishes that, as of its publication date, a group of chemical substances used by an industry or a group of chemicals used to manufacture certain products; it would require to be evaluated and to develop programmes in order to reduce and manage environmental risks. Furthermore, the regulation stipulates the establishment of an import, trade and use registry for certain chemical substances used in industrial processes.

135. The other on-going GEF/UNDP project (GEF ID: 6928) ?***Reducing UPOPs and Mercury Releases from Healthcare Waste Management, e-Waste Treatment, Scrap Processing and Biomass Burning***?, mentioned in Section II, has found that Colombia must strengthen even more its data gathering and analysis on the identification, classification and treatment of brominated flame-retardant plastics due to the consumption of electrical and electronic equipment.

136. The Outcome of this Component is *?National capacity in place to identify Industrial POPs (in products) and suitable alternatives, in support of the phase-out of industrial POPs*?.
The rationale for this outcome is that there is a need to develop Colombia?s capacity to phase-out Industrial POPs and promote the use of feasible alternatives; hence, It is necessary to have a clear identification of the sectors, activities, products and actors that are using them, which in turn will facilitate to conduct exposure analyses and risk assessments for alternative substances to Industrial POPs and introduce changes to production processes where, that will be addressed in Component 3. This issue was identified during the development of the NIP update that was published in 2017; this FSP aims at implementing the recommendations that were identified in this Report.

137. Output 2.1 *?National capacity built to conduct an in-depth inventory of Industrial POPs contained in products and wastes?*.
A *first-of-a-kind* inventory will consider an identification and assessment of the various industrial sectors like fire-fighting foams, aviation hydraulic fluids, consumer products/goods as well as wastes, related chemicals, and contaminated sites. Considering that manufacturing and import data on the content of Industrial POPs in products is hard to find, products and wastes will be sampled in order to carry out a qualitative and quantitative physical or chemical analysis to determine the presence and concentration of Industrial POPs. The project will support the sampling of a representative collection of products and goods of concern. This analysis will help to establish, though statistical methods, an estimate of the type and number of products or waste quantities that may contain industrial POPs.

138. MinAmbiente will undertake a tailor-made inventory on PFOS/PFOA, SCCP and brominated POPs assessing the extent of the import of POP-containing substances and products and the consumption of Industrial POPs, sampling, laboratory analysis and site inspection, in key areas such as companies that trade in, distribute and/or manufacture electrical and electronic equipment and from aeronautical, hydrocarbons, plastic, rubber and metal working sectors, in order to develop an elimination plan in accordance with the new guidelines established by the Stockholm Convention. This tailor-made inventory refers to the available information to be gathered during the Project execution for each type of these chemical substances.

139. The following incremental activities will be carried out to achieve Output 2.1:

i. Gathering information and assessing stocks of PFOS/PFOA, SCCP and brominated POPs in sectors where presumably they have been used as well as the identification of POP-containing substances and products.

ii. Designing and setting up a monitoring plan of PFOS in the aeronautical and hydrocarbons sectors, SCCP in plastic, rubber and metalworking sectors, HBCD and other brominated POPs in the plastic manufacture and transformation industry. This monitoring plan will allows the specification of the estimations made for the industrial COPs with the international guidelines; including sampling of a representative collection of products and goods of concern.

iii. Elaborating a report and outreach of tailor-made inventory results on industrial POPs.

iv. Strengthening technical capacity, including personnel training of two laboratories to support the identification and characterization of POPs used for industrial purposes.

v. Setting up an Industrial POPs monitoring program to determine the impact of PFOS, PBDE and Chlorinated Paraffins by monitoring their presence and concentration in a number of biological matrices (human milk, blood and bivalves).

140. Output 2.2 *?Feasible alternatives recommended by Stockholm Convention to Industrial POPs promoted?*.
The identification of the alternative substances will be based on reliable sources in order to identify potential dangers and risks. Alternatives will be evaluated and compared in light of the identified risks, and the safest, most feasible alternatives that fit the intended use will be selected. Small-scale pilot trials will be undertaken to identify the required technological changes as well as environmental, health and consumer impacts, and to establish the necessary control measures. Criteria for the feasible substitution of Industrial POPs chemicals will be drawn up and aligned with Colombia?s industrial sector specific needs and considering gender needs into account.

141. Table 6 shows the preliminary findings of alternative substances to Industrial POPs identified during the execution of the PPG stage.

Table 6. Possible alternatives to most common Industrial POPs in Colombia

SCCP	PFOS	PBDE	PCN

Rubber	Phosphate esters, inorganic additives, and halogenated additives.	Metal Plating	Perfluorinated	EEE	Other brominated, TBBPA, non-brominated retardants.	Transformers and condensers	Mineral oils, silicone oils and Ester oils
Metal Working Sector	Sulfurized, phosphorous, chlorinated, and non-halogenated.	Petroleum	Perfluorinated	Vehicles	TBBPA, non-brominated retardants.	Cable coating	Plastics
Sealants	Plasticizers	Floor mats and furniture	Perfluorinated and siloxanes.				
PVC	Inorganic, phosphorous, halogenated and phthalates.	Endoscopes	n.a.				
Leather	Non-halogenated, nitro alkanes and chlorinated.	AFFF	Perfluorinated.				
Paints	Chlorinated and phosphorous.	Hydraulic	n.a.				
Textiles	Phosphorous and halogenated retardants.	Sulfuramide	Other pesticides.				
Technology change		Technology change					

142. With respect to PFOS, activities that will support the substitution of firefighting foams containing these Industrial POPs that will be carried out at the airports of Bogot?, Medellin, Cali, Armenia, Bucaramanga, Riohacha, and Santa Marta with the logistical and technical support of AEROCIVIL, AIRPLAN, OPAIN and other regional operators. Regarding brominated POPs, SPPCs and other Industrial POPs, these UNDP/GEF FSP interventions will be undertaken in the main industrial zones of the country such as Bogot?, Medellin, Bucaramanga, Popay?n and Cartagena, as well as the municipalities next to these locations.

143. The following incremental activities will be carried out to achieve Output 2.2:

i. Identifying most favorable alternatives for the substitution of industrial POPs in Colombia considering their technical feasibility and commercial availability.

ii. Carrying out an assessment including a cost-benefit analysis to support the selection of the Stockholm Convention recommended feasible alternatives, in order to replace industrial POPs that are currently being used in Colombia in production processes or being consumed in products and goods in key sectors.

iii. Implementing four demonstrative projects to phase-in the identified alternatives for industrial POP or strengthening of the substitution processes that already have begun, in the aeronautical, petrochemical, plastics or metalworking industries, as indicated in Table 7.

Table 7. Demonstrative projects as alternatives to Industrial POPs

Pilot Project Name	Location	Baseline (current Industrial POP)	Alternative Substance ? Alternative Materials
#1 Replacing SCCP in PVC production	Bogot? Medell?n Cartagena Popay?n	In 2017, 418.128 tons of PVC were produced by the Colombian industry. Considering that 85% of PVC produced in the world goes to construction industry (pipes, floors, ceilings, window profiles, etc.) and the articles containing SCCPs are mainly soft plastic items made of PVC, the consumption of SCCP in PVC industry in Colombia is estimated in around 62 tons.	Alumina trihydrate; Aluminum trihydroxide (ATH), used in conjunction with antimony trioxide; Aluminum trioxide; Antimony trioxide (or Antimony oxide); Zinc borate; Cresyl diphenyl phosphate (CDP); Tertbutylphenyl diphenyl phosphate (TBPDPP); Isopropylphenyl diphenyl phosphate (IPPDPP); Phosphorus based compounds (in general); Tricresyl phosphate (TCP); Long-Chain Chlorinated Paraffins - LCCPs; Medium-Chain Chlorinated Paraffins - MCCPs; Di-isononyl?phthalate (DINP); Di-isodecyl phthalate (DIDP); Bis(2-ethylhexyl) phthalate (DEHP); Butyl benzyl phthalate (BBP); Di-isoundecyl phthalate (DIUP); Other phtalate-like alternative: Tri-octyl trimellitate; Polymeric additives: Acrylic polymers

Pilot Project Name	Location	Baseline (current Industrial POP)	Alternative Substance ? Alternative Materials
#2 Replacing PFOS in AFFF	Bogot? Medell?n Cali Armenia Bucaramanga Riohacha Santa Marta	Airports in Colombia use firefighting foams with fluorosurfactants from synthetic sources. In 2017, 376 tons of preparations and charges for fire extinguishers were imported, but it is unknown whether these fire extinguishers are PFOS-free. Up to date, using the information of 27 airports made available by AEROCIVIL and the Stockholm Convention guidance, it is now estimated that the existing quantity of PFOS in firefighting foam in Colombia may be around 4.6 metric tons.	Fluorosurfactants as: Perfluorohexane ethyl sulfonyl betaine and C6-fluorotelomers often used in combination with hydrocarbons; Dodecafluoro-2-methylpentan-3-one Fluorine-free fire-fighting foams as: Protein-based foams and Products that contain glycols.

Pilot Project Name	Location	Baseline (current Industrial POP)	Alternative Substance ? Alternative Materials
#3 Replacing SCCP in rubber producs	Bogot? Medell?n Popay?n	Considering that one of the main uses of SCCP is as lubricant or flame retardant in rubber, in the revision of tariff subheadings was verifies the import of products related as chlorinated rubber (3913.90.10.00) and the manufacturing of product related in Colombia. In 2017, 15 tons of chlorinated rubber entered to the Country. Likewise, in the same year were produced 3.254 tons of Compounds related with synthetic rubber. Assuming that the total amount of chlorinated rubber imported and produced use SCCP as lubricant or as flame retardant, the amount of SCCP used or consumed in Colombia was estimated in 0,15 tons and 32 tons, respectively.	The following substances have been identified as possible replacement for SCCPs in rubber products: Medium-Chain Chlorinated Paraffins (C14-17) (MCCPs), Long-Chain Chlorinated Paraffins (C18+) (LCCPs), Acrylic polymers, Aluminum trihydroxide, used in conjunction with antimony trioxide (ATH), Antimony trioxide (or Antimony oxide), Other Organophosphorus flame retardants (in general): a) Cresyl diphenyl phosphate (CDP), b) Tertbutylphenyl diphenyl phosphate (TBPDPP), c) Isopropylphenyl diphenyl phosphate (IPPDPP), Phosphorus based compounds (in general): a) Tricresyl phosphate (TCP), Phthalates (generally, including phthalates esters): a) Di-isononyl phthalate (DINP), b) Di-isodecyl phthalate (DIDP), c) Bis(2-ethylhexyl) phthalate (DOP aka DEHP), d) Butyl benzyl phthalate (BBP), e) Di-isoundecyl phthalate (DIUP), Zinc borate.

Pilot Project Name	Location	Baseline (current Industrial POP)	Alternative Substance ? Alternative Materials
#4 Replacing PFOS in metal plating	Bogot? Medell?n Bucaramanga	An assessment using Central Product Classification code (CPC) updated yearly by the National Administrative Department of Statistics (DANE) for ?03549012-Special liquids for chrome, nickel and electro-bright metals? during the period 2015-2017 suggests that, according to metal plating liquid production, and reported concentrations of PFOS in the report No. (UBA-FB) 002369/ENG[38][38], eight tons of PFOS may be used each year in chromium plating.	6:2 Fluorotelomer sulfonate (6:2 FTS); 3,3,4,4,5,5,6,6,7,7,8,8,8- Tridecafluorooctane-1-sulphonate potassium salt; 1,1,2,2,-tetrafluoro-2-(perfluorohexyloxy)- ethane sulfonate; 2-(6-chloro-1,1,2,2,3,3,4,4,5,5,6,6- dodecafluorohexyloxy)-1,1,2,2- tetrafluoroethane sulfonate

144. Output 2.3 *?An elimination plan for products and wastes containing Industrial POPs developed?*.

The data analysis originating from the Industrial POPs inventory (Output 2.1) will contribute to establishing a plan to ensure environmentally sound management of wastes containing industrial POPs. The activities to be carried out to achieve this output will consider the life-cycle of the product; in this regard the Industrial POPs containing waste will be treated, disposed or eliminated in an environmental sound manner. In total, this output aims to eliminate up to 2,000 tons of waste containing brominated PBDEs (approximately 50 tons of brominated POPs), 1 ton of PFOS and 10 tons of short chain chlorinated paraffins (SCCP).

145. The following incremental activities will be carried out to achieve Output 2.3:

i. Identifying worldwide best available technologies for treatment and elimination of wastes with industrial POP content.

ii. Implementing a management and treatment/disposal plan of products and wastes containing POP substances. The Plan will be developed in collaboration between MinAmbiente and key institutional stakeholders of the private sector through their corporate associations and will be the input for the NIP update.

146. Output 2.4 ?*Industrial POPs containing waste treated*?. Based on the plan designed in the previous output, field activities will be carried out to demonstrate the treatment and/or disposal of products and wastes containing industrial POPs.

147. The following incremental activities will be carried out to achieve Output 2.4:

i. Strengthening the capacity of three waste companies for sound management of of products, and wastes that contain industrial industrial POPs as SCCP, PFOS/PFOA and brominated POP.

ii. Implementing a demonstrative project for treatment of associated wastes that contain industrial POPs, which will be identified through the tailor-made inventory on industrial POPs.

iii. Eliminating waste containing brominated POP, PFOS/PFOA and SCCP in association with the above corporate associations.

Component 3: <u>Development of National Capacity to avoid the use of Industrial POPs and promote the use of alternative substances, as established by the Stockholm Convention</u>

148. The heart of this component is to strengthen the national capacity and institutional frameworks in order to make the change to an environment without industrial POPs by using alternative substances as established by the Stockholm Convention, adopted by Colombia in accordance with Law 1196 of 2008, in which market-oriented goals govern public policy, planning, and investment decisions, for both, the short and long term.

149. The Outcome of this Component is the *?National capacity developed to replace industrial POPs by using alternative substances as established by the Stockholm Convention?*.
The technical capacity of environmental, health/sanitation, trade and labour authorities needs to be built so they are able to verify, check and assess information submitted to the National Industrial Chemicals Registry. Therefore, the project will not also strengthen this Registry but also will train staff authorities at the national (MinCit, MinAmbiente, MinSalud, MinTrabajo) and at the local levels (sub-regions, large urban cities and local municipalities) which will ultimately result in better control on the trade and use of industrial chemicals and POPs nation-wide, and support the promotion of the use of substitutes/alternatives; as this Registry will also capture and generate information on alternatives to POPs substances.

150. When a producer/importer of an Industrial Chemical would like to register a substance, information prescribed by the national authority managing the Registry has to be provided such as quantity, uses, country of origin, physical, chemical, toxicological or behavioral characteristics in the environment. The producer/importer has also to indicate if the substance will be used, or has been used, as a substitute for Industrial Chemicals listed under the corresponding chemicals related convention. The producer/importer has also to indicate information sources that support the provided data, in particular the properties of the said substance.

151. Output 3.1 *?Four (4) demonstration Projects carried out to introduce four (4) substances identified as alternatives to Industrial POPs (linked to Output 2.2)?*. This output is linked to Output 2.2

in order to carry out the demonstration projects for four chemical substances that have been identified as feasible alternatives to industrial POPs, taking into account the risk of exposure by sex. The geo-referenced information and map locations for each the specific sites are shown in Annex 3.

152. The following incremental activities will be carried out to achieve Output 3.1:

i. Carrying out the evaluation of four alternative substances, priority from demonstrative projects *(linked to Output 2.2*) for the replacement of industrial POP in the manufacturing of products, considering the risk of exposure by sex, as previously indicated in Table 6.

ii. Determining environmental and health risks associated with the use of alternatives substances in local conditions and establishing a management risk program for each substance in the applications defined for substitution.

iii. Establishing Best Environmental Practices (BEP) and Best Available Technologies (BAT) for the use of alternatives substances to industrial POP in priority sectors.

iv. Implementing a capacity building program -during the lifetime of the FSP- for 50 professional public officers (MinAmbiente, MinSalud, MinCit and MinTrabajo) in the use of the international risk assessment protocols that are deemed to fit best the circumstances of Colombia, evaluating the life-cycle of the new alternative substances through risk management. This activity will also include the training of 200 professionals from private industries on how to introduce alternatives and support transition to eliminate industrial POPs. Of these professionals and workers, at least 50% will be women fully engaged in the use of alternative substances to Industrial POPs, in accordance with the Action Plan for Gender Equality (Annex 11). Of greater importance is to incorporate treatment methods in this training against climate change impacts that may increase the remobilization and bioavailability of POPs.

153. Output 3.2 *?Industrial Chemicals Registry established (covering import, trade, production and use of substitutes for industrial POPs)?*.
The information submitted to the Registry has to be validated by the national environmental and health authorities, MinAmbiente and MinSalud, respectively, who must verify the sources of information and the quality thereof, define whether the information presented is acceptable or if it is necessary for the registrant presenting the chemical data to make changes. Furthermore, the environmental and health authorities must notify to the respective control authority when substances require a follow-up or a restriction on their uses emerges; due to their quantity, health risks, environmental or physical hazards, or because they are prohibited.

154. The following incremental activities will be carried out to achieve Output 3.2:

i. Implementing and strengthening of the Industrial Chemicals Registry stablished by the GoC covering import, trade, production and use of Industrial Chemicals, including alternatives substances to industrial POPs.

ii. Providing technical assistance for the Chemical Substances Register to the companies that substitute industrial POPs.

iii. Developing and validating -with the importers, producers and traders- a ?Manual for the Management of the Platform of the Registry?.

iv. Developing a training program for technical personnel of MinAmbiente, MinSalud and MinCit who will be socializing and managing the registry on a day-to-day basis to verify, check and assess information submitted to the Registry, as well as to build capacity in the competent national authorities responsible for the Inspection, Surveillance, and Control within the framework of the comprehensive management of POPs used for industrial purposes.

155. Output 3.3 *?Capacity for GHS implementation built and GHS implementation completed for four potential alternatives to industrial POPs (linked to Output 2.2 and 3.2)?*.
Through Executive Decree 1496 (August 6th, 2018), Colombia adopted the Globally Harmonized System of Classification and Labeling of Chemical Products (GHS). As a follow up, MinAmbiente published five documents on this topic[39]:

? ?*Analysis of the situation and gaps in the Globally Harmonized System of Classification and Labeling of Chemical Products (GHS) in Colombia*?

? ?*National strategy for the implementation of the Globally Harmonized System of Classification and Labeling of Chemical Products (GHS) in Colombia (2016 ? 2020)*?

? ?*Hazards classification guide based on the criteria of the Globally Harmonized System of Classification and Labeling of Chemical Products (GHS)*?

? ?*Hazards communication guide based on the criteria of the Globally Harmonized System of Classification and Labeling of Chemical Products (GHS)*?

? ?*Intelligibility Test of the Globally Harmonized System of Classification and Labeling of Chemical Products (GHS)*?

156. Only with synergies between government policy makers, private sector players and Civil Society Organizations (CSOs), the GHS can be enforced and put into practice to advance the commitments of Colombia with regards to the Stockholm Convention. In this respect, the following incremental activities will be carried out to achieve Output 3.3:

i. Providing technical assistance for implementation of Globally Harmonized System (GHS) for four (4) chemical substances that have being identified as feasible alternatives to industrial POPS.

ii. Strengthening the capacity building program of at least 250 professionals from the public (at least 50), private (at least 200) sectors and 750 industrial workers and on how to implement the GHS for alternatives substances to industrial POPs, lined up with Activities 3.2.iii and 3.3.i.

157. Output 3.4 *?Pollutant Release and Transfer Register (PRTR) established?*.
In line with Colombia?s Policy on the Risk Management of Chemical Substances, which aims to meet international commitments and guidelines related to chemical substances, MinAmbiente is also setting up a *?Pollutant Release and Transfer Register ?PRTR-?*. Currently, this Ministry is developing the PRTR?s Information and Technology (IT) platform and is establishing the list of substances to be included in the PRTR in coordination with MinSalud, the Colombian Agricultural Institute (ICA) and the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM); the later will be the public entity in charge of managing the IT platform and issuing the required reporting.

158. The following incremental activity will be carried out to achieve Output 3.4:

i. Providing technical assistance for the Pollutant Release and Transfer Register ?PRTR- in order to consolidate and include alternative substances in this register. Currently the PRTR is being developed by MinAmbiente in partnership with other entities and it is under the institutional management of IDEAM.

159. Output 3.5 *?Standard / guidelines developed on POPs limits in wastes and the sound storage, collection and final disposal of POPs containing wastes?*.
The Stockholm and Basel Conventions indicate that in order to establish a comprehensive regulatory framework to environmentally sound management of POP wastes, regulatory measures to support the irreversible elimination of POPs need to be adopted, in tune with innovative legislation that should

define hazardous wastes. Wastes with a POP content above a specified ?*low-POP content*? should be safely disposed of. Legislation should define environmentally sound management (ESM) and require adherence to the ESM principles, ensuring that Colombia has provisions for ESM of POP wastes, including their environmentally sound disposal. These provisions need to meet the requirements of both Conventions.

160. The following incremental activities will be carried out to achieve Output 3.5:

i. Establishing protocols and guidelines that define ?*low-POP content*? of PFOS/PFOA, SCCP and brominated POPs in waste based on international information available and providing guidance ?through MinAmbiente- for storage, collection and final disposal of POPs containing wastes, taking into account the risk of exposure by sex.

Component 4: <u>Raising awareness, ensuring project monitoring and evaluation and collecting and disseminating project results and experiences on best practices for the LCM of Industrial Chemicals and POPs</u>

161. It is important to note that awareness will be created on the impact of PFOS, PBDE and Chlorinated Paraffins through the Industrial POPs monitoring programme. While the Industrial POPs inventory will create awareness on the current use and application of POPs in various sectors (industry, aviation, construction, waste management, among else) and their potential negative impacts, both health and environmental. The assessment will support the selection of Stockholm Convention recommended feasible alternatives to Industrial POPs and will also create awareness among producers/manufacturers on potential POPs alternatives.

162. The Outcome 4.1 of this Component is *?Awareness of project stakeholders raised on the management of Industrial (POPs) Chemicals, related wastes and safer alternatives?*.

It includes the design of an awareness raising campaign and information strategy and a programmatic monitoring of FSP global indicators (specifically, GEF Core Indicators 9 and 11), together with a review of on-going, activities to ensure successful project implementation in accordance with UNDP and GEF procedures. Awareness raising and gender sensitive training materials will be developed and made widely available.

163. Output 4.1.1 ?*Awareness raised of 7,000 people (3,640 female and 3,360 male) on the sound management of Industrial (POPs) chemicals and related wastes through tailored training and awareness raising activities?*.

Directly, this FSP will support the awareness raising on risks associated with the use of industrial POPs in manufacturing process and the use of products and goods contaning industrial POPs that takes gender considerations/needs into account. Furthermore, the project will also aim to awareness-raising on storage, treatment and elimination of industrial POPs.

164. Furthermore, awareness will be raised with the environmental authorities ?both, at the national and local levels- on the sound management of PCBs which will help them in strengthening the monitoring and control programme together with the launch of a training programme on labelling, sampling and disposal for the staff of maintenance and service companies, both actions will create additional consciousness on the importance of safe and proper PCB management located in in the rural areas where such awareness currently lacks.

165. This FSP will also create awareness among staff of environmental (MinAmbiente), health/sanitation (MinSalud) and trade authorities (MinCit), on the management of the Industrial Chemicals registry, trade, use and control of industrial chemicals.

166. The following incremental activities will be carried out to achieve Output 4.1.1, in accordance with a Gender Action Plan (Annex 11 -Gender Analysis and Action Plan-) and awareness raising activities (detailed in Annex 9 -Stakeholder Engagement Plan-) to raise the awareness of 7,000 people, of which 3,640 participants are female and 3,360 are male:

i. Developing a comprehensive communication strategy for all project stages in order to awareness stakeholders, project beneficiaries and general public about project activities and expected outcomes.

ii. Designing and implementing an awareness-raising of 6,000 PCB equipment owners on the need to identify and label these equipment and the availability of support that will be provided to individual owners and the ?*terceros*? by the project, as well as by the power industry to test, label and dispose of these units in an environmentally sound manner.

iii. Raising awareness among power utility companies on the sound management of PCB containing equipment in their control in line with the guidelines established by MinAmbiente, to encourage the management and disposal of remaining PCB containing equipment.

iv. Raising awareness among approximately 50 environmental authority professionals, 200 industrial sector professionals and 750 workers of the private-sector stakeholders involved in the project activities, highlighting on the importance of risk evaluations and GHS implementation and their benefits.

v. Establishing and implementing a strategy on gender perspective that includes a Gender Action Plan on Industrial POPs by engaging key institutional stakeholders of the private sector:

a. Conduct specific surveys for gender analysis to identify the different roles and tasks that men and women perform on Industrial POPs for the most significant open applications in aeronautical, hydrocarbons, plastic, rubber and metal working sectors, in order to structure an Action Plan, to be carried out during the first year of project implementation.

b. Design and implementation of data collection instrument to be used during the site visits.

c. Establish standards and guidelines for safety management of alternative substances to industrial POP and storage, treatment and disposal of wastes containing POP.

167. The second Outcome of this Component (4.2) is ?*Project results sustained and replicated*?. Information outreach for the citizens, as main beneficiaries of the project, is critical to sustain the project?s interventions over time. Cost-efficient innovations will be documented and accessible to the public on a timely and regular basis, as this FSP develops.

168. Output 4.2.1 ?*Results, lessons-learned and best practices captured in knowledge products and disseminated at national, regional and global level to support replication?*.

Considering the project will support many ?firsts? in Colombia, most directly related to the Latin American and the Caribbean region but also affecting other signatories of the Stockholm and Basel Conventions in terms of identifying and introducing alternatives to Industrial POPs in many sectors; this FSP aims to collect lessons-learned, gender-related challenges, best practices, the prevention of cross-contamination at facilities that perform equipment maintenance and repair activities using dielectric oil. It will also gather project experiences and capture them in easy ways to update, share and understandable communication materials to ensure that outreach of project?s outputs and outcomes are made fully available for further replication.

169. The following incremental activities will be carried out to achieve Output 4.2.1:

i. Gathering the main findings, all lessons-learned, best practices and project experiences and capturing them in user-friendly ways to update, share and disseminate communication materials through mass media and other means of communication, both in printing and online forms, integrating the corresponding gender-related challenges.

ii. Carrying out technical workshop to disseminate the main findings of project with policy makers, Industrial POPs importers, traders, end-users and the academia.

iii. Organizing, once a year a national seminar to present the FSP results, to which national and international experts will be invited to speak on topics of interest to the project and to the participating FSP stakeholders.

170. Output 4.2.2 ?*M&E and adaptive management applied in response to needs and Mid-Term Evaluation findings?*.
As is standard practice for every UNDP project, continuous monitoring of FSP results and achievements will be ensured, while the application of adaptive management of the project after conclusion of the Mid-Term Review (MTR) will be warranted. The Project Management Unit (see Section VII below on Governance and Management arrangements for detailed information) will design the project?s M&E system and will be responsible for implementing the project?s M&E plan, including the project?s inception workshop and annual planning workshops.

171. The following incremental activities will be carried out to achieve Output 4.2.2:

i. Carrying out the Project's Inception Workshop.

ii. Following up to the monitoring indicators. This monitoring will include the Project Results Framework with outcome indicators, GEF Core Indicators, baseline and annual target indicators.

iii. Carrying out the monitoring of the Project Risk Matrix, SESP, the Gender Analysis and Action Plan, and the Stakeholder Engagement Plan.

iv. Organizing and developing the Project Steering Meetings.

v. Carrying out annual external financial audits.

vi. Carrying out the ?Mid-term Review? (MTR).

The MTR will be carried out after the second submission of the Project Implementation Report (PIR); it will assess the progress of each project activity and attainment of the project?s indicators presented in the Project Results Framework (Section V) and Multiyear Work Plan (Annex 4). This review will also assess one (1) Gender Assessment of project impact completed as part of MTR and the disbursement of financial resources and co-financing provided by project partners, and it will monitor and assess administrative aspects for the execution of the project. The MTR will also inform the adaptive management of the project and improve its implementation for the remainder of the project?s duration.

vii. Carrying out the Terminal Evaluation (TE).

The TE aims to evaluate whether all planned project activities have been developed, resources granted by the GEF have been disbursed and spent in line with GEF and UNDP policies and rules, and in accordance with the activities as set-out in this Project Document. The Terminal Evaluation will also extract and identify lessons-learned, how to disseminate them most efficiently and make recommendations to ensure that project results become sustainable.

4) Alignment with GEF focal area and/or Impact Program strategies;

172. The proposed project is fully aligned with the GEF-7 Programming Directions of April, 2018 within its *Chemicals and Waste* Focal Area Strategy, aiming at eliminating / restricting / controlling emissions of the chemicals listed in annexes A, B and C of the Stockholm Convention as well as supporting the objectives of the *?Strategic Approach to International Chemicals Management?* (including building capacity for management and disposal of e-waste and eliminating chemicals of global concern from the supply chain of commercial and domestic products).

5) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing;

173. As follows, these the expected contributions from the baseline, the GEFTF and co-financing.

Component 1: PCB Management and Elimination in Priority Sectors

5.1 Contributions from the baseline: In this regard, these are the following actions:

i. Colombia signed the Stockholm Convention on Persistent Organic Pollutants in May 2001, which was later ratified by Law 1196 in 2008. Since the Convention was signed, the country has conducted various activities aimed at improving the management and elimination of PCBs.

ii. Since 1998, 2,722 tons of electrical equipment and waste containing PCBs have been eliminated. Additionally, the country has put in place one PCB washing facility, two sodium declorination facilities and one (1) facility that uses supercritical fluid technology to eliminate equipment and waste containing PCBs. These facilities have been established with funds provided by

the Global Environmental Facility (GEF) as well as significant investments from national companies. In addition the country has at its disposal 17 laboratories that are accredited (ISO standard 17025) for the analysis of PCB in dielectric oils.

iii. Colombia has established a PCB inventory which requires that each piece of equipment (in service or out of use) either owned by utility companies or individuals, should have an ID number and must have a label. Procedures and capacity for the identification and labelling are in place and fully certified. It is estimated that the current electricity network contains 450,000 pieces of equipment (transformers and capacitors), of which 160,000 have been marked and have been tested for PCB content through gas chromatography.

iv. The cost of dielectric oil testing and classification activities for each piece of equipment (transformers and capacitors) is around USD $150. To date, this cost has been assumed by the utility companies. In terms of PCB elimination, the market value for treatment at national level is USD $1,500 per ton of waste, which is lower than the cost of exporting this waste to another country.

In synthesis, the proposed PCB related project interventions will build on the national capacity already in place, which includes capacity for labelling, classification and PCB analysis, as well as treatment/disposal plants.

5.2 Contributions from GEFTF: Funding from the GEFTF will be allocated to:

i. Support the capacity building of regional environmental authorities through the establishment of a training programme that will provide environmental authorities with the tools to identify PCB owners and help environmental authorities establish a monitoring and control programme (Output 1.1).

ii. Support the establishment of a training programme on labelling, sampling and disposal for the staff of maintenance and service companies, located in regions where PCB owners and maintenance companies lack the training to undertake such procedures properly and safely (Output 1.1).

iii. Support the elimination and disposal of 200 tons of equipment and waste contaminated with PCBs owned by financial retrained individuals (Output 1.2).

iv. Support capacity building of electrical power companies on PCB management through training (Output 1.2).

v. Assess potential, viable and cost-effective technologies that can extract PCBs from porous materials and establish and operationalize the most suitable BAT technology at national level (Output 1.3).

vi. Conduct a study to identify which POPs are used in which type of open applications, assess their concentrations as well as their exposure levels, and ultimately prepare an elimination plan (Output 1.4).

5.3 Contributions from co-financing: The cofinancing of this FSP includes:

i. In partnership with the power utility companies, the project will establish a support programme for individual financially retrained PCB owners, which will provide technical and financial support to substitute and eliminate 200 tons of PCB-containing equipment. Co-financing provided by the Colombian electrical power companies will cover costs related to the identification, classification, testing and labelling of electrical equipment owned by individuals who purchase their electricity from these companies (co-financing to Output 1.1).

ii. Furthermore, the electrical power companies are expected to apply their own financial resources to identify, replace/phase-out and eliminate/dispose of 1,300 tons of equipment and waste contaminated with PCBs owned by them (providing co-financing to Output 1.2).

Component 2: Identification of feasible alternatives to Industrial POPs and improved management of wastes containing such POPs

5.4 Contributions from the baseline: In this regard, these are the following actions:

i. Colombia is already developing its capacity for the environmentally sound management of brominated flame retardants included in Annex A of the Stockholm Convention, with a particular focus on PBDE, PBB and HBCD. Specifically, the presence and content of Industrial POPs in plastic computers parts, end-of-life vehicles and polyurethane foam from end-of-life refrigerators is being analyzed contracting a laboratory from abroad to conduct the tests. However, Colombia only has waste incineration facilities, and thus currently does not have the capacity to destroy brominated flame-retardant plastics.

ii. In 2013, Colombia issued Law 1672 ?through which the guidelines for the adoption of a comprehensive public policy on the management of waste electrical and electronic equipment (WEEE) and other provisions are dictated?. Furthermore, the country published the National Policy on the Comprehensive Management of Waste Electrical and Electronic Equipment in 2017, and Decree 284 in 2018 that establishes guidelines for the Comprehensive Management of Waste Electrical and Electronic Equipment (WEEE). These regulations have led to the identification of a higher quantity of WEEE that may contain plastics with brominated flame retardants than initially anticipated. Such equipment should be properly identified, separated, managed and disposal.

iii. In 2016, Colombia looked into the possibility of undertaking an Initial PFOS inventory (level 1) but it was not possible to come up with a preliminary list of suppliers, consumers, exporters and importers of products containing PFOS and related chemicals, since the tariff headings were not sufficiently disaggregated. In 2017 Colombia therefore introduced the following tariff heading: 2904.31.00.00 "*Sulphonated, nitrated or nitrosated derivative organic chemical products of hydrocarbons, including halogenates, perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride, perfluorooctane sulfonic acid?* and 2904.99.00.00, "*Other sulphonated, nitrated or nitrosated derivatives of hydrocarbons, including halogenates*".

5.5 Contributions from GEFTF:

Contributions from the baseline and co-financing provide the regulatory and policy framework for the elimination and improved management of products and wastes containing Industrial POPs, and ensure the long-term financial sustainability of the improved management of Industrial POPs containing products through partnerships with the private sector. However in order for Industrial POPs to be phased-out, GEFTF support is critical to support capacity building to:

i. Conduct in-depth inventories for Industrial POPs (Output 2.1).

ii. The identification of feasible alternatives to Industrial POPs (Output 2.2).

iii. An elimination plan for products and wastes containing Industrial POPs (Output 2.3).

iv. Demonstrating potential treatment options for wastes containing Industrial POPs (Output 2.4).

5.6 Contributions from co-financing: The cofinancing of this FSP includes:

i. To further support the sound management of materials and wastes containing Industrial POPs, the Government is developing a circular economy strategy. One of its strategic objectives is the re-use of materials (such as WEEE plastics) into the productive cycles. In line with Colombian regulations, companies that trade in, distribute and/or manufacture electrical and electronic equipment, must establish collection and disposal programmes for generated waste (e-waste). In support of Output 2.4, these companies will finance the treatment of 2,000 tons of wastes containing Industrial POPs, which will be considered co-financing to the project.

ii. Airports will make the necessary investments to replace PFOS containing foams with suitable alternatives, while the chemical industry will make necessary investments at its facilities in order to be able to replace Industrial POPs with feasible alternatives.

iii. In addition, the Government of Colombia is receiving support from EMPA (Swiss Federal Laboratories for Materials, Science and Technology) through its Sustainable Recycling Industries (SRI) programme. The objective of the SRI programme is to engage and work with small- and medium sized enterprises from developing countries and countries with economies in transition in terms of the global recycling of secondary resources. The SRI programme has worked with the MinAmbiente on developing the legal and regulatory framework pertaining to WEEE, as well as the development of policies regarding WEEE management to allow for the elimination of brominated flame-retardant plastics.

iv. Furthermore the SRI programme is supporting the creation of projects that will support the collection, separation and differentiated handling of brominated flame-retardant POPs in partnership with various stakeholders who are implementing mandatory WEEE recollection programmes. Funding for these recollection programmes is co-financed by the manufacturers and importers of products that contain toxic substances and which fall under the Colombian EPR law.

Component 3: Development of National Capacity to avoid the use of Industrial POPs by using alternative substances, as established by the Stockholm Convention.

5.7 Contributions from the baseline: In this regard, these are the following actions:

i. Given the shortfalls in the control of the import, commercialization, production and use of chemical substances in Colombia?s industry, especially the lack of information about amounts used, applications, population exposure and the impact on the environment, the Government, through MinAmbiente, elaborated a regulation on the comprehensive management of industrial use chemical substances and other provisions. This regulation has been reviewed by the World Trade Organization (WTO) in 2018 and is under consideration for issuance. The regulation establishes that, as of its publication date, a group of chemical substances used by industry or a group of chemicals used to manufacture certain products, requires evaluations and programs to reduce and manage environmental risks. Furthermore, the regulation stipulates the establishment of an import, commercialization and use registry for certain chemical substances used in industrial processes.

ii. Furthermore, through Decree 1496 (August 6th, 2018), Colombia adopted the Globally Harmonized System of Classification and Labeling of Chemical Products (GHS). In addition, MinAmbiente published five (5) strategy, guidance and analysis documents on the topic.

5.8 Contributions from GEFTF: Funding from the GEFTF will be allocated to:

i. GEFTF resources will be applied to support the design and set-up of the Industrial Chemicals Registry, while the implementation and management of the Registry will be assumed by the Government of Colombia (and is considered co-financing). GEFTF resources will also be used to develop a manual for the management of the registry and train government personnel who will be populating and managing the Registry on a day-to-day basis. Particular focus will be placed on the registration of substances that may be suitable alternatives to Industrial POPs. The capacity of

environmental, health/sanitation and trade authorities will need to be built for them to be able to verify, check and assess information submitted to the Industrial Chemicals Registry. Therefore, GEF TF resources will also be used to train staff, which will ultimately result in better control on the trade and use of industrial chemicals and POPs at national level and support the promotion of the use of substitutes/alternatives to industrial POPs (Output 3.1).

ii. GEFTF resources will be applied to carry out four demonstration projects for four chemical substances that have been identified as feasible alternatives to industrial POPs, and in the process 50 environmental authority professionals and 200 industrial sector professionals will be trained on how to introduce alternatives to industrial POPs. As such national capacity on how to conduct identify alternatives will be built, which without GEF support is unlikely to take place (Output 3.2).

iii. Building on the GHS system the government of Colombia has already put in place, GEFTF funding will be applied to support the GHS implementation for four selected Industrial POPs alternatives and train (in coordination with Output 3.2) 50 environmental authority professionals and 200 industrial sector professionals on GHS implementation (with an emphasis on alternatives to industrial POPs) (Output 3.3).

iv. As the PRTR will be set up and managed on a day-to-day level by the Government, GEF TF resources will mostly be allocated to ensure the inclusion of POPs into the PRTR (Output 3.4).

v. GEFTF funding will be applied to develop regulations/standards on Industrial POPs limits (Output 3.5).

5.9 Contributions from co-financing: The cofinancing of this FSP includes:

i. In line with Colombia?s Policy on the Risk Management of Chemical Substances, which aims to meet international commitments and guidelines related to chemical substances, MinAmbiente is setting up a Pollutant Release and Transfer Register (PRTR).

ii. In addition, this Ministry is developing the PRTR?s IT platform and is establishing the list of substances to be included in the PRTR in coordination with the Ministry of Health and Social Protection, the Colombian Agricultural Institute and the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM) which will manage and operate the IT platform and issue required reporting.

6) Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF);

174. The following Global Environmental Benefits (GEB) of the project at the CEO Endorsement stage are the same as presented at the PIF stage, i.e.:

- ? 1,500 tons of PCB contaminated wastes
- ? 1,000 kg of PFOS
- ? 2,000 tons of waste containing Brominated POPs (700 kg Brominated POPs)
- ? 10 tons of Short-Chain Chlorinated Paraffins (SCCPs)

175. The methodology to be used to monitor the Global Environmental Benefits of this project related to the 1,500 tons of PCB contaminated wastes will be implemented as follows. Under Component 1 it is estimated that the corresponding amount of oil to be treated will be 480 tons. The Stockholm Convention establishes that equipment and oil with levels of contamination above 50 ppm must be taken out of use and disposed of, and this FSP aims at exactly that. For this substance, the information reported by the power utility companies and owners of equipment contaminated with PCBs (?*the terceros*?), will be collected and processed through the Information and Technology (IT) platform available in Colombia to annually feed the National PCB Inventory managed by the IDEAM. This platform has verification processes by local environmental authorities and IDEAM and allows the monitoring of progress regarding PCBs disposal goals.

176. On the other hand, for the other three kind of Industrial POPs under the scope of this FSP, an easy-to-fill tool will be developed for those companies that participate in the demonstration projects, thanks to the technical support provided by the project staff, which will allow calculating the amounts of substituted POPs either in substances for their chemical formulations or associated to some products that contain this kind of POPs.

177. These two mechanisms will allow having measurements that demonstrate GEBs due to avoided releases of POPs to the environment.

7) Innovativeness, sustainability and potential for scaling up. ?

178. For the global environment, the strategy of this FSP for greater results is intended to seize opportunities for higher impact through three manners:

i. Innovation: The proposed project is quite innovative ?as compared to other POPs, chemicals and waste management related projects- not only at national level in Colombia but also to other developing country Parties and Parties with economies in transition. Many of the proposed project interventions have not yet been embarked on in GEF recipient countries.

ii. Sustainability: through integration, this project will harness synergies across the public sector and the private sector by creating a more sustainable policy environment in order to enhanced efforts to mobilize investments to environmentally sound management of industrial POPs, within the framework of national and international guidelines on chemical substances and hazardous waste management, in order to sustain the change over time without GEF grant financing once this project is completed.

iii. Scale up: this innovative approach will also reflect the fact that this FSP will generate significant lessons and best practices that can be amplified in the whole Latin American and the Caribbean region, in a way to increase the potential to deliver significant global and local environmental benefits (elimination of persistent chemical substances and hazardous waste).

Innovativeness

179. Under Component 1 with respect to PCB management, the innovative project aspects are related to the fact that the project is based on the assumption that most of the necessary capacity, financial, analytical, management and treatment/disposal structures are in place to eliminate all PCBs from the power utility companies before the 2028 deadline and that additional support is predominantly required for individual/private PCB holders that do not have the technical or financial capacity to test, label and replace PCB containing equipment, i.e.: the ?*terceros*?. Colombia might be one of the first countries where a GEF supported project focus is redirected from the utility companies ? as systems put in place with GEF grant funds and national government support- are thought to be sufficiently robust to individual holders to ensure that also the ?high hanging fruits? in terms of PCB phase-out are being addressed.

180. Another innovative aspect under Component 1 is that the project, in partnership and synergy with the power utility companies, will put in place a programme that will provide financial and technical support to financially deprived individual equipment holders (the *terceros*), to enable and allow them to dispose of PCB contaminated equipment in an environmentally sound manner. Even though this electrical equipment is not the responsibility of the power utility companies, the fact that they technically and logistically support its elimination is deemed very innovative, at least in the Latin American region.

181. An additional innovative aspect of this Component 1 is the launch of the BAT to extract PCBs from porous materials/waste which would ensure that this country disposes of the full disposal/treatment cycle for most of types of PCB wastes.

182. On the other hand, another of the innovative aspects of component 1 is related to a first exploratory study of open PCB applications in the region, taking into account that few countries have performed them so far, especially in Latin America.

183. For Component 2, the innovative aspects lie in the fact that Colombia as part of the proposed project, might be one of the first countries to use an Industrial POPs inventory to support the identification of feasible alternatives to Industrial POPs that are currently being used/consumed in the country (PBDE, HBCD, PFOS, Chlorinated Paraffins and Chlorinated Naphthalene), following a cost-benefit analysis based on the selection criteria of the Stockholm Convention, recommended feasible alternatives and technological requirements that should be put in place.

184. Another innovative aspect of the project under Component 2 will be the *first-of-a-kind* elimination plan for the management and treatment/disposal of products and wastes containing substances of Industrial POPs which will be followed by very innovative pilot projects to demonstrate the management, treatment and/or disposal of products and wastes containing industrial POPs.

185. Under Component 3, the innovation related resides predominantly in the aspect that with this FSP?s support, Colombia would be able build the necessary capacity to launch ?for the first time- an Industrial Chemicals Registry for Industrial POPs. This would allow Colombia to better monitor and manage the import, trade, production and use of chemical substances for its industry and it would greatly help in the introduction of alternatives, in particular alternatives to Industrial POPs. These actions, to be carry out at national level, will be accompanied by very innovative aspects in terms of capacity building and by the implementation demonstration projects for four alternatives to Industrial POPs, allowing in turn to integrate three GoC initiatives to these demonstration projects, such as the Registry of chemical substances, the PRTR and the GHS implementation.

Sustainability

186. The project has been designed to create an enabling framework for strengthening the national capacity in Colombia to manage industrial POPs within the framework of national and international guidelines on chemical substances and hazardous waste management. This is planned through enhanced inter-institutional coordination, based on sectorial planning and defining short, medium and long-term goals, in accordance with Colombia?s National Implementation Plan (NIP) and in particular its National Action Plan for Industrial POPs, thus ensuring sustainability.

187. In this sense, the sustainability of interventions proposed as part of Component 1 lie in the fact that after this project has been fully implemented, Colombia has implemented the full disposal/treatment cycle for PCB waste and the human resource capacity to meet the 2025 deadline, making an effort to ensure that all PCB waste can be treated at national level and in a more cost-effective way than exporting to other parties such waste. The establishment of the support programme for individual PCB holder who are financially restrained (the *terceros*), will ensure that remaining PCB containing equipment can be disposed of in an environmentally sound manner and that financial, technical and logistic resources required will be provided by power utility companies, who in addition will also provide the resources for the elimination and disposal of their own PCB containing equipment and wastes.

188. For Component 2, this FSP has considered the fact that alternatives to Industrial POPs will be identified and introduced, guaranteeing the sustainability of the project which aims to phase out the use of these substances and replace them with feasible, safe and cost-effective alternatives. Furthermore, by national regulations, companies that trade in, distribute and/or manufacture electrical and electronic equipment, must establish collection and disposal programmes for generated waste (e-waste). As co-

financing to the project, these companies will finance the treatment of 2,000 tons of waste containing brominated POPs and 10 tons of waste containing SCCP in the rubber and plastic sector. In accordance with these actions, the project will built the necessary incremental capacity for the treatment of such waste, and after the project comes to an end, these companies will continue to finance treatment in a sustainable way, as stipulated by the environmental regulation, ensuring sustainability.

189. Under Component 3, this FSP will build national capacity to: i) undertake cost-effective, commercially-driven demonstration projects for Industrial POPs alternatives, ii) ensuring GHS implementation of alternatives, and iii) adding Industrial POPs and their alternatives to the PRTR system, in a sustainable manner, because operating costs related to day-to-day management of these systems will be assumed by the national government after the FSP?s completion.

190. In short, the sustainability after completion of this FSP depends on three main effects aligned with the Development Challenge:

i. Improve the institutional and regulatory frameworks. This is in tune with its commitments under the Stockholm and Basel Conventions and in accordance with Colombia?s National Implementation Plan (NIP), in particular its National Action Plan for Industrial POPs,

ii. increase the flow of private investment capital to launch alternatives to Industrial POPs to sustain the change over time once this FSP is completed, and

iii. build up the national capacity to sustain an alternative, private sector-driven markets in the chemical industry for full compliance of the existing environmental regulations for the use of Industrial POPs.

Potential for scaling up

191. For Component 1, extending the financial FSP?s support from 6,000 individual holders (which represents 200 tons of suspected PCB contaminated equipment) to the remaining 52,000 holders (about 1,800 tons of potentially contaminated equipment) is where the potential for scaling up lies at the national level. While the capacity for PCB management and disposal built by the proposed project and past GEF supported interventions (full disposal/treatment cycle plus capacity building and a strong regulatory framework) will allow Colombia to scale up PCB disposal from 1,300 tons as envisaged by the proposed project to the disposal of the remaining PCB amounts in the country (about 2,000 tons) which will be financed -as stipulated by law- by the power utility companies.

192. Under Component 2, the activities proposed for the identification of Industrial POPs alternatives will build the necessary capacity through the demonstration projects for Colombia to scale-up such efforts to replace additional POPs or other chemical substances of concern, while the demonstration of the management, treatment and/or disposal of products and wastes containing industrial POPs, can be scaled-up significantly in order to put in place sustainable systems to dispose of and treat Industrial POPs containing waste of which the generation cannot be avoided.

193. In terms of scaling up ? all capacity built as part of project Component 3, in particular related to building national capacity for managing the Industrial Chemicals Registry, undertaking analysis for alternatives to Industrial POPs, ensuring GHS implementation, and adding substances to the PRTR, has tremendous opportunity for scaling-up to any chemical industrial sector, in particular those of concern that might be added to the Stockholm Convention in the future.

-

[1] MinAmbiente. *?Plan Nacional de Implementaci?n del Convenio de Estocolmo sobre Contami?nantes Org?nicos Persistentes (NIP)?*, 2017.

[2] ?*Perfil nacional de sustancias qu?micas en Colombia. Vol. II: Actualizaci?n de los cap?tulos 2 y 3, con ?nfasis en sustancias de uso industrial?. Su?rez Medina, Oscar Javier. Narv?ez Rinc?n, Paulo Cesar. Bogot?. D.C.; Colombia. Ministerio de Ambiente y Desarrollo Sostenible, 2017*.

[3] PyME Survey: *Asociaci?n Nacional de Instituciones Financieras* ? ANIF-, *Banco Interamericano de Desarrollo* ? BID-, *Banco de la Rep?blica* and *Bancoldex*, page 5, en: http://anif.co/sites/default/files/encuestas_pyme/2017/07/gep_nacional_ii-2016.pdf

[4] Wagner, K. Watson, A., Weber, R. *?Management of PCBs from Open and Closed Applications ? Case Study?*, Switzerland, 07/2014.

[5] National Administrative Department of Statistics ? DANE (2019). Departmental Accounts Gross Domestic Product by department 2018 preliminary.

[6] These substances refer, in general, to all chemical products in the categories of pure substances, dilute solutions and mixtures that meet the characteristics of POPs.

[7] The term ?*local*? under this FSP is referred to the different geographical arrangements that exists in the institutional governance of Colombia, including autonomous sub-regions, large urban cities and local municipalities. -

[8] National Council of Economic and Social Policy (CONPES), Document N? 3868 of 2016.

[9] According to the preliminary statistics reported by 891 companies and individual owners to the IDEAM for the year 2018. IDEAM will publish revised statistics for 2018 during first semester of 2020.

[10] MinAmbiente estimates that the current electricity network contains near to 500,000 pieces of equipment (transformers and capacitors), of which 221,000 have been marked and have been tested for PCB content through gas chromatography.

[11] Corresponding to 1,100 metric tons of equipment tested and 3,200 tons expected of equipment pending for testing its PCB content.

[12] From the equipment reported as marked in the national inventory of PCBs, it was calculated that on average the weight of liquid of each equipment ranges between 24% and 25% with respect to the total weight of the equipment.

[13] Assuming 2% of equipment that could be contaminated and an average weight of 560 kg per unit, according to the statistics available so far in the country reported by IDEAM.

[14] According to the list of laboratories accredited by IDEAM until September 2019.

[15] Including 1,000 metric tons eliminated before the UNDP/GEF PCB Project (COL/84851-71268) implementation.

[16] Estimated costs based on the available values of the PCBs project developed between 2013 and 2018. Based on an exchange rate from 3,100 to 3,400 COP/USD.

[17] For this document, the expression *?Terceros?* refers to the owners not belonging to the electricity sector, and include small holders like individual owners and public organizations.

[18] UNEP (2019). *?Consolidated Guidance on PCB in Open Applications?*. Secretariat of the Basel, Rotterdam and Stockholm Conventions, United Nations Environment Programme, Geneva.

[19] Detailed reference of these documents can be found at: http://www.minambiente.gov.co/index.php/asuntos-ambientales-sectorial-y-urbana/sustancias-quimicas-y-residuos-peligrosos#informaci%c3%b3n-de-inter%c3%a9s

[20] Considering SCCP content (mg/kg) reported in UNEP (2019). Detailed guidance on preparing inventories of short-chain chlorinated paraffins (SCCPs). (Draft of 2019). Secretariat of the Basel, Rotterdam and Stockholm Conventions, United Nations Environment Programme, Geneva and use of CPs containing 1% of SCCPs.

[21] Considering SCCP content (mg/kg) reported in UNEP (2019). Detailed guidance on preparing inventories of short-chain chlorinated paraffins (SCCPs). (Draft of 2019). Secretariat of the Basel, Rotterdam and Stockholm Conventions, United Nations Environment Programme, Geneva.

[22] Australia, Brazil, China, France, India, Italy, Japan, Russia, Spain, Slovakia, South Africa, UK. According with Table 2-2 Detailed guidance on preparing inventories of short-chain chlorinated paraffins (SCCPs). (Draft of 2019). Secretariat of the Basel, Rotterdam and Stockholm Conventions, United Nations Environment Programme, Geneva.

[23] Gl?ge, J., Wang, Z., Bogdal, C., Scheringer, M., Hungerb?hler, K., 2016. Global production, use, and emission volumes of short-chain chlorinated paraffins ? A minimum scenario Science of The Total Environment Volume 573, 15 December 2016, Pages 1132-1146.

[24] According to UNEP/POPS/COP.8/INF/19 Draft guidance on preparing inventories of Polychlorinated Naphtalenes (PCNs). March 2017.

[25] Draft document of the Stockholm Convention, UNIDO, UNITAR, UNEP, 2014.

[26] Draft document of the Stockholm Convention, UNIDO, UNITAR, UNEP, 2014.

[27] Updated in Colombia yearly by the National Administrative Department of Statistics (DANE). Consulted for ?*03549012 - L?quidos especiales para cromar, niquelar y electro brillar metales*?.

[28] ?*Use of PFOS in chromium plating?Characterization of closed-loop systems, use of alternative substances?*, German Environment Agency, (2017).

[29] Daniel S. Drage, Martin Sharkey, Mohamed Abou-Elwafa Abdallah, Harald Berresheim, Stuart Harrad. Brominated flame retardants in Irish waste polymers: Concentrations, legislative compliance, and treatment options, Science of The Total Environment, Volume 625, 2018, Pages 1535-1543.

[30] Colombia did not adopt EU categories, instead, categories for WEEE were defined by MinAmbiente in the 2019 WEEE management regulation, based on EEE categories of the Central Product Classification (CPC) adapted for Colombia, and the current customs Harmonized System (HS).

[31] The amount of HBCD in the used polystyrene foam in the country is calculated using convention guidance. In the manufacture HBCD is applied in flame-retardant EPS at 0.5 - 1.0 % by weight and in flame-retardant XPS at 0.8 ? 2.5 % in XPS by weight. It is also assumed that all EPS and XPS produced have flame retardant.

[32] According with UNEP. (2019b). Guidance for the inventory of Hexabromocyclododecane (HBCD). Geneva: Secretariat of the Basel, Rotterdam and Stockholm conventions.

[33] Niton XL3t Ultra, from the brand *Thermo Scientific* and confirmed through a gas chromatography, coupled to the Mass Spectrometry (GC-MS). It follows the guidelines established by the IEC standard 623121-6:2015.

[34] The imported amount of this tariff subheading was partitioned into two equal parts to calculate the estimated amount of SCCP and PFOS.

[35] Corresponding to the amount imported from countries that have a current Production of CP?s of various lengths, according with (UNEP 2019) Detailed guidance on preparing inventories of short-chain chlorinated paraffins (SCCPs). (Draft of 2019). Secretariat of the Basel, Rotterdam and Stockholm Conventions, United Nations Environment Programme, Geneva.

[36] Corresponding to the amount imported from China, considering that according with UNEP. (2019b). Guidance for the inventory of Hexabromocyclododecane (HBCD). Geneva: Secretariat of the Basel, Rotterdam and Stockholm conventions: ?HBCD is currently likely produced only in China?.

[37] "It is expected that the remaining 54,000 transformers will be identified, labelled, classified and if necessary disposed of, with technical support of the environmental authorities and the power utilities from which individual holders receive their electricity."

[38] Use of PFOS in chromium plating ?Characterization of closed-loop systems, use of alternative substances-, German Environment Agency, (2017).

[39] These documents can be downloaded through the following link: http://www.MinAmbiente.gov.co/index.php/asuntos-ambientales-sectorial-y-urbana/sustancias-quimicas-y-residuos-peligrosos#informaci%c3%b3n-de-inter%c3%a9s.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

194. Please, refer to Annex E of this document for detailed geo-referenced information and map where the project interventions will take place.

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

No.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations Yes

Indigenous Peoples and Local Communities

Private Sector Entities Yes

If none of the above, please explain why:

N/A

Please provide the Stakeholder Engagement Plan or equivalent assessment.

195. UNDP has formed mutually beneficial long-standing relationships with senior policy makers at the national level and has assisted the strengthening of the Directorate of Sectorial and Urban Environmental Affairs of MinAmbiente during the formulation of the PIF and in the implementation of the PPG. It has also created a synergy with key stakeholders in the private sector, academic and CSO sectors during the formulation of the ProDoc and will continue in the upcoming execution phase.

196. A stakeholder engagement plan was undertaken in order to identify key stakeholder institutions and relevant beneficiaries to be involved in the project implementation process. Annex 9 of the ProDoc *?Stakeholders Engagement Plan-* describes the process of assessing the project's key stakeholder?s interests and the ways in which these stakeholders may influence the project?s outcomes. This Plan is important because it enhances local ownership, strengthens project integrity and design, and helps to create foundational relationships that may contribute to constructive problem solving if difficulties or challenging issues arise.

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

197. To achieve the planned outcomes, this FSP needs to get a variety of stakeholders involved: national policy makers (mainly MinAmbiente and MinSalud), primarily interested in achieving the project?s overarching objective of development by accomplishing the necessary implementation of national policies, in accordance with the mandates of the corresponding conventions signed by the country as well as reporting the environmental benefits to the GEF, large private sector players (like power utility companies, petrochemical and manufacturing industries) dedicated to become greener corporations, academic and technical education stakeholders (UniValle and University of Antioquia and SENA, respectivelly), technological civil society organizations (CSOs); integrating the gender equality approach and the cultural change needed to achieve the project?s objective.

198. Alliances will be established with the corresponding indigenous peoples and local communities where many of the foreseen activities will be implemented, based on workshops and awareness-raising meetings that will be held with local authorities and beneficiaries.

199. In short, the implementation of this project requires the active participation of diversity of partners. Responsibilities of these partners in the project?s implementation as well as initiatives supported by these partners in addressing the project?s development challenge are presented in the Table 7 below.

Table 7. Partnerships of the FSP

Type	Group	Stakeholder	Role

Type	Group	Stakeholder	Role
Public Entities	National Government	Ministry of Environment and Sustainable Development (MinAmbiente)	MinAmbiente -as the focal point of the Stockholm Convention, the Basel Protocol and other MEAs- is the lead public partner responsible for development, detailed design and implementation of this FSP, and as such, member of the Project Steering Committee. It is also responsible for liaison work with the other ministries (MinSalud, MinCiT) and public agencies (IDEAM). On behalf of the GoC, MinAmbiente will be the Implementing Partner for this project. It is responsible and accountable for managing this project, including the monitoring and evaluation of project interventions, achieving project outputs and outcomes, and for the effective use of GEF and UNDP resources. The Project Management Unit (PMU) will be located in their premises.
		Ministry of Health and Social Protection (MinSalud)	This Ministry will guide ?in overall- the development of activities that are related to the risk management of chemicals substances. MinSalud will be also an official member of the Project Steering Committee and will directly support in the capacity building for Chemical Risk Evaluations and GHS implementation.
		Ministry of Commerce, Industry and Tourism (MinCIT)	MinCit is a key stakeholder in the implementation of the Stockholm Protocol. It grants import and export permits and as such closely regulates what chemical substances can come in and out of the country. MinCit will also setup and establish guidelines to management and operation of Industrial Chemicals Registry.

Type	Group	Stakeholder	Role
		Ministry of Labor (MinTrabajo)	MinTrabajo is a key stakeholder that will support the identification of feasible alternatives to Industrial POPs and strengthening the technical capacity of the authorities at the local level to identify risks associated with chemical substances as part of Globally Harmonized System (GHS) implementation during the execution of the four demonstration projects.
	Public agencies	Institute of Hydrology, Meteorology and Environmental Studies (IDEAM)	IDEAM will manage and operate ?under Component 3- the Information and Technology platform for setting up the Pollutant Release and Transfer Register (PRTR) and will issue the required reporting, in close coordination with MinAmbiente and MinSalud.
		Institute of Marine and Coastal Research (INVEMAR)	INVEMAR manages a laboratory for monitoring contaminants. This Institute will assess the presence of some POPs in the sea and coastal areas.
	Local Government	Local Authorities	This stakeholder is made up by a variety of entities, including public representatives from the sub-regions, large urban cities, and local municipalities.
International Organization	Cooperation Agency	UNDP	UNDP is accountable to the GEF for the implementation of this project. This includes oversight of project execution to ensure that the project is being carried out in accordance with agreed standards and provisions. UNDP is responsible for delivering GEF project cycle management services and is also responsible for the Project Assurance role of the Project Board/Steering Committee.

Type	Group	Stakeholder	Role
Non-governmental Organizations	Corporate Associations/technological Civil Society Organizations (CSOs)	? Colombian Association for the Advancement of Science (ACAC) ? National Association of Public Service and Communications Companies (ANDESCO)	ACAC and ANDESCO will be beneficiary representatives in the Project Steering Committee. As such, they have specific responsibilities, among others: ? Provide guidance on project risks as well as on mitigation and management actions to address specific risks; ? Advise on major and minor amendments to the project within the parameters set by UNDP-GEF; ? Ensure coordination with other donors and government-funded projects and programmes; ? Ensure coordination with several government agencies and their participation in the project activities; ? Track and monitor co-financing for this project.
		? Institute for the Plastic and Rubber Research and Training (ICIPC) ? National Association of Automatic Fire Sprinkler Systems (ANRACI) ? International Air Transport Association (IATA) ? Integral Responsibility	ICIPC, ANRACI, IATA and Integral Responsibility ?as representatives of large private corporate associations- will participate in the execution of some project activities, including information outreach of acquired knowledge to the scientific community and their membership. Through their institutional capacities, these CSO stakeholders will play a proactive role in conducting specific surveys for gender analysis and implementing the corresponding action plan, related to Industrial POPs applications.

Type	Group	Stakeholder	Role
Academy	Universities	? University of Valle (UniValle) ? University of Antioquia	Considering the on-going activities carry out by the University of Valle on PCB destruction through supercritical fluid technology, this academic center will participate on the implementation of a pilot test for the treatment of POPs contaminated materials, considering feasible decontamination, cleaning and removal techniques, as well as incorporating safeguards for workers and the environment. On the other hand, the University of Antioquia has developed analytical methodologies for POPs, it could increase its services to others POPs in the framework of this FSP.
	Technical Education Institutions	SENA	In the power sector, some related services demand for specialized technical services with a trained and certified staff. For this kind of services, SENA is a key organization that will contribute to the execution of the activities under Component 1.
Private sector and sectors to Intervene	Petrochemical sector	Ecopetrol	Ecopetrol is a mixed-ownership company partially owned by the Colombian government, which is engaged in exploring, producing, transporting and refining hydrocarbons. As part of this FSP, Ecopetrol will developed several actions under Component 1, related with the identification and classification of the units (equipment) of its property and the elimination of PCB contaminated wastes.

Type	Group	Stakeholder	Role
	Power Utility Companies	In light of the project, this group is made up by the following companies: ? EPM - Enterprise of Public Services of Medellin ? IPSE ? CEO ? EMCALI ? Enterprise of Energy of Quind?o - EDEQ ? CHEC ? ELECTROHUILA ? Enterprise of Energy of Pereira ? EBSA ? CENS ? ESSA ? Codensa ? ENEL Group	These are generation and distribution power utility companies that will be fully engaged to help design and implement the activities planned under Component 1 on PCB Management and Elimination in Priority Sectors. These companies will also finance and ensure the elimination and disposal of 1,300 tons of PCB contaminated equipment of their ownership as well as they will provide technical support to poor communities by eliminating 200 tons of PCB contaminated equipment, owned by individual small holders or the ?*terceros*?.

Type	Group	Stakeholder	Role
	Aeronautical Sector	Civil Aviation Authority of Colombia ?Aerocivil-	This National Public Authority will be engaged to implement project activities under Component 2 to eliminate PFOS containing AFFF foams in the participating airport facilities and support their disposal, such as: Channel relevant data for inclusion in the Industrial POPs inventory under Activity 2.1.i (PFOS used in firefighting equipment used at airports). Support the implementation of a demonstrative project for the treatment of associated wastes that contain industrial POPS, including the disposal of one ton of PFOS, which are initially identified using the inventory of this substance, as per Activity 2.4.ii.
		? Private airport operators, as AIRPLAN and OPAIN, in the cities of Bogota, Medellin, Cali, Armenia, Bucaramanga, Riohacha and Santa Marta. ? Airlines and aeronautical services: Avianca Copa - Wingo Helicol	Their role in the project ?under Component 2- is to: ? Provide relevant data for inclusion in the Industrial POPs inventory under Activity 2.1.i (PFOS used in firefighting equipment currently used at these city airports). ? Support the design and implementation of a demonstration project for the disposal of one ton of PFOS; to replace the use of PFOS containing aviation firefighting foams with suitable alternatives, as per Activity 2.3.i. ? Assist in the replacement of PFOS containing aviation firefighting foams with suitable alternatives.

Type	Group	Stakeholder	Role
	Producers and Traders of Electrical and Electronic Equipment	HACEB Industries MABE Colombia SAS	Private companies that trade in, distribute and/or manufacture electrical and electronic equipment, will be engaged to help carry out Component 2 on the identification of feasible alternatives to Industrial POPs and environmentally sound management of waste containing such POPs. In line with Colombian regulations, these stakeholders must establish collection and disposal programmes for generated waste (*e-waste*). These companies, as per national regulations, will also finance the treatment of wastes containing Industrial POPs and make investments to replace them with feasible alternatives.

Type	Group	Stakeholder	Role
	Manufacturers and Distributors of Plastic, Rubber and Paint	In light of the project, this group is made up by the following private companies: ? C.I. Mexichem Compuestos Colombia S.A.S. - Alphagary ? Icobandas ? Andercol ? Brenntag ? Novaplast ? Ricardo Molina Colombia SAS	This FSP will partner with the chemical industries which produce lubricants, cutting oils and wood preservatives in order to help implement Component 2, on the identification of feasible alternatives to Industrial POPs and improved management of waste containing such POPs. Specifically, these stakeholders will: ? Provide relevant data for inclusion in the Industrial POPs inventory. ? Support the identification of feasible alternatives to Industrial POPs. ? Make the necessary investments at their facility level to replace Industrial POPs with feasible alternatives. ? Establish collection and disposal programmes for wastes containing Industrial POPs. ? Support the development of standard/guidelines on POPs limits in wastes and the sound storage, collection and final disposal of POPs containing wastes.

Type	Group	Stakeholder	Role
	Metal & Mechanical Industries	In light of the project, this group is made up by the following private companies: ? CROMOTEC SAS ? Hydraulic Systems ? NICOL SAS	This FSP will partner with the metalworking industries which produce metallic and chrome products to help implement Component 2, on the identification of feasible alternatives to Industrial POPs and improved management of waste containing such POPs. Specifically, these stakeholders will: ? Provide relevant data for inclusion in the Industrial POPs inventory. ? Support the identification of feasible alternatives to Industrial POPs. ? Make the necessary investments at their facility level to replace Industrial POPs with feasible alternatives. ? Establish collection and disposal programmes for wastes containing Industrial POPs. ? Support the development of standard/guidelines on POPs limits in wastes and the sound storage, collection and final disposal of POPs containing wastes.

Type	Group	Stakeholder	Role
	Waste management and disposal companies	Treatment and disposal companies: ? EPM PCB Treatment Plant ? Ocade ? Veolia ? Indutrade ? Ecoindustria	The role of these companies in the FSP includes: ? Provide relevant data for inclusion in the Industrial POPs inventory. ? Support the identification of feasible alternatives to Industrial POPs. ? Make the necessary investments at their facility level to replace Industrial POPs with feasible alternatives. ? Establish collection and disposal programmes for wastes containing Industrial POPs. ? Support the development of standard/guidelines on POPs limits in wastes and the sound storage, collection and final disposal of POPs containing wastes. ? Provide co-financing in the form of investment in the technologies to treat wastes containing Industrial POPs.
		Post?consumer Programs: ? EcoC?mputo ? Red Verde	These programs already invest in infrastructure to collect, segregate and manage WEEE at national level and should collaborate to improve the management of some POPs in the lifecycle of products and articles that containing them.

Type	Group	Stakeholder	Role
Other beneficiaries	Civil Society	For the purposes of the project, the beneficiaries are the citizens of Colombia.	The project will benefit the local communities, especially those which are located in the places to intervene as Departments of Antioquia, Cauca, Quind?o, Huila, Boyac?, Cundinamarca, Santander, Risaralda and North de Santander, as well as vulnerable and low-income communities of Bogot?, Medellin, Cali, Bucaramanga, C?cuta and Pereira (Outcome 1). Although the activities related with the identification, substitution and elimination of Industrial POP as PFOS, SCCP and Brominated POPs will be carried out at Bogot?, Medellin, Cali, Armenia, Bucaramanga, Riohacha, and Santa Marta (substitution of firefighting foams containing PFOS at airports) and in the main industrial zones of the country such as Bogot?, Medellin, Popay?n and Cartagena, as well as the municipalities next to these locations (for brominated POPs, SPPCs and other Industrial POPs), the beneficiaries of the project will be the all citizens of Colombia due to the minimizing (elimination) of toxic products as those that containing industrial POP.
	Small holders (Called ?terceros? in Spanish)	Small holders are small electricity consumers located in urban and rural settings which own electrical transformer and for the most part have not yet been included in the National PCB Inventory, neither analyzed/tested for PCB content; but are located along the distribution lines of the power companies.	This FSP will support the elimination and environmentally sound disposal of about additional 200 tons of electrical transformers and waste contaminated with PCBs that are currently located in vulnerable and low-income communities in the Departments of Antioquia, Cauca, Quind?o, Huila, Boyac?, Cundinamarca, Santander, Risaralda and North de Santander, as well as vulnerable and low-income communities in the cities of Bogot?, Medellin, Cali, Bucaramanga, C?cuta and Pereira.

Type	Group	Stakeholder	Role
Relevant Groups	Women	In daily life, men, women, and children are exposed to different kinds of chemicals in varying concentrations. Biological factors ?notably size and physiological differences between women and men and between adults and children? influence susceptibility to health damage from exposure to toxic chemicals.	From gender perspective, Colombia need more gender and sex disaggregated information related with the level and frequency of exposure to toxic chemicals and their impacts on human health and developing indicators to measure hazardous chemical?s impacts on women and men. Especially data related with the labor market and health because gender-determined occupational roles have a direct impact on the exposure to these kind of chemicals and is urgently needed to build specific policies focus on gender and hazards of polluting substance. The project will carry out the evaluation of alternative substances for the replacement of industrial POP in the manufacturing of products, considering the risk of exposure by sex (Activity 3.1.i) and the mainstreaming of gender perspective into the development of activities (Activity 4.1.1.v) in order to identify existing gender gaps in the chemical industry and sound management of hazard waste and design strategies to reduce these gaps (Gender Action Plan).

Type	Group	Stakeholder	Role
	Indigenous People and Local Communities	Considering the geographic context of Colombia, and the Departmenets to intervene, indigenous populations are predominantly located in the departments of Cauca and Huila.	The indigenous peoples, through the social managers of the companies in the power sector, will be who decide their participation in the project and eventual activities within their territories. This decision will be expressed through a prior informed consent in written form in accordance with the existing protocols set up by the local power companies. However, in many cases the prioritized areas for activities related with PCBs, will be located far away from indigenous territories and for industrial POPs, the interventions will be focused on industrial areas and airports that are located in areas that are not indigenous territories. Representatives of indigenous peoples and local communities, in partnership with local and national NGOs/CBOs and environmental authorities will supervise activities related to electrical transformers carried out in their areas; and will provide access to (for testing) and information on the electrical equipment owned within their communities (Outcome 1). The project would benefit this communities in case that in their territories could be equipment and wastes containing PCBs owned by low-income individuals (who do not have the technical and financial capacity to ensure environmentally sound PCB disposal), and which therefore, are not considered under the responsibility of the power industry; because the project would support the identification, labeling, classification and elimination of this devices. These activities only will be carried out into the territory if the project have the approval of the indigenous people present at it.

Type	Group	Stakeholder	Role
	Waste Pickers Associations	In Colombia, 319 organizations are currently registered in the Single Utility Information System - SUI (SUI) of the Superintendency of Residential Public Service, which aggregate more than 30,000 waste pickers[1]..	The project will involve waste pickers, who recover valuable materials from municipal solid waste streams and depend on this activity for their livelihoods. The project will encourage waste picker participation through training and awareness about identification, classification and sound management of waste containing industrial POP in order to avoid potential exposition risk to these hazard substances (Outcome 4.1).

200. As indicated above, Outcome 4.1 of Component 4 of this FSP is fully dedicated to raise awareness of project stakeholders raised on the management of Industrial (POPs) Chemicals, related wastes and safer alternatives. The activities planned to achieve this outcome include the design of an awareness raising campaign and information strategy and a programmatic monitoring of FSP global indicators (specifically, GEF Core Indicators 9 and 11), together with a review of on-going, activities to ensure successful project implementation in accordance with UNDP and GEF procedures, integrating awareness raising and gender sensitive training materials.

---

[1] *Taken from:* https://sostenibilidad.semana.com/medio-ambiente/articulo/mas-de-30000-personas-en-colombia-viven-del-reciclaje/44231

Select what role civil society will play in the project:

Consulted only;

Member of Advisory Body; Contractor;

Co-financier; Yes

Member of project steering committee or equivalent decision-making body;

Executor or co-executor; Yes

Other (Please explain)

N/A

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

201. From the gender perspective, Colombia?s women and men need more information on environmental stresses and more data?disaggregated by sex, age and other factors?is urgently needed to build policies that are more comprehensive. The Industrial POPs markets, specifically in the context of this project, are usually male oriented, from the supplier and the producer perspectives, however from the demand point of view protection of women from hazardous chemical needs to be strengthened. Under this perspective, women are exposed constantly with hazardous chemical in the health care sector that use medical devices and materials in clinical laboratories. Annex 11 (Gender Analysis) of the ProDoc describes the process of assessing the gender challenges for the project and how these may influence the project?s outcomes.

202. The project has developed a strategy that links the most important gaps identified in relation to its components, the country's reality in terms of equality and the SDGs, particularly SDG 5. The gaps identified in the analysis and which are considered in the strategy include parity in decision-making spaces around the current consumption of Industrial POPs, alternatives to reduce the releases of industrial POPs and other Hazardous Chemicals, such as PCB, SCCP, CN, PFOS and Brominated POPs, in an integral approach to promote compliance of the Stockholm Convention in Colombia and improvement of women's income and livelihoods. These gaps require the strengthening of institutional capacities to promote equality between women and men in a structural manner, as the proposed Gender Action Plan also included in Annex 11 of the ProDoc.

203. For this purpose, and in accordance with the proposed gender strategy:

- Each activity was analysed to include the necessary elements to guarantee the reduction of identified gaps and establish more pro-active actions when appropriate.
- Specific activities that focus on the empowerment of women have been included (capacities, and access to planning and decision-making processes).
- Two indicators have been included to help measure progress in this field and will be monitored as part of the M&E process[41].
- A budget has been included to guarantee the measures and actions to be taken. The strengthening of the project team's capacities is planned to ensure the adequate mainstreaming of the gender perspective into all project activities.

---

[41] Please, refer to Section V of the ProDoc: Indicators 2 and 10.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources; Yes

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Does the project?s results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

204. The project has a significant number of private sector partners (please, refer also to Section 2 ?Stakeholders?). A good sign of private sector engagement in the project?s implementation is that 92.5% of the project?s co-financing (USD 24,685,612) is being provided by the private sector. Of this amount, 100 % is grant co-financing. As such it can be concluded that Private Sector Engagement for this project is significant.

205. Private sector stakeholders are involved throughout the project, for instance, in the disposal of the 1,500 tons of PCBs (Output 1.2), as wellas in the implementation of the demonstration projects carried out to introduce four substances identified as alternatives to Industrial POPs (Output 3.2), among other activities, either as lead implementors, project partners, contractors or beneficiaries (e.g. waste generator, industry, waste operator, waste transporter, waste recycler, laboratories, etc.).

206. The private sector partners who are engaged in the project?s implementation can be grouped as follows:

Corporate associations:

? Colombian Association for the Advancement of Science (ACAC)

? National Association of Public Service and Communications Companies (ANDESCO)

? Institute of Rubber and Plastic (ICIPC)

? National Association of Automatic Fire Sprinkler Systems (ANRACI)

? International Air Transport Association (IATA)

? Integral Responsibility

Private sector and sectors to intervene:

? Petrochemical sector: Ecopetrol

? Power utility companies (involved in the phase-out and disposal of PCB containing electrical equipment)

? Aeronautical Sector

? Producers and Traders of Electrical and Electronic Equipment

? Manufacturers and Distributors of Plastic, Rubber and Paint

? Metal & Mechanical Industries

? Waste management and disposal companies

? Private Companies responsible for the generation of hazardous wastes, treatment/disposal, recycling, and analysis.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

207. The key risks that could threaten the achievement of project results have been summarized in Table 8 below. In addition, social and environmental risks identified in the SESP during the PPG (Annex 6) are included in the UNDP Risk Register in Annex 7 of the ProDoc. The description of how the project risks will be mitigated is shown in Annexes 7 and 10.

Table 8: FSP Key Risks

Risk Class	Type of Risk	Description of the Risk
Social and Environmental (SES)	Temporary shutdowns in the electrical energy service supply	During the interventions related to the PCB contaminated equipment (to identify, label, classify and eliminate them) could be temporary shutdowns in the electrical energy service supply.
	Exclusion of stakeholders	The project may exclude affected stakeholders, indigenous peoples, local communities and potentially marginalized groups from participating in decisions regarding to identification, labelling, classification and elimination of PCBs contaminated equipment.
	Discrimination against women	The project could reproduce existing discriminations against women by excluding them from decision-making during the implementation of the activities.
	Susceptibility to extreme environmental events (Climate change risk)	Accidental releases of hazardous waste and substances due to earthquakes, subsidence, landslides, erosion, flooding or extreme climate conditions.

	Community health and safety	The project may pose potential risks to community health and safety during its implementation, due to the transport, storage, use or disposal of hazardous substances and wastes (PCBs, PFOS/PFOA, SCCP and brominated POP), an incident could occur such as accidental spills or unforeseen exposures of local communities due to possible human or technological errors.
	Occupational health and safety	The project would increase health risks and may pose risks to occupational health and safety due to exposure to physical, chemical (PCBs, PFOS/PFOA, SCCP and brominated POP), and biological (like the pandemic type) hazards during its implementation.
	Accidental release of POPs into the environment	Project may potentially result in the accidental release of industrial POPs or PCBs into the environment due to improper handling, storage, transport and treatment/disposal of these hazardous wastes.
	Inappropriate waste disposal	Project may potentially result in the inappropriate waste disposal (within the country or cross-border) due to the management of hazardous chemicals and could result in the generation of waste (both hazardous and non-hazardous)
Financial	Affectation by interest rates, exchange rate fluctuations or inflation	High variations in interest rates, fluctuations of the currency exchange and high inflation may prevent a proactive involvement of the private stakeholders.
	Difficulties with the co-funding	Private companies fear that participation in the project might affect their image or brand.
Operational	Lack of information required to develop the Inventory of POPs for Industrial use.	The participating companies, given their ignorance of the project, could feel threatened regarding the confidentiality of their industrial information or affect their corporate image, for the mere fact of participating in the project. In this sense, the project could be affected if the necessary information for the inventory is not available, which would limit the depth level thereof.
	Difficulties with the waste treatment facilities in Colombia	Failures in the fulfillment of standards, procedures and safety protocols to eliminate Industrial POPs in an environmentally sound manner.
	Deficiencies in communication and relationship with stakeholders.	Deficiencies in assertive communication processes with stakeholders or key actors that may generate conflicts, misinformation, panic, misinterpretation of project objectives, or inadequate perception of the project.

	Delay periods	Delayed deliveries of devices and raw materials, laboratory and monitoring results; may affect the development of the project, for instance, delays in obtaining the information required to develop the Industrial POPs Inventory.
Organizational	Poor FSP monitoring	Limited capacity in MinAmbiente and other key stakeholders due to insufficient trained staff on the implementation of alternatives to Industrial POPs, causing an inadequate tracking and monitoring for the project and indicators.
	Weak legal compliance	Limited capacity of stakeholders to develop innovative alternatives to Industrial POPs in order to comply with environmental standards and licensing processes.
Political	Lack of interest at the *national* level	Environmental, health and trade public authorities do not actively participate in the development and implementation of project activities.
	Lack of political will at the *local* level	It may happen that in certain circumstances ?at the territorial level- some local major or provincial governor may show disagreement with the scope of some activities.
Strategic	Weak relations among stakeholders	Limited capacity in MinAmbiente and other key stakeholders with key actors that can generate conflicts, misinformation and misunderstandings of the overall objective of the project and hinder the improving of knowledge and skills necessary for the environmentally sound management of hazardous chemicals.
	Fear to affect the social and corporate	Private companies fear that participation in the project might imply to affect their image or brand with the community.
	Lack of technical will at the industry	Industries are reluctant to replace Industrial POPs with alternative substances
	Lack of strategic vision, planning, communication and wrong intervention of the media and adverse public opinion.	Public and private companies fear that participation in the project might imply greater controls of environmental authorities and affect their image or brand, causing a wrong interpretation of the project objectives.

208. On the other hand, this FSP has also considered, as part of its risk management assessment carried out during the PPG, several global coronavirus (COVID-19) pandemic threats. Incremental project activities will require, by the PMU, regularly scanning for emerging risks across the FSP?s activities to ensure to continue delivering the expected outputs, prevent unintended harm as a result of the planned activities, and proceed quickly with adaptive management response under this rapidly changing context.

209. For this project, the following additional five risks have been identified due to the global coronavirus pandemic:

Health risk: Potential harm to people and the environment.

Description: Potential health and safety, including contagious exposure for stakeholders the FSP has planned to engage with, including the staff of the PMU and institutional partners, plus third party workers where the field project demonstration will take place.
Management strategy: This will be implemented in twofold: i. develop innovative virtual and remote methods for working and implementation, as much as possible, and ii. since the World has not yet found a vaccine for this virus, for the implementation of those activities that require social gathering, the FSP?s PMU, with assistance from the UNDP CO, should promote the application of the measures established by the WHO and the GoC, for the control of COVID 19, both preventive and care measures in the event of a contagion in any of the facilities of the interested parties.

Financial risk: Reduce the committed co-financing by the project partners.

Description: Potential delays of anticipated co-financing, both in kind and cash sources, due to COVID-19 corporate response, especially from the private sector stakeholders that need to react immediately to adjust their cash flows to cover unexpected labor costs and significant drop of business revenues.
Management strategy: For the development of the activities that the project has planned with the different interested parties, it is scheduled to sign institutional agreements that are legally binding. It is also planned that once the Project starts and before the agreement is signed, a due diligence financial capacity of the counterpart and its affectation by COVID 19 will be carried out, in such a way that it is guaranteed that the project?s activities will be implemented with partners that have the capacity to mitigate any possible financial risk.

Operational risk: Limited domestic travel.

Description: Immediate impacts from domestic travel restrictions per UN, GoC requirements and unavailability of land and air transport means.
Management strategy: Develop innovative virtual and remote methods for working and implementation, as much as possible.

Political Risk: Weak participation of health and environmental authorities.

Description: The health and environmental authorities must attend to immediate actions related to the COVID 19 pandemic and cannot assume the project's requirements to attend meetings, trainings and the implementation of activities that are required for the timely execution of the Project.
Management strategy: Develop from the beginning of the project materials for the dissemination of activities, which can be submitted virtually and hold virtual meetings.

Operational risk: Long periods to prepare tenders and purchase some goods and services.

Description: Delay in the delivery of supplies, equipment, raw materials, laboratory tests, monitoring, among others, may affect the estimated periods for the development of the project because some activities are restricted due to the effects of the pandemic created by the COVID 19.
Management strategy: The capacity of companies or entities that provide the in-country needed services for the project should be specially strengthened. A key action is to identify from the beginning the laboratories

or companies supplying the required services and establish a work plan that allows deliveries in the required times.

210. During the project implementation, these five risks should be regularly screened, managed and reported to ensure the Project Coordinator has relevant data from across all activities for effective decision making and to determine when escalation is required. As part of its track monitoring role of GEF projects, UNDP, through the Country Office, will track and monitor this global outbreak and its immediate implications for this FSP; if necessary, the Risk Register (Annex 7) will be updated consequently. Likewise, indicators convened under the Project Results Framework (Section V) will be adjusted. These two actions will be also tracked, monitored and reported in the Mid Term Review.

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

211. The project will be executed according to UNDP?s National Implementation Modality (NIM), as per the NIM project management implementation guidelines agreed by UNDP and the Government of Colombia.

212. The Implementing Partner is responsible and accountable for managing this project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of resources. The main associate in the implementation of this project, on behalf of the national government, is the Ministry of Environment and Sustainable Development (MinAmbiente), which is in charge of addressing political guidance to the country?s commitments, as a signatory to the Stockholm Convention.

213. Implementing Partner: The Implementing Partner for this project is the Ministry of Environment and Sustainable Development.

214. The Implementing Partner is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in this document.

215. The Implementing Partner is responsible for executing this project. Specific tasks include:
•Project planning, coordination, management, monitoring, evaluation and reporting. This includes providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.

? Risk management as outlined in this Project Document;

? Procurement of goods and services, including human resources;

? Financial management, including overseeing financial expenditures against project budgets;

? Approving and signing the multiyear workplan;

? Approving and signing the combined delivery report at the end of the year; and,

? Signing the financial report or the funding authorization and certificate of expenditures.

216. Furthermore, MinAmbiente as implementing partner, will be supported by a Project Management Unit (PMU). The project will be implemented in coordination with other GEF-funded Chemicals and Waste projects managed by UNDP and y the Project Executive, namely Project COL 94749/98842 "(Reduction of UPOP and mercury releases from the management of sanitary waste, electronic waste treatment, scrap processing and biomass burning). For the two (2) UNDP-GEF chemical and waste products projects, coordination and administrative issues will be supported by a joint project unit. Each project will contribute to the costs of the project unit according to the time and effort required for each one.

a. The implementing partner (MinAmbiente), will be responsible for the strategic orientation and overall technical coordination of the project, ensuring that progress, implementation and results are agreed in a timely and consistent manner and contribute to compliance strategic objectives of the project. MinAmbiente will be the Technical Coordinator of the Project and will have responsibility for, among others: 1) set general strategic guiding and technical coordinating of the project; 2) develop the Annual Operational Plans (AOP) and work plans; 3) approving terms of reference for consultants hiring and acquisitions; 4) analyzing and approving the products and services contracted by UNDP; and 5) reviewing the final version of the progress reports. The project will be led by the Director of Environmental Affairs and Urban Sector which is part of MinAmbiente staff. The director will provide technical inputs and guidance into the planning and execution of project activities directing the Project Management Unit (PMU) in project implementation. PMU will be located at MinAmbiente and will report to the Director of Environmental Affairs and Urban Sector.

b. Project Management Unit (PMU): will support the day-to-day execution of Project activities. The PMU will have responsibility for, among others: 1) operational planning, managing and executing the project including draft of the Annual Operational Plans (AOP) and work plans to be validated to MADS and UNDP, the direct supervision of project activities subcontracted to specialists and other institutions, as well as those that are to be implemented through MinAmbiente, if applicable; 2) coordinating the management of financial resources and procurement; 3) reporting on the application of resources and results achieved; 4) preparing management reports for MinAmbiente and UNDP including annual reports and any proposals for the adaptive management of the Project, if required and based on inputs from the Project M&E plan; 5) promoting inter-institutional linkages; and 6) disseminating project results. The PMU will consist of Project Coordinator, and personal administrative, financial and technical support. The Project Manager will lead the PMU and will be responsible for the overall management of the Project, including the mobilisation of all project inputs, supervision over project staff, consultants and sub-contractors.

217. Responsible Parties: Does not apply for this project.

Project stakeholders and target groups:

218. The stakeholders of the project correspond to entities of the Government sector such as:

? The Ministry of Health and Social Protection (MinSalud) who will establish the guidelines on risk management associated with the management of chemical substances and their impact on health,

? The Ministry of Commerce Industry and Tourism (MinCIT) will provide information on the importation and use of chemical substances, and who will administer the Industrial Chemicals Registry in Colombia.

? The Ministry of Labor (MinLabor) who will support the actions to implement the Globally Harmonized System for the identification of the risks of chemical substances,

? The Institute of Hydrology, Meteorology and Environmental Studies (IDEAM) who administers the Pollutant Transfer Registration System,

? The Institute of Marine and Coastal Research (INVEMAR) who has a laboratory for monitoring contaminants,

? The regional environmental and health authorities will participate in the development of the project since they must carry out control and monitoring activities that guarantee the proper management of POPs substances and their waste.

219. Also stakeholders of this project are the enterprise sector corporations such as the energy distribution companies which are mostly private, such as: Enterprise of Public Services of Medell?n (EPM) and its subsidiaries (EPM Group), ENEL Colombia Group, Municipal Enterprises of Cali (EMCALI) and others, which will support activities related to the identification and labeling of equipment that is not owned by them but their operation is linked to their power networks.

220. Interested parties are also private companies that perform the activity of waste sound management such as OCADE, LITO, VEOLIA and ECOINDUSTRIA who develop a variety of activities including storage, transport and disposal of waste containing POPs for Industrial use.

221. Non-profit entities created by large companies of the WEEE sector that sell electrical and electronic equipment who are responsible for the post-consumption management of e-waste and light bulbs. These NGOs have to dispose the plastic waste containing POPs and will participate in the implementation of alternatives for the management of this type of waste.

222. Companies that made up the chemical industry that use POPs will participate in the activities for the substitution of these substances, including C.I. MEXICHEM COMPUESTOS COLOMBIA S.A.S., ICOBANDAS S.A., ANDERCOL SAS and HACEB Industries, MABE Colombia SAS and others.

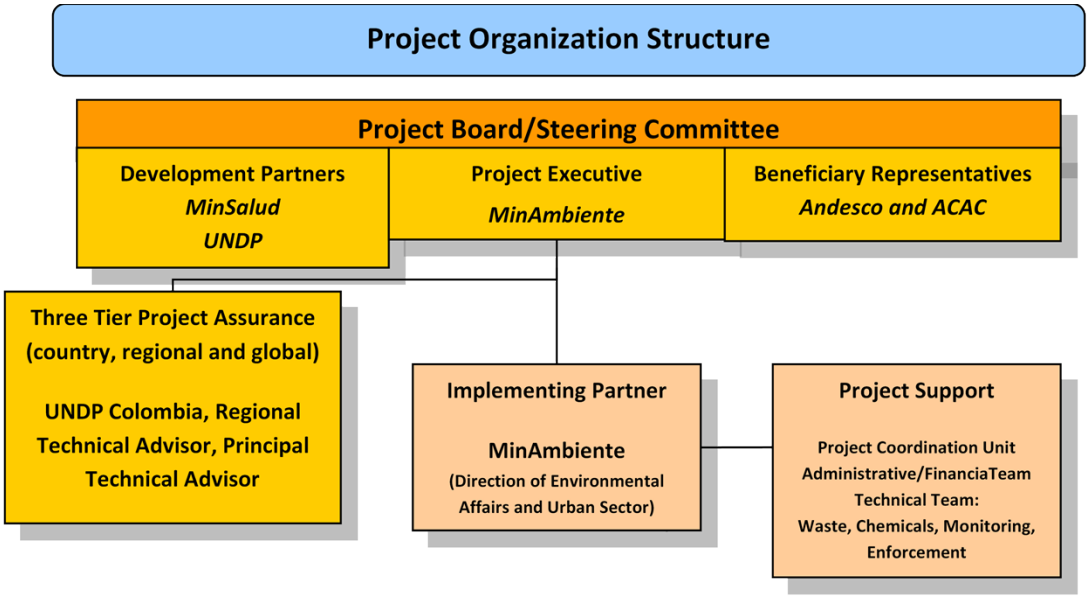
223. In relation to the replacement of PFOS in foams and the disposal of waste containing these substances, the following entities will participate: the Special Administrative Unit of Civil Aviation ?AEROCIVIL- as well as the airports operators of Medell?n and Bogot? like AIRPLAN and OPAIN and airlines like AVIANCA, COPA - WINGO and others.

224. UNDP: UNDP is accountable to the GEF for the implementation of this project. This includes oversight of project execution to ensure that the project is being carried out in accordance with agreed standards and provisions. UNDP is responsible for delivering GEF project cycle management services comprising project approval and start-up, project supervision and oversight, and project completion and

evaluation. UNDP is also responsible for the Project Assurance role of the Project Board/Steering Committee.

225. Project organisation structure: The project organization structure is as follows:

Figure 3. Project organization structure



226. The Project Board (also called Project Steering Committee) is responsible for taking corrective action as needed to ensure the project achieves the desired results. In order to ensure UNDP?s ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition.

227. In case consensus cannot be reached within the Board, the UNDP Resident Representative (or their designate) will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed.

228. Specific responsibilities of the Project Board include:

? Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;

? Address project issues as raised by the project manager;

? Provide guidance on new project risks, and agree on possible mitigation and management actions to address specific risks;

? Agree on project manager?s tolerances as required, within the parameters set by UNDP-GEF, and provide direction and advice for exceptional situations when the project manager?s tolerances are exceeded;

? Advise on major and minor amendments to the project within the parameters set by UNDP-GEF;

? Ensure coordination between various donor and government-funded projects and programmes;

? Ensure coordination with various government agencies and their participation in project activities;

? Track and monitor co-financing for this project;

? Review the project progress, assess performance, and appraise the Annual Work Plan for the following year;

? Appraise the annual project implementation report, including the quality assessment rating report;

? Ensure commitment of human resources to support project implementation, arbitrating any issues within the project;

? Review combined delivery reports prior to certification by the implementing partner;

? Provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;

? Address project-level grievances;

? Approve the project Inception Report, Mid-term Review and Terminal Evaluation reports and corresponding management responses;

? Review the final project report package during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

? Ensure highest levels of transparency and take all measures to avoid any real or perceived conflicts of interest.

229. The composition of the Project Board must include the following roles:

a. Project Executive: Is an individual who represents ownership of the project and chairs the Project Board. The Executive is normally the national counterpart for nationally implemented projects. The Project Executive is the Director of Environmental Affairs and Urban Sector of the Ministry of Environment and Sustainable Development (Project Implementing Institution), who will chair the Steering Committee. The Office for International Affairs of the

MinAmbiente will act as an observer in the Project Board given its capacity as GEF OFP in Colombia.

The Project Executive will be supported by a full-time team, formed by one Project Coordinator, and personal administrative, financial and technical support. In addition, for specific technical activities, it will be supported by national and international consultants.

b. Beneficiary Representatives: Individuals or groups representing the interests of those who will ultimately benefit from the project. Their primary function within the board is to ensure the realization of project results from the perspective of project beneficiaries. Often civil society representative(s) can fulfil this role. The Beneficiary representatives are: i) the environmental coordinator of the National Association of Public Service and Communications Companies (ANDESCO), a non-profit organization that represents the interests of the companies that provide the public power distribution service in Colombia, who will represent the companies in the electricity sector allied to the project; ii) the Colombian Association for the Advancement of Science (ACAC), a non-profit organization that promotes scientific advances carried out in the country and who will represent the parties interested in the project that will carry out the substitution and elimination of POPs.

c. Development Partner: Individuals or groups representing the interests of the parties concerned that provide funding and/or technical expertise to the project. The Development Partner is: The Ministry of Health and Social Protection of the Government of Colombia (MinSalud), as responsible to develop safe policies on the use of chemical substances in the country. This Ministry is a relevant actor for the implementation of the project as it has the technical competences to guide the development of most of the activities. The representative of MinSalud will be the Deputy Director of Environmental Health. UNDP will provide technical support to the project, the representative of UNDP will be the UNDP Resident Representative.

d. Project Assurance: UNDP performs the quality assurance and supports the Project Board and Project Management Unit by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed, and conflict of interest issues are monitored and addressed. The Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. UNDP provides a three ? tier oversight services involving the UNDP Country Offices and UNDP at regional and headquarters levels. Project assurance is totally independent of project execution.

230. **Project extensions:** The UNDP Resident Representative and the UNDP-GEF Executive Coordinator must approve all project extension requests. Note that all extensions incur costs and the GEF project budget cannot be increased. A single extension may be granted on an exceptional basis and only if

the following conditions are met: one extension only for a project for a maximum of six months; the project management costs during the extension period must remain within the originally approved amount, and any increase in PMC costs will be covered by non-GEF resources; the UNDP Country Office oversight costs in excess of the CO?s Agency fee specified in the DOA during the extension period must be covered by non-GEF resources.

Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

231. There is a group of GEF-financed projects and other initiatives in Colombia currently under implementation related to the development challenge this project is also addressing, which could provide some additional support to strengthening this institutional partnership approach. Thanks to the involvement of the institutional partners in some of them (under the leadership of MinAmbiente), it seems of mutual benefit the achievement of the outcomes for this FSP. Specifically, this FSP will ensure coordination and count on the capacity built and knowledge gathered from the concurrent GEF-financed projects that are already in progress, as shown in the Table 9 below:

Table 9: relevant GEF-financed projects and other initiatives

Project	Agency	Main relevance for this FSP
?Reducing UPOPs and Mercury Releases from Healthcare Waste Management, e-Waste Treatment, Scrap Processing and Biomass Burning?	GEF/UNDP	Capacity building at the national level for the environmentally sound management of brominated flame retardants included in Annex A of the Stockholm Convention, in particular PBDE, PBB and HBCD.
?Action Plan of Policy on the Risk Management of Chemical Substances?	MinAmbiente	Setting up technical and regulatory elements for risk management to: prevent major accidents and to develop cross-cutting instruments to strengthen the institutional, financial and legal capacity associated with the consumption of chemical substances for industrial use; including the establishment of Pollutant Release and Transfer Register (PRTR) and the Globally Harmonized System of Classification and Labeling of Chemical Products (GHS) in Colombia.
?National Policy for the Integrated Management of Waste Electrical and Electronic Equipment (WEEE)?	MinAmbiente	Awareness of the Colombian society to change the paradigm that involves "buying, using and disposing of" electrical and electronic devices for everyday use (some of them containing POPs) and think about the negative impacts that this consumption entails for human health and the environment; and to reassess the concept of waste for that they are not more, but that they remain within the productive and economic cycle, generate value and allow the desired environmental sustainability.

232. In addition, South-South cooperation plays an important part in informing the development and implementation of project interventions. On-going south-south collaboration initiatives will continue to be supported by this project, for instance, the *?Inter-Governmental Network for Chemicals and Waste Management under the Forum of Ministers of Environment of Latin America and the Caribbean?*. This

network recently approved a work plan and countries are cooperating and developing joint activities on several subjects related to the environmentally sound management of chemicals and waste, including governance and information sharing.

233. UNDP organizes on a yearly basis face-to-face South-South exchanges among all UNDP GEF Chemicals and Waste projects and programmes in the Latin American and the Caribbean region. These allow government counterparts, project coordinators and experts to exchange experiences and lead to long-term collaboration, exchanges and partnerships between projects and countries. Projects that participate in these exchanges include UNDP/GEF projects like those implemented in Colombia, Ecuador, Honduras and Uruguay (among others), which also focus on various POPs and Mercury issues.

234. In addition, to bring the voice of Colombia to global and regional fora, this FSP will explore opportunities for meaningful participation in specific events where UNDP could support engagement with the global development dialogue on chemical substances management. The project will furthermore provide opportunities for regional cooperation with countries that are implementing initiatives on PCBs and industrial POPs sound management in committed geopolitical, social and environmental contexts such as the proposed projects in *Ecuador, Mexico and other Latin-American and The Caribbean countries.*

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assesments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

235. This project is consistent and aligned with National Priorities taken up in the: National Implementation Plan (NIP) under the Stockholm Convention on Persisten Organic Pollutants (POPs), published in 2010 and updated in 2017, which includes actions formulated for the 28 POP substances regulated so far by the Convention, a policy that is complemented with normative instruments that contribute to the integral management of POPs in Colombia.

236. Furthermore, the 2017 NIP identified activities that are in accordance with specific actions and recommendations at the national level, and in particular with a ?National Action Plan for Industrial POPs? as well as several official resolutions that have established the requirements for the integral environmental management of equipment and wastes that consist, contain or are contaminated with Polychlorinated biphenyl (PCB) and Industrial POPs, among others.

237. For the global development agenda, this project is aligned with Sustainable Development Goal (SDG) 12 (Responsible Consumption and Production), 5 (Gender Equality), 9 (Industry, Innovation and Infrastructure), and 3 (Good Health and Well-being).

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

238. There are three key challenges faced by this FSP to build up a ?Knowledge Management Approach?. In the first place, the challenge to be addressed by this project is to phase-out, by 2025, all PCB-containing equipment and PCB disposal and waste in an environmentally sound manner by 2028, as per the Stockholm Conventio, is one the alternative paths proposed by the project as a result of the Theory of Change analysis carried out during the PPG. The second challenge is related to the full implementation of a national regulatory context that sets up the timeline for the implementation of PCB elimination at the national level, by 2028. The third challenge refers to the adoption of public policies and measures to identify, reduce or eliminate releases derived from intentional use of PCB in ?open applications? and of other Industrial POPs in products and articles that do not have specific regulations in Colombia but the regulatory actions are provided in Chapter 5 of the ?National Implementation Plan ?NIP-? in accordance with the Stockholm and Basel Conventions.

239. Based on these three tasks, of the project?s four components, Component 4 has been dedicated to ?Raising awareness, ensuring project monitoring and evaluation and collecting and disseminating project results and experiences on best practices for the LCM of Industrial Chemicals and POPs.?, with a budget allocation of USD500,000 and co-financing of USD1,805,158.

240. Under the foreseen activities in Output 4.1.1, the project will implement a National Communications Strategy, making use of social media, the preparation of publications, scientific papers, articles, lessons learned reports, among else, (detailed in Annex 9 ?*Stakeholder Engagement Plan*?). In particular, knowledge ?both at the national and international fora- will be gathered, managed and disseminated through the below listed of incremental activities which will capture lessons-learned and experiences and publish them in publications and lessons-learned reports. The timeframe for the implementation of these activities can be found in Annex 4 -Multi-year Work Plan- (attached to the UNDP Project Document).

241. The communication strategy should serve as a platform for dissemination, providing lessons learned and technical information material for other countries to implement large-scale, best practices for the elimination of PCBs and market alternatives for Industrial POPs. All knowledge management activities will be gender mainstreamed; this includes integration of gender dimensions into the FSP?s training activities, for instance, through the presentation of sex-disaggregated data, activities related to reducing gender, and gender mainstreaming in training programs in line with the Gender Action Plan.

242. In addition to that, it should be noted that UNDP annually organizes meetings for Government Officers and Project Coordinators of all the UNDP-GEF funded Chemicals and Waste Projects in Latin America and the Caribbean. In these meetings, lessons learned, and best practices are shared among the countries which has created a coordination mechanism among all the projects in the region.

243. Finally, UNDP will ensure that relevant information and lessons learned will be collected as input for the Mid-term Review and Terminal Evaluation.

9. Monitoring and Evaluation

Describe the budgeted M and E plan

244. The project results, corresponding indicators and mid-term and end-of-project targets in the project results framework will be monitored annually and evaluated periodically during project

implementation, supported by Component 4: *?Raising awareness, ensuring project monitoring and evaluation and collecting and disseminating project results and experiences on best practices for the LCM of Industrial Chemicals and POPs?*. If baseline data for some of the results indicators is not yet available, it will be collected during the first year of project implementation. The Monitoring Plan included in Annex 5 details the roles, responsibilities, and frequency of monitoring project results.

245. Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy. The UNDP Country Office is responsible for ensuring full compliance with all UNDP project monitoring, quality assurance, risk management, and evaluation requirements.

246. Additional mandatory GEF-specific M&E requirements will be undertaken in accordance with the GEF Monitoring Policy and the GEF Evaluation Policy and other relevant GEF policies[42]. The costed M&E plan included below, and the Monitoring plan in Annex 5, will guide the GEF-specific M&E activities to be undertaken by this project.

247. In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report.

248. The project results as outlined in the Project Results Framework (Annex A) will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results.

249. In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report.

---

[42] See https://www.thegef.org/gef/policies_guidelines

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

250. The project will bring direct and indirect socioeconomic benefits. The direct and immediate benefits are those related to the implementation of the project itself, including employment of project staff, operators, and others; The project will strength capabilities of the industrial sector, creating opportunities for the adoption of new technologies with added value.

251. At the national and local levels, the implementation of coordinated demonstration actions with the private sector in the field willgenerate specialized jobs that will improve the quality of life of workers of the power and industrial sectors while showing the opportunities that institutional integration and coordination, private-driven investments, will demonstrate that the positive results of these demo interventions would serve to improve and enforce current regulation for environmentally sound management of Industrial POPs. Innovative market interventions offer alternative solutions to the growing market need in the chemical industry of Colombia generating new markets for their products and services. It is also expected that other LAC parties of the Stockholm Convention will follow and integrate these

strategies in their efforts to phase out hazardous substances so the project benefits will extrapolate to other countries in the region. For this, a public awareness and communication strategy for the management of Industrial (POPs) Chemicals, related wastes and safer alternatives should result in direct gains for the citizens and the environment.

252. The project will also bring obvious indirect benefits. The removal of PCB sources (equipment, waste, and contaminated oil) from the environment and reduction of POPs emissions from industrial applications will prevent the contamination of the environment by these substances. This will translate into economic benefits in terms of reduced cases of illness and death due to POPs exposure, reduced work hours lost represented by a reduction in cases of illness and death due to exposure to POPs, savings in health care costs due to adverse effects of POPs, savings in costs associated with avoided deaths, prevention or minimisation of POPs contamination in soil, air, water, air and biota, cost savings from management of POPs contamination of soil, water and biota, as well as increasing the admissibility of POPs-free Colombian products in international markets.Additional economic and social benefits that will be brought on by the project:

? Reduced health impact from the exposure to hazardous chemicals, including PCBs and open application for Industrial POPs. The project aims to directly benefit 7,000 people, of which 3,640 females and 3,360 males.

? Job creation through opportunities created in the waste treatment and recycling industry.

? A general increase in awareness about the environmental impacts of Industrial POPs as well as gender dimensions related to chemicals. The project estimates to increase awareness of 7,000 people, of which 3,640 females and 3,360 males.

? Improved policy, regulatory, monitoring and analysis frameworks, to safeguard human health and the environment.

How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

253. In the BAU national context of a growing economy, increasing dependence on Industrial POPs and hazardous materials will put a heavy burden in the compliance of international regulations committed by Colombia with the Stockholm and Basel Conventions. The Global Environmental Benefits (GEB) of the project at the CEO endorsement stage, are the same as presented at the PIF stage. The positive impacts of the project will include the following reductions:

? 1,500 tons of PCB contaminated wastes

? 1,000 kg of PFOS

? 2,000 tons of waste containing Brominated POPs (700 kg Brominated POPs)

? 10 tons of Short-Chain Chlorinated Paraffins (SCCPs)

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
	Medium/Moderate		

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

QUESTION 2: What are the Potential Social and Environmental Risks? *Note: Describe briefly potential social and environmental risks identified in Attachment 1 ? Risk Screening Checklist (based on any ?Yes? responses). If no risks have been identified in Attachment 1 then note ?No Risks Identified? and skip to Question 4 and Select ?Low Risk?. Questions 5 and 6 not required for Low Risk Projects.*	**QUESTION 3: What is the level of significance of the potential social and environmental risks?** *Note: Respond to Questions 4 and 5 below before proceeding to Question 6*			**QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?**
Risk description	***Impact and Probability (1-5)***	***Significance*** ***(Low, Moderate, High)***	***Comments***	***Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.***

				In an initial project stage activities regarding with identification, labelling and classification of equipment that might potentially contain PCBs will be developed by technical staff of power companies following their existing protocols and attending the principles of continuity and quality of electric power supply established in the Colombian energy regulation[1]. The project will provide technical and financial support for this stage in synergy with the power companies.	
Risk 1: During the interventions related to the PCB contaminated equipment (to identify, label, classify and eliminate them) could be temporary shutdowns in the electrical energy service supply. (SES Principle 1 Human Rights, q3)	I = 2 P = 2	**Low**	On the second stage, the devices that might be found to be contaminated with PCBs (Less than 2% according with statistics), owned by small electricity consumers (called ?*terceros*?) will be replaced and paid by the power companies in the frame of their maintenance and infrastructure renewal programmes. Lastly, the project will carry out the environmentally sound management of PCBs contaminated devices owned by *?terceros?* and will provide a technical and financial support for this activity. According to this, the field interventions are brief, programmed and previously informed to equipment users, otherwise this may constitute a failure in the electrical energy service supply, therefore, power utility companies would be fined for infringement of article 136 of the Law 142 of 1994[2]. Considering the above, is unlikely that a failure in the electrical energy service supply may happen and even though it occurs the impact would be	N/A

Risk 2: The project may exclude some affected stakeholders, like indigenous peoples, local communities and potentially marginalized groups from participating in decisions regarding to identification, labelling, classification and elimination of PCBs contaminated equipment. (SES Principle 1 Human Rights, q4 and SES Principle 3, Standard 6. Indigenous Peoples q6.1)	I = 3 P = 1	**Low**	The Project will support the identification, labeling, classification and elimination of a total of 6,000 units of equipment and wastes that may contain PCBs and which are owned by low-income individuals (who do not have the technical and financial capacity to ensure environmentally sound PCBs disposal), and which therefore, are not considered under the responsibility of the power industry. These activities will be developed in the following departments: Antioquia, Cauca, Huila, Boyac?, Cundinamarca, Santander, Quind?o, Caldas, Risaralda and Norte de Santander, as well as in the vulnerable and low-income communities of the cities of Bogot?, Medellin, Cali, C?cuta, Bucaramanga and Pereira. Taking into account that the resources and funds available for the PCBs component are limited, it is necessary to carry out cost-effective actions, prioritizing among others, the peri-urban marginal areas where most of the devices are located. Therefore, in many cases the prioritized areas will be located far away from indigenous territories. However, considering the wide distribution of the power distribution grids, it is not excluded that would be necessary to intervene equipment located areas with the presence of indigenous peoples. However, the local communities (Afro-Colombian communities, community action boards, indigenous peoples, potentially marginalized groups, among others) through the social managers of the companies in the power sector, will be the ones who decide their participation in the project and eventual activities within their territories. This decision	N/A

Risk 3: The project could reproduce existing discriminations against women by excluding them from decision-making during the implementation of the activities. (SES Principle 2 Gender, q2)	I = 3 P = 2	**Moderate**	Social factors, mainly the occupational roles determined by the gender, affect the type of exposure to toxic chemicals, and the differentiated impacts on the health of men and women. This could be interpreted as a situation of discrimination and affect fair participation, yet with a gender perspective. However its unlikely that occurs.	During the PPG phase, a Gender Analysis and Action Plan was prepared. Full details of those measures can be found in Annex 11 of the Project Document (Gender Analysis and Gender Action Plan) Also, these management measures are detailed at Management Sheet 1 of the **Environmental and Social Management Framework (ESMF)** that was developed based on initial assessments and consultations (please, refer to Annex 10, Section 5)

Risk 4: Accidental releases of hazardous waste and substances due to earthquakes, subsidence, landslides, erosion, flooding or extreme climate conditions**.** (SES Principle 3, Standard 3. Community Health, Safety and Working Conditions q3.5)	I =3 P=1	**Low**	A natural disaster could eventually affect the physical facilities and operation of the places where the planned demonstration projects are carried out, generating environmental, social and operational difficulties for the development of the activities planned under the project. If that occurs, the impact will be moderate, of low magnitude, limited in scale (near to the facilities) and can be managed and/or mitigated with measures given in the contingency plans of the companies required by environmental authorities. Also, taking into account that project will work with hazardous waste operators licensed to management of hazardous substances and wastes (e.g. the EPM Treatment Plant located in the City of Medellin, and the Ocade Treatment Plant located near the City of Bogota), that are located in areas with low risk of earthquakes, subsidence, landslides, erosion or flooding according with Colombian Regulation and guidelines[3], the probability of occurrence is slight.	N/A

Risk 5: The project may pose potential risks to community health and safety during its implementation, due to the transport, storage, use or disposal of hazardous substances and wastes (PCBs, PFOS/PFOA, SCCP and brominated POP), an incident could occur such as accidental spills or unforeseen exposures of local communities due to possible human or technological errors. (SES Principle 3, Standard 3. Community Health, Safety and Working Conditions q3.1 and q3.2)	I = 3 P = 2	**Moderate**	The project will work with well-known and reputable universities, national companies and international holdings; activities will take place at specific sites with already installed capacity including inspection, surveillance and control by health national authorities. These companies already carried out ?Social Responsible Programmes? for their workers, the surrounding communities, (e.g. the Andercol Plant located in the City of Medellin, and the C.I. Mexichem Compuestos Colombia S.A.S. ? Alphagary Plant located near the Cartagena City). In addition, they are already active members of the national large Civil Society Organizations - CSO. Even though the incident occurs its impact would be moderate, of low magnitude and limited area (near to the spills) into their facilities. Also, to transport, storage, use or disposal of hazardous substances and wastes, the project will work with hazardous waste operators licensed under inspection, surveillance and control by environmental authorities. Therefore if any incident regard to management of hazardous substances and wastes occurs, it will have a short duration and can be avoided, managed and/or mitigated by the existing waste operator?s management plans. However its unlikely that occurs.	The measures to management this risk are detailed in Management Sheet 2 of the **Environmental and Social Management Framework (ESMF)** that was developed based on initial assessments and consultations (please, refer to Annex 10, Section 5).

Risk 6: The project would increase health risks and may pose risks to occupational health and safety due to exposure to physical, chemical (PCBs, PFOS/PFOA, SCCP and brominated POP), and biological (like the pandemic type) hazards during its implementation. (SES Principle 3, Standard 3. Community Health, Safety and Working Conditions q3.6 and q3.7)	I = 3 P = 3	**Moderate**	The health of workers could be affected by chemical and physical exposure to hazardous substances and wastes during the project implementation. Even though it occurs, this would be limited to the companies? workers that are involved in the implementation of the substitution demonstration projects. (e.g the Andercol Plant located in the City of Medellin, and the C.I. Mexichem Compuestos Colombia S.A.S. ? Alphagary Plant located near the Cartagena City) and the staff of hazardous waste operators where the management takes place. Taking into account the current pandemic, the project implementation also may pose potential health and safety risks, by contagious exposure to COVID-19 for workers and community where the interventions of potentially PCBs contaminated equipment will take place. Considering the above, the impact will be moderate, of low magnitude, limited in scale (companies? staff and communities around the intervention places) and the risk is moderately likely given that it can be avoided, managed and/or mitigated with relatively uncomplicated accepted measures as per the business-as-usual health and safety protocols.	The measures to management this risk are detailed in Management Sheet 2 of the **Environmental and Social Management Framework (ESMF)** that was developed based on initial assessments and consultations (please, refer to Annex 10, Section 5). -

Risk 7: Project may potentially result in the accidental release of industrial POPs or PCBs <u>into the environment</u> due to improper handling, storage, transport and treatment/disposal of these hazardous wastes. (SES Principle 3, Standard 1. Biodiversity Conservation and Sustainable Natural Resource Management, q1.2 and Standard 7: Pollution Prevention and Resource Efficiency, q7.1)	I = 3 P = 3	**Moderate**	POPs cause a wide variety of adverse effects if not managed safely and if released to the environment, which could cause environmental pollution. However, the project will work with hazardous waste operators licensed to transport, storage, use or disposal of hazardous substances and wastes (e.g. the EPM Treatment Plant located in the City of Medellin, and the Ocade Treatment Plant located near the City of Bogota) approved by the Colombian regulations[4] for the implementation of their activities, including management measures for spills and other incidents with hazardous materials. Also, considering the wide distribution of the power distribution grids, this infrastructure could come across in some environmentally sensitive areas, their surroundings or legally protected areas, it is not excluded that some potentially PCBs contaminated equipment would be located in these areas; However, considering that the resources and funds available for the PCBs component are limited, it is necessary to carry out cost-effective actions, prioritizing among others, the peri-urban marginal areas where most of the devices are located. Also, taking into account that one the project objectives is to provide technical and financial support for the environmentally sound management of equipment contaminated with PCBs owned by the so-called "terceros", it is estimated that the impact of the project on these geographic areas and their surrounding communities will be positive. Considering the above, if any	The measures to manage this risk are detailed in the Management Sheet 2 of the **Environmental and Social Management Framework (ESMF)** that was developed based on initial assessments and consultations (please, refer to Annex 10, Section 5).

Risk 8: Project may potentially result in the inappropriate waste disposal (within the country or cross-border) due to the management of hazardous chemicals and could result in the generation of waste (both hazardous and non-hazardous) (SES Principle 3, Standard 1. Biodiversity Conservation and Sustainable Natural Resource Management, q1.10 and Standard 7: Pollution Prevention and Resource Efficiency, q7.2 and q7.3)	I = 3 P = 3	**Moderate**	During the implementation project, especially at demonstrative project sites, it may be foreseen the use of small amounts of hazardous chemicals, and could result in the generation of hazardous waste, which could produce adverse effects if they are not handled safely and are released into the environment. Currently, there is an official regulation for PCBs management but the regulation for the other industrial POPs are not developed yet. However, considering that companies that carry out the hazardous waste management in Colombia must have the environmental licenses, permits and plans to develop these business activities, or the permits to cross-border movement waste, according to the protocols of the Basel Convention; the probability that an inappropriate waste management event may occur will be moderate and its impacts will be of a low magnitude, limited in scale (near to the spill) as well as temporary.	The measures to management this risk are detailed in Management Sheet 2 of the **Environmental and Social Management Framework (ESMF)** that was developed based on initial assessments and consultations (please, refer to Annex 10, Section 5).
	QUESTION 4: What is the overall Project risk categorization?			
	Select one (see SESP for guidance)			**Comments**

	Low Risk	**?**	
	Moderate Risk	**?**	There are 8 identified risks that need to be addressed during implementation of the project. Three of the risks were assessed as of low significance while five were assessed as moderate.
	High Risk	**?**	
	QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?		
	Check all that apply		**Comments**
	Principle 1: Human Rights	**?**	Refer to Risks 1 and 2
	Principle 2: Gender Equality and Women?s Empowerment	**?**	Refer to Risk 3
	1. Biodiversity Conservation and Natural Resource Management	**?**	Refer to Risks 7 and 8
	2. Climate Change Mitigation and Adaptation	**?**	
	3. Community Health, Safety and Working Conditions	**?**	Refer to Risks 4, 5 and 6
	4. Cultural Heritage	**?**	
	5. Displacement and Resettlement	**?**	

	6. Indigenous Peoples	**?**	Refer to Risk 2
	7. Pollution Prevention and Resource Efficiency	**?**	Refer to Risk 7 and 8

[1] Law 143 of 1994. Art. 6 *Whereby the regime for the generation, interconnection, transmission, distribution and commercialization of electricity in the national territory is established - it establishes the regime for the activities of the Colombian power sector*

[2] Law 143 of 1994 ? Art. 6 *?Whereby the regime for the generation, interconnection, transmission, distribution and commercialization of electricity in the national territory is established - it establishes the regime for the activities of the Colombian power sector?*

[3] Colombia. Ministerio de Ambiente, Vivienda y Desarrollo Territorial ? MAVDT & Consejo Colombiano de Seguridad - CCS (2003). Environmental guidelines for storage and transport of hazardous chemicals substances and wastes. Bogot? D.C., Colombia. These criteria are required in the Colombian environmental licensed process

[4] Decree 1076 of 2015 - Title 6. Hazardous Waste ? *?Whereby the Single Regulatory Decree of the Environment and Sustainable Development Sector is issued*? and Decree 1079 of 2015 ? Cap 7 Sec. 8 Transport of dangerous goods *?Whereby the Single Regulatory Decree of the Transport Sector is issued.?*

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
6390 Annex 10_ESMF_V24072020_approved_August	**CEO Endorsement ESS**	
6390 Annex 6_SESP_V27072020_approved_August	**CEO Endorsement ESS**	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

The Project Results Framework can be found in Chapter V ?*Project Results Framework*? in the UNDP Project Document.

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

ANNEX B: RESPONSES TO PROJECT REVIEWS
(from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Comments	Response	Reference in documents
Comments from from Council at Work Program (Germany)		
(no remaining comments)		
Comments from from Council at Work Program (US)		
(no remaining comments)		
Comments from the GEF Sec		
(no remaining comments)		
Comments from STAP		

#1. Relevant stakeholders have been identified, and their roles listed. However, the academic and research communities should be included, and be actively engaged in developing and implementing the project. In addition to providing some necessary expertise, especially for the research and technology assessment and demonstration aspects of the project, this will also help increase awareness and dissemination of results: it could also help ensure the continuity and sustainability of the project.	Indeed, this recommendation is of great significance for the success of this project. Academic and research associations have already been incorporated in the project during the execution of the PPG; i.e.: Colombian Association for the Advancement of Science (ACAC), University of Valle (UniValle) and University of Antioquia, Institute for the Plastic and Rubber Research and Training (ICIPC) and National Training Services - SENA. Section IV, Sub-section *?Partnerships?*, now includes these stakeholders. First, well recognized universities will participate in the incremental activities to be carried out in Outputs 2.1 and 2.4; specifically in activities associated with training and identification of Industrial POPs contained in products and wastes, for instance, by using their lab infrastructure to detect the existence of POPs through screening methods and quantitative analyses in products and goods with methods like liquid chromatography and mass spectrometry. On the other hand, considering the on-going activities carry out by the UniValle on PCB destruction through supercritical fluid technology, this academic center will participate in the implementation of a pilot test for the treatment of POPs contaminated materials, considering feasible decontamination, cleaning and removal techniques, as well as incorporating safeguards for workers and the environment. Second, research communities associated to the Institute of Rubber and Plastic (ICIPC) and the Association for the Advancement of Science (ACAC) will participate in the development of some project activities, including information outreach of acquired knowledge to the scientific community and their membership. Additionally, the last one (ACAC), will be one of the beneficiary representatives in the Project Steering Committee. Third, the National Training Services ? SENA-, will participate in the incremental activities to be carried out in Output 1.1; specially in activities associated with technical staff training to achieve labor competence in the sampling of dielectric oils in equipment.	Component I: Output 1.1 (incremental activity v). Please, refer to paragraph (Para.) 124. Component II: Output 2.1 (incremental activity ii). Please, refer to paragraphs (Para.) 138, and 146, of the ProDoc. Component IV: Please, refer to Table 8: *?Partnerships of the FSP?* in Para. 175 of the ProDoc, for the inclusion of academic and research communities.

#2. Discussion on Gender Equality and Women's Empowerment is still lacking and should be completed as the project is developed further.	Indeed, during the PPG phase a detailed analysis of gender issues was carried out. As a result, a Gender Action Plan has been structured and transversally integrated into the project?s incremental activities.	Please, refer to Annex 11 of the ProDoc, *?Gender Analysis and Gender Action Plan?*.
#3. The project presents risks, but these need to be rated (high, medium, low). Beyond the currently identified risks, other potential risks, including finance (current co?finance is tentative), possible political risk, and environmental impacts, should be considered in detail as the project is further developed.	Risks considerations have been adjusted as recommended during the PPG. As a result, two elements to respond to this comment have been integrated in the ProDoc. The first one is in Section IV of the ProDoc, Sub-section *?Risks?*. Environmental and social risks have been discussed with the executing partners and with a variety of stakeholders through the workshops held during the PPG. In addition, these risks were analysed in the *?Social and Environmental Screening Procedure?* (SESP, Annex 6) and the ones rated as MODERATE have been reviewed in more detail within the *?Environmental Social Management Framework?* (ESMF, Annex 10). The second one is in Annex 7 *?UNDP Risk Register?* of the ProDoc which now includes a classification of the different risk categories faced by the this FSP, including political, financial and environmental risks, among other categories. With respect to the co-financing to the project, during the PPG a well-diversified group of participants have been identified and engaged; their commitment have been expressed in writing for this FSP giving their proactive role ?of some of them- in previous GEF projects implemented by the UNDP in Colombia in the Chemicals and Waste Focal Area, as well as in considering the high interest of national chemical industry for the substitution/elimination of Industrial POPs. For specific details on this comment, please refer to Point 5 of the CEO Endorsement on incremental/additional cost reasoning and expected contributions from the co-financing.	Component IV, Sub-section *?Risks?* of the ProDoc: Please, refer to paragraphs 179 through 184. Please, refer to the following annexes of the ProDoc: Annex 6: *?Social and Environmental Screening Procedure* (SESP)*?*. Annex 10: *?Environmental Social Management Framework* (ESMF)?. Annex 7: *?UNDP Risk Register?*. Please, refer to Table C *?Confirmed sources of Co-financing for the project by name and by type?* of the CEO Endorsement Request.

#4. Colombia is at high risk from climate change impacts, including sea?level rise, floods, land instability and water shortages. It is important therefore that climate change impacts are considered in determining which treatment methods should be adopted, and how the treatment should be carried out to ensure limited environmental and human exposure to pollutants. Climate change is expected to increase the remobilization and bioavailability of POPs. Project outputs should also be protected against natural hazards.	The risk assessment of this project has already recognized that demonstrative project as alternatives to Industrial POPs may potentially result in the accidental release of POPs into the environment due to improper handling, storage, transport, and treatment/disposal of these chemicals, as described in risks # 4, 5, 7, and 8 in Annex 7 *?UNDP Risk Register?*, of the ProDoc. Indeed, these risks may be aggravated by natural hazards due to climate change impacts. Output 3.1/Activitiy 3.1.iv of the ProDoc, reads as follows in order to integrate this comment by the STAP: iv. Implementing a capacity building program -during the lifetime of the FSP- for 50 professional public officers (MinAmbiente, MinSalud, MinCit and MinTrabajo) in the use of the international risk assessment protocols that are deemed to fit best the circumstances of Colombia, evaluating the life-cycle of the new alternative substances through risk management. This activity will also include the training of 200 professionals from private industries on how to introduce alternatives and support transition to eliminate industrial POPs. Of these professionals and workers, at least 50% will be women fully engaged in the use of alternative substances to Industrial POPs, in accordance with the Action Plan for Gender Equality (Annex 11). Of greater importance is to incorporate treatment methods in this training against climate change impacts that may increase the remobilization and bioavailability of POPs.	Annex 7. *?UNDP Risk Register?.* Section IV. Results and Partnerships. Output 3.1/Activity 3.1.iv in Para. 151, of the ProDoc.

#5. Coordination of the project is explained. However, more is needed on how Knowledge Management will be used in scaling up.	Indeed, this comment related to Knowledge Management is of key importance given the innovative approach of this FSP and its impact in two avenues, i.e.: in one hand to assist Colombia in the compliance of its commitments under the Stockholm Convention, and in the other, to serve as a platform for further reapplication and scale up in other countries. In this regard, Colombia through MinAmbiente, is part of the *?Inter-Governmental Network for Chemicals and Waste Management under the Forum of Ministers of Environment of Latin America and the Caribbean?*, a regional network to support cooperation and develop joint activities on several subjects related to the environmentally sound management of chemicals and waste, including governance and information sharing.	Section IV. Results and Partnerships. Paragraphs 190, 191 and 192 in Section IV, of the ProDoc.
#6. Is there a recognition of what adaptations may be required during project implementation to respond to changing conditions in pursuit of the targeted outcomes?	Indeed, this FSP has being structured under a very participatory methodology during the PPG execution. A key point, given the innovative approach of the project, is to consider an adaptive management in order to respond to changing conditions as well as to the identified risks. Component 4 also considers an adaptive management approach under Output 4.2.2.	The ProDoc has considered an adaptive management approach in Section VI. Monitoring an Evaluation (M&E) Plan.

#7. Are indicators, or methodologies, provided to demonstrate how the global environmental benefits will be measured and monitored during project implementation?	Comment acknowledged. Section 6 of the CEO Endorsement describes the methodologies to measure and monitor the GEB of the following substances: ? 1,500 tons of PCB contaminated wastes ? 1,000 kg of PFOS ? 2,000 tons of waste containing Brominated POPs (700 kg Brominated POPs) ? 10 tons of Short-Chain Chlorinated Paraffins (SCCPs) The methodology to be used to monitor the Global Environmental Benefits of this project has two mechanisms, essentially: The first one, in the case of PCBs, the information reported by the power utility companies and owners of equipment contaminated with PCBs (?*the terceros*?), will be collected and processed through the Information and Technology (IT) platform available in Colombia to annually feed the National PCB Inventory. This platform has verification processes by local environmental authorities and IDEAM and allows the monitoring PCBs disposal goals progress. On the other hand, for Industrial POPs, an easy-to-fill tool will be developed for companies that participate in the demonstration projects, thanks to the technical support provided by the project staff, which will allow calculating the amounts of substituted POPs either in substances for their chemical formulations or associated to some products that contain these kind of POPs. These two mechanisms will allow having measurements that demonstrate GEBs due to avoided releases of POPs to the environment.	Please, refer to Section 6) Global Environmental Benefits, of this CEO Endorsement Request.
#8. Have gender differentiated risks and opportunities been identified, and were preliminary response measures described that would address these differences?	Indeed, during the PPG phase a detailed analysis of gender issues was carried out, and as a result, a Gender Action Plan has been structured and transversally integrated into the project?s incremental activities.	Please, refer to Annex 11 of the ProDoc, *?Gender Analysis and Gender Action Plan?*.
#9. Are the identified risks valid and comprehensive? Are the risks specifically for things outside the project?s control?	Please, refer to responses in Comment #3 of this Table.	Please, refer to responses in Comment #3 of this Table.

#10. What overall approach will be taken, and what knowledge management indicators and metrics will be used?	Acknowledged through Indicator #10 ?Number of people fully aware on the sound management and elimination of PCBs and Industrial POPs, as well as their substitution alternatives?.	Please, refer to Section V ?Project Results Framework-of the ProDoc.

ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: USD 150,000.00			
Project Preparation Activities Implemented	***GETF/LDCF/SCCF Amount ($)***		
	Budgeted Amount	***Amount Spent Todate***	***Amount Committed***
Project preparation grant to finalize the project: Strengthening national capacity to manage industrial POPs within the framework of national and international guidelines on chemical substances and hazardous waste management.	USD $150,000.00	USD $150,000.00	USD $0.00
Total	**USD $150,000.00**	**USD $150,000.00**	**USD $0.00**

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.

Project sites for PCB. Departments to get involved through components 1 and 4.

The coordinates for the development of the project are shown in the following tables.

Project map and geospatial Coordinates of project sites	
	DEPARTMENTS (PCB)
Geospatial Coordinates	
ANTIOQUIA	Latitude: 6.55, Longitude: -75.817, 6? 33? 0? North, 75? 49? 1? West
CAUCA	Latitude: 2.433, Longitude: -76.617, 2? 25? 59? North, 76? 37? 1? West
HUILA	Latitude: 2.92504, Longitude: -75.2897, 2? 55? 30? North, 75? 17? 23? West
BOYAC?	Latitude: 5.533, Longitude: -73.367, 5? 31? 59? North, 73? 22? 1? West

CUNDINAMARCA	Latitude: 4.733, Longitude: -74.267, 4? 43? 59? North, 74? 16? 1? West
SANTANDER	Latitude: 7.11392, Longitude: -73.1198, 7? 6? 50? North, 73? 7? 11? West
QUIND?O	Latitude: 4.52808, Longitude: -75.704, 4? 31? 41? North, 75? 42? 14? West
CALDAS	Latitude: 5.067, Longitude: -75.517, 5? 4? 1? North, 75? 31? 1? West
RISARALDA	Latitude: 4.81321, Longitude: -75.6946, 4? 48? 48? North, 75? 41? 41? West
NORTH DE SANTANDER	Latitude: 7.9, Longitude: -72.5, 7? 54? 0? North, 72? 30? 0? West

Project map and geospatial Coordinates of project sites	
	Cities (PCB)
Geospatial Coordinates	
Bogot? D.C	Latitude: 4.61, Longitude: -74.082, 4? 36? 36? North, 74? 4? 55? West
Bucaramanga	Latitude: 7.11392, Longitude: -73.1198, 7? 6? 50? North, 73? 7? 11? West
Cali	Latitude: 3.42158, Longitude: -76.5205, 3? 25? 18? North, 76? 31? 14? West
Medell?n	Latitude: 6.217, Longitude: -75.567, 6? 13? 1? North, 75? 34? 1? West
Pereira	Latitude: 4.81321, Longitude: -75.6946, 4? 48? 48? North, 75? 41? 41? West
C?cuta	Latitude: 7.9, Longitude: -72.5, 7? 54? 0? North, 72? 30? 0? West

Project sites for PFOS. Municipalities to get involved through components 2, 3 and 4.

The coordinates for the development of the project are shown in the following table.

Project map and geospatial Coordinates of project sites	
Municipalities (PFOS)	
Geospatial Coordinates	
Armenia	Latitude: 4.52808, Longitude: -75.704, 4? 31? 41? North, 75? 42? 14? West
Bogot? D.C	Latitude: 4.61, Longitude: -74.082, 4? 36? 36? North, 74? 4? 55? West
Bucaramanga	Latitude: 7.11392, Longitude: -73.1198, 7? 6? 50? North, 73? 7? 11? West
Cali	Latitude: 3.42158, Longitude: -76.5205, 3? 25? 18? North, 76? 31? 14? West
Medell?n	Latitude: 6.217, Longitude: -75.567, 6? 13? 1? North, 75? 34? 1? West
Riohacha	Latitude: 11.533, Longitude: -72.9, 11? 31? 59? North, 72? 54? 0? West
Santa Marta	Latitude: 11.233, Longitude: -74.2, 11? 13? 59? North, 74? 12? 0? West

Project sites for SCCP and brominated POPs. Municipalities to get involved through components 2, 3 and 4.

The coordinates for the development of the project are shown in the following table.

Project map and geospatial Coordinates of project sites	
	Municipalities (SCCP and Brominated POPs)

Geospatial Coordinates	
Bogot? D.C	Latitude: 4.61, Longitude: -74.082, 4? 36? 36? North, 74? 4? 55? West
Cartagena	Latitude: 10.4, Longitude: -75.5, 10? 24? 0? North, 75? 30? 0? West
Medell?n	Latitude: 6.217, Longitude: -75.567, 6? 13? 1? North, 75? 34? 1? West
Popay?n	Latitude: 2.433, Longitude: -76.617, 2? 25? 59? North, 76? 37? 1? West

ANNEX E: Project Budget Table

Please attach a project budget table.

		Component (USDeq.)							
Expenditure Category	Detailed Description	Component 1	Component 2	Component 3	Sub-Total	M&E (Componente 4)	PMC	Total (USDeq.)	Responsible Entity (Executing Entity receiving funds from the GEF Agency)[1]
		Outcome 1.1	Outcome 2.1	Outcome 3.1		Outcome 4.1	Outcome 4.2		
Material and Goods (72300)	Laboratory materials and reagents purchase for the trainning and strengthening of laboratories	32,700	100,000		132,700			-	Ministry of Environment and Sustainable Development (MinAmbiente)-PMU
Contractual Services ? Companies (72100)	Company ofor the third part devices tagging	550,000			550,000			-	MinAmbiente-PMU

	Company for the elimination of contaminated PCB wastes, and technical assistance for the power companies of the country	490,000	490,000	-	MinAmbiente-PMU
	Company for the pilot test of porous materials contaminated with PCB	80,000	80,000	-	MinAmbiente-PMU
	Company for the design and implementation of a monitoring plan for the open PCB applications	70,000	70,000	-	MinAmbiente-PMU

	Company for the establishment of an Industrial POPS monitoring program. This program will be undertaken to determine the impact of PFOS/PFOA, SCCP and brominated POPS by monitoring their presence and concentration in a number of biological matrices (human milk, blood and bivalves).	70,000	70,000	-	MinAmbiente-PMU

	Company for the implementation of four pilot projects for the substitution (phase out) of industrial POPs or the strengthening of companies that have already started the process of substitution in the aeronautic, hydrocarbons, plastic and metal-mechanic industries.	550,000	550,000	-	MinAmbiente-PMU
	Company for the strengthening of three waste managers for the integral management of products, goods and wastes that contains industrial POP	90,000	90,000	-	MinAmbiente-PMU

	Company for the implementation of a demonstrative project about the treatment of wastes related to products and goods that contains industrial POP	109,440	109,440	-	MinAmbiente-PMU
	Company for the elimination of substances, wastes or products that contains PFOS, SCCP and brominated POP	370,000	370,000	-	MinAmbiente-PMU

	Selection of four alternative substances for the industrial POPS that have the potential of been used in Colombia as inputs in production processes, making emphasis in the identification of hazards, and associated potential risks, also, its technical, financial and comercial avialability.	100,000	100,00 0	-		MinAmbiente-PMU

	Definition of the environmental and human health associated to the use of these substances in local conditions, and stablishment of a managment and reducing program for each one of these substances in the determinated aplication for the substitution.	100,000	100,000	-		MinAmbiente-PMU
	Training of 50 environmental authority professionals and 200 industrial sector professionals on how to introduce alternatives to industrial POPS.	30,000	30,000	-		MinAmbiente-PMU

	Provide technical assistance for the implementation of Globally Harmonised System (GHS) of four (4) chemical substances that could be identified as viable alternatives por the industrial POPS.	200,000	200,00 0	-		MinAmbiente-PMU

	Provide Technical assistance in the consolidation of the Pollutant Release and Transfer Register (PRTR) and also the inclusion of alternative substances. This registry is currently been developed for MinAmbiente, with colaboration of other entities and will be managed for the IDEAM.	117,100	117,10 0	-			MinAmbiente-PMU

	Awareness raising of about 6,000 owners of potentially contaminated PCB equipment on the need to identify and locate these units and the availability of support that will provided to individual owners by the project as well as by the electrical power industry to test, label and dispose (if necessary) of these units in an environmentally sound manner.	-	120,361		120,361	MinAmbiente-PMU
	Aplication of audits and monitoring of the results and achievements of the project	-		10,000	10,000	MinAmbiente-PMU

International Consultants (71200)	International consultant for the development of activities related to porous PCB materials	6,750		6,750	-	MinAmbiente-PMU
	International consultant for the development of activities related to open PCB aplications	13,500		13,500	-	MinAmbiente-PMU
	International consultant for the development of activities related with industrial POPs substitution		13,500	13,500	-	MinAmbiente-PMU
	International consultant for the alternatives of treatment and elimination of industrial POPs		13,500	13,500	-	MinAmbiente-PMU

	International consultant for the development of four demonstrative projects related to industrial POPs		13,500	13,500			-	MinAmbiente-PMU
	International consultant, expert in the project assesment			-		100,000	100,000	MinAmbiente-PMU
Local Consultants (71300)	National consultant for the activities of inventory platforms	26,960		26,960			-	MinAmbiente-PMU
	National consultant for the capacitations related with PCB	36,000		36,000	33,500		33,500	MinAmbiente-PMU
	National consultant for the work with entities of work competencies	25,000		25,000			-	MinAmbiente-PMU
	National consultant for the field work in the regions where activities are going to be developed	60,000		60,000			-	MinAmbiente-PMU

National consultant for the development of activities related to open PCB aplications	30,000			30,000			-	MinAmbiente-PMU
National consultant for the determination cost-effectiveness of the pilot tests		30,000		30,000			-	MinAmbiente-PMU
National consultant for the PCB elimination		23,000		23,000			-	MinAmbiente-PMU
National consultant, toxicology professional			35,000	35,000			-	MinAmbiente-PMU
National consultant for the chemical substances registry			73,000	73,000			-	MinAmbiente-PMU
National consultant, especialist in communication				-	40,000	40,000		MinAmbiente-PMU
National consultant, especialist in gender				-	19,500	19,500		MinAmbiente-PMU

	National consultant, expert in the development of workshops			-	4,000		4,000	MinAmbiente-PMU
	Archive assistant			-		24,000	24,000	MinAmbiente-PMU
Contractual Services ? Individuals (71400)	Professional, service contract, technical specialist in PCB	186,840		186,840			-	MinAmbiente-PMU
	Professional, service contract, specialist in the substitution of industrial POPs		160,360	160,360			-	MinAmbiente-PMU
	Professional, service contract, specialist in the sampling of industrial POPs		130,000	130,000			-	MinAmbiente-PMU
	Professional, service contract, specialist in risk management related to industrial POPs		117,800	117,800			-	MinAmbiente-PMU

	Professional, service contract, sampling professional		-	63,600	63,600		MinAmbiente-PMU
	Coordinator		-	84,340	84,340		MinAmbiente-PMU
	Administrative assistant		-	76,440	76,440		MinAmbiente-PMU
	Finnancial assistant		-	38,220	38,220		MinAmbiente-PMU
Trainings, Workshops, Meetings (75700)	Workshops, capacitations and trainnings for the use and implementation of the tagging guide	18,000	18,000		-		MinAmbiente-PMU
	Workshops for the environmental authorities who have jurisdiction in the zones where PCB devices are located	12,050	12,050		-		MinAmbiente-PMU

	Workshops and capacitations aimed to the PCB managment technical staff	16,000			16,000	-	MinAmbiente-PMU
	Workshops for the implementation of the industrial POP monitoring plans		20,000		20,000	-	MinAmbiente-PMU
	Workshops for the implementation of pilot test projects		17,200		17,200	-	MinAmbiente-PMU
	Strengthening workshops for the waste managers		20,000		20,000	-	MinAmbiente-PMU
	Workshops for the capacitation of environmantel authorithies and two hundred professionals of the industrial sector			41,000	41,000	-	MinAmbiente-PMU

Workshops for the capacitation of environmantel authorithies	21,000	21,000			-	MinAmbiente-PMU
Workshops for the SGA implementation	21,000	21,000			-	MinAmbiente-PMU
Awareness raising workshops and capacitations		-	20,000		20,000	MinAmbiente-PMU
Gender perspective workshop and capacitations		-	5,000		5,000	MinAmbiente-PMU
Final works		-		4,000	4,000	MinAmbiente-PMU
National seminar for the results divulgation		-		16,000	16,000	MinAmbiente-PMU
Inception workshop		-		10,000	10,000	MinAmbiente-PMU

	Travel cost (airplane tickets, TE,DSA) for missions and field visits of national and international consultants and individual services who carry out the first output activities	67,200		67,200		-	MinAmbiente-PMU
Travel (71600)	Travel cost (airplane tickets, TE,DSA) for missions and field visits of national and international consultants and individual services who carry out the second output activities		33,000	33,000		-	MinAmbiente-PMU

	Travel cost (airplane tickets, TE,DSA) for missions and field visits of national and international consultants and individual services who carry out the third output activities	50,600	50,600			-	MinAmbiente-PMU
	Travel cost (airplane tickets, TE,DSA) for missions and field visits of national and international consultants and individual services who carry out the fourth output activities		-	9,039		9,039	MinAmbiente-PMU

Supplies (72500)	Design and implementation of a program related with best practices for the labelling, sampling and elimination aimed to the maintenance and service staff located in the target department or regions; promoting that the PCB owners and the maintenance companies will carry out these procedures properly and safely Identification and labeling of third part devices associated with power companies.	6,000	6,000	-	MinAmbiente-PMU
		3,000	3,000	-	MinAmbiente-PMU

	Awareness raising of about 6,000 owners of potentially contaminated PCB equipment on the need to identify and locate these units and the availability of support that will provided to individual owners by the project as well as by the electrical power industry to test, label and dispose (if necessary) of these units in an environmentally sound manner.	-	10,000		10,000	MinAmbiente-PMU
	Project Management Cost	-		4,000	4,000	MinAmbiente-PMU

Communication and audiovisual equipment (74200)	Video: Awareness raising of the PCB contaminated device owners and learned lessons	10,000		30,000	40,000	40,000		40,000	MinAmbiente-PMU
	Translations of the mid term and final evaluations				-		5,000	5,000	MinAmbiente-PMU
Information technology equipment (72800)	Devices purchase				-		10,000	10,000	MinAmbiente-PMU
Grand Total		1,740,000	1,750,000	950,000	4,440,000	288,361	211,639	247,000	747,000

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

N/A

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agencys is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

N/A

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies? capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).

N/A