



GEF-6 REQUEST FOR PROJECT ENDORSEMENT/APPROVAL

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

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PART I: PROJECT INFORMATION

Project Title: Sustainable industrial zone development in Peru			
Country(ies):	Peru	GEF Project ID: ¹	9206
GEF Agency(ies):	UNIDO	GEF Agency Project ID:	150061
Other Executing Partner(s):	Ministry of Production (PRODUCE)	Submission Date:	10/16/2017
		Resubmission Date:	02/16/2018
GEF Focal Area (s):	Multi-focal Areas	Project Duration (Months)	48
Integrated Approach Pilot	IAP-Cities <input type="checkbox"/>	IAP-Commodities <input type="checkbox"/>	Corporate Program: SGP <input type="checkbox"/>
	Security <input type="checkbox"/>	IAP-Food <input type="checkbox"/>	
Name of Parent Program	N/A	Agency Fee (\$)	390,830

A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²

Focal Area Objectives/Programs	Focal Area Outcomes	Trust Fund	(in \$)	
			GEF Project Financing	Co-financing
CCM-1 Program 1	Outcome A. Accelerated adoption of innovative technologies and management practices for GHG emission reduction and carbon sequestration.	GEFTF	1,518,309	28,738,878
CW-1 Program 1	Outcome 1.2. Innovative technologies are successfully demonstrated, deployed and transferred.	GEFTF	300,000	6,437,500
CW-2 Program 3	Outcome 3.1. Quantifiable and verifiable tonnes of POPs eliminated or reduced.	GEFTF	2,295,691	9,281,426
Total project costs			4,114,000	44,457,804

B. PROJECT DESCRIPTION SUMMARY

Project Objective: To enhance regulatory mechanisms for sustainable industrial zone development and increased adoption and diffusion of low-carbon and clean technologies and practices, to reduce unintentional POPs (u-POPs), greenhouse gases (GHG), air pollutants and improve sound chemicals management in one Peruvian sustainable industrial zone.

Project Components/ Programs	Financing Type ⁽¹⁾	Project Outcomes	Project Outputs	Trust Fund	(in \$)	
					GEF Project Financing	Confirmed Co-financing
1. Policy framework for	TA	Outcome 1.1 Regulations for the planning and	Output 1.1.1 Regulation, planning aids, and policies	GEF	235,000	1,124,000

¹ Project ID number remains the same as the assigned PIF number.

² When completing Table A, refer to the excerpts on [GEF 6 Results Frameworks for GETF, LDCF and SCCF](#) and [CBIT programming directions](#).

⁽¹⁾ Financing type can be either investment or technical assistance.

sustainable industrial zone development		management of sustainable industrial zones including policies on industrial pollution management and responsibilities in industrial zones developed and proposed to the government for approval.	for sustainable industrial zone master planning developed and submitted to the government for approval.	TF		
		Outcome 1.2. Policies on financial and non-financial incentives for promoting low-carbon, clean technologies and environmentally-friendly practices developed and submitted to the government for approval.	Output 1.2.1 Proposal for financial and non-financial mechanisms and incentives drafted and submitted.			
2. Capacity building on sustainable industrial zone planning	TA	Outcome 2.1 Improved level of expertise in sustainable industrial zone themes amongst representatives of private and public sectors.	<p>Output 2.1.1 Training modules delivered for planning of sustainable industrial zones.</p> <p>Output 2.1.2 Training modules delivered for resource-efficient and cleaner production, clean and low-carbon technologies.</p> <p>Output 2.1.3 Training modules delivered for sound chemicals management.</p> <p>Output 2.1.4 Upgrade of the existing national database for environmental consultants in the field of low carbon, cleaner production (RECP) and Strategic Approach to International Chemicals Management (SAICM).</p>	GEF TF	315,000	345,600

		Outcome 2.2 Improved and disseminated collaboration between companies, government and financial institutions in environmental management and concluded investments	Output 2.2.1 Technical Unit for sustainable industrial zone development established.				
3. Pilot demonstration of clean and low-carbon technologies	TA	Outcome 3.1 Potential companies and services determined in industrial zone Callao, strategy on clean and low-carbon technology developed.	Output 3.1.1 Detailed feasibility studies for technology application and transfer and cleaner production assessments carried out.	GEF TF	889,000	997,500	
		Outcome 3.2 Inclusive socio-economic projects assessed and initiated.	Output 3.2.1. Set of inclusive socio-economic projects identified				
		Outcome 3.3. Increased public awareness on sustainable industrial zones.	Output 3.3.1. Public awareness and communication events held and project results disseminated.				
	INV	Outcome 3.4. New installations of clean technologies and practices in selected companies implemented and financed.	Output 3.4.1 Access to alternative finance established; clean technology investment projects selected.	GEF TF	2,280,000	41,265,704	
4. Monitoring and Evaluation	TA	Outcome 4.1 Monitoring and evaluation procedures.	Output 4.1.1 Monitoring and Evaluation mechanism implemented.	GEF TF	200,000	325,000	
Subtotal						3,919,000	44,057,804
Project Management Cost (PMC) ^[2]						195,000	400,000
Total project costs						4,114,000	44,457,804

C. CONFIRMED SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE

Please include evidence for co-financing for the project with this form.

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Amount (\$)
Private sector	Agencia Para la Protección de los Recursos Naturales (APREN)	Equity	150,000

^[2] For GEF Project Financing up to \$2 million, PMC could be up to 10% of the subtotal; above \$2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

Private sector	Ciclo - MP Recicla S.A.C	Equity	300,000
Private sector	CITE Energía - Silicon Technology S.A.C	Equity	40,000
Private sector	Climber World Peru S.A.C	Equity	1,000
Private sector	Comercializadora Coerimar E.I.R.L	Equity	500
Private sector	Mecanica E Hidraulica Galex S.A.C.	Equity	50,000
Private sector	Izajes Del Perú S.A.C	In-kind	5,000
Private sector	J&S Ferrería Industrial S.A.C. - Universal Colors	In-kind	200,000
Private sector	Marco Peruana S.A.	Equity	10,000
Private sector	Pure Biofuels Del Perú S.A.C.	Equity	36,000
Private sector	Reactivos Nacionales S.A.	Equity	25,000
Private sector	RF Capital S.R.L.	Equity	30,000
Private sector	Talma Servicios Aeroportuarios S.A.	Equity	150,000
Private sector	CER Grupo GEA	In-kind	440,000
Industrial association	National Society of Industries (SNI)	In-kind	345,600
Donor	State Secretariat for Economic Affairs	Loan	5,000,000
National Government	Ministry of Production	In-kind	1,014,000
National Government	Ministry of Environment	In-kind	510,000
National Government	Ministry of Transport and Communication	In-kind	35,825,704 ³
Implementing agency	UNIDO	Grant	125,000
Implementing agency	UNIDO	In-kind	200,000
Total Co-financing			44,457,804

D. TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES), FOCAL AREA AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country Name/Global	Focal Area	Programming of Funds	(in \$)		
					GEF Project Financing (a)	Agency Fee ^{a)} (b) ²	Total (c)=a+b
UNIDO	GEF TF	Peru	Climate Change	Mitigation	1,518,309	144,239	1,662,548
UNIDO	GEF TF	Peru	Chemicals and Wastes	SAICM	300,000	28,500	328,500
UNIDO	GEF TF	Peru	Chemicals and Wastes	POPS	2,295,691	218,091	2,513,782
Total Grant Resources					4,114,000	390,830	4,504,830

E.

a) Refer to the Fee Policy for GEF Partner Agencies

³Investments considered as contributions to the GEF project n° 9206 from the overall investment portfolio of the Ministry of Transport and Communication.

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS⁴

Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascapes covering 300 million hectares	<i>hectares</i>
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	<i>hectares</i>
3. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services	Water-food-ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins;	<i>Number of freshwater basins</i>
	20% of globally over-exploited fisheries (by volume) moved to more sustainable levels	<i>Percent of fisheries, by volume</i>
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO _{2e} mitigated (include both direct and indirect)	<i>Total emissions: 1,352,719 tCO₂ eq result from bottom up approach</i>
5. Increase in phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern	Disposal of 80,000 tons of POPs (PCB, obsolete pesticides)	<i>Total emission reduction: 8.92 u-POPs (g TEQ/a)</i>
	Reduction of 1000 tons of Mercury	<i>0 metric tons</i>
	Phase-out of 303.44 tons of ODP (HCFC)	<i>0 ODP tons</i>
6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream into national and sub-national policy, planning financial and legal frameworks	Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries	<i>Number of Countries:</i>
	Functional environmental information systems are established to support decision-making in at least 10 countries	<i>Number of Countries:</i>

F. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? **No**

(If non-grant instruments are used, provide an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/CBIT Trust Fund) in Annex D.

⁴ Update the applicable indicators provided at PIF stage. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the [GEF-6 Programming Directions](#), will be aggregated and reported during mid-term and at the conclusion of the replenishment period.

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN WITH THE ORIGINAL PIF⁵

1. Work carried out during the PPG phase was aimed at complementing information and validating the assumptions underlying the Project Identification Form (PIF), as well as strengthening engagement with project counterparts and stakeholder dialogue. Some adjustments were made to the original project strategy outlined in the PIF to respond to the national context and approach, and to adequately address the identified needs and barriers.
2. Targeted overall GHG and u-POPs emission reductions in the PIF were estimated based on similar initiatives, including the Eco-Industrial Park Initiative for Sustainable Industrial Zones in Viet Nam. During the PPG phase, data was collected from national institutions and companies in the target area, so as to obtain a more accurate calculation of expected global environmental benefits. This resulted in an adjustment of the project targets for both GHG and u-POPs reductions, based on national conditions and available budget. The replication factor of 30, as utilized in the calculations of the PIF, was deemed to be unrealistic and adjusted accordingly to a factor 5, which resulted in lower expected uPOPs reductions. As a result, the overall budget for the project was reduced by USD 750,000.

Please refer to the below table for an overview of changes incurred between the CEO submission and the original PIF.

Changes in Project's Strategic Results Framework between PIF and CEO ER			
Components at PIF stage	Outcomes and Outputs - location at PIF stage	Outcomes and Outputs - location at CEO Endorsement	Comments / Rational for changes
1. Policy framework for sustainable industrial zone development	Outcome 1.2. Policies on financial incentives for promoting the use of clean technologies and environmentally-friendly practices developed.	Outcome 1.2: Policies on financial and non-financial incentives for promoting low-carbon, clean technologies and environmentally-friendly practices developed and submitted to the government for approval.	The outcome has been aligned with the priorities of GEF, focusing on promoting low carbon technologies. Additionally, the text has been changed to reflect that the proposals will also include non-financial mechanisms that will be submitted to the Vice Ministry of SME and Industry at PRODUCE.
	Output 1.2. Proposal for adapted financial incentives drafted.	Output 1.2.1 Proposal for financial and non-financial mechanisms and incentives drafted and submitted.	Minor text change to reflect that the proposals will also include non-financial mechanisms that will be submitted to the Vice Ministry of SME and Industry at PRODUCE.
2. Capacity building on sustainable industrial zone planning	Outcome 2.1. Improved level of expertise in sustainable industrial zone themes amongst representatives of government, employees of industrial zone management boards and businesses.	Outcome 2.1. Improved level of expertise in sustainable industrial zone themes amongst representatives of private and public sectors	The outcome was changed given that there are no management boards for industrial zones in Peru. The project will therefore target representatives from public and private sectors.
	Output 2.1. Training modules delivered for master	Output 2.1.1. Training modules delivered for planning of sustainable	During the PPG phase, no zone certification scheme in Peru was identified. The output was changed to

⁵ For questions A.1 –A.7 in Part II, if there are no changes since PIF , no need to respond, please enter “NA” after the respective question.

	planning of sustainable industrial zones, and integration into host community, industrial zone certification	industrial zones.	reflect the identified national conditions.
		Output 2.1.4 Upgrade of the existing national database for environmental consultants in the field of low carbon and cleaner production (RECP) and SAICM.	During the PPG Phase, the Government indicated the need for upgrading the existing database on qualified environmental consultants, hence this output was added.
	Outcome 2.2 Improved and disseminated collaboration between industrial zone management boards and companies in environmental management and concluded investments.	Outcome 2.2 Improved and disseminated collaboration between companies, government and financial institutions in environmental management and concluded investments	The outcome was changed given that there are no management boards for industrial zones in Peru. The project will therefore target representatives from companies, government and financial institutions.
		Output 2.2.1 Technical Unit for sustainable industrial zone development established.	This output was added in order to create an entity, the Technical Unit, which will be responsible for technical activities, stakeholder dialogue and sustainable industrial zone networking.
3. Pilot demonstration of clean and low-carbon technologies	Outcome 3.3. Public awareness raising on sustainable industrial zones.	Outcome 3.3. Increased public awareness on sustainable industrial zones.	Minor text change.
	Output 3.3.1. Public awareness raising and communication and project results disseminated.	Output 3.3.1 Public awareness and communication events held and project results disseminated.	Minor text change.

A.1. *Project Description*. Elaborate on: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed; 2) the baseline scenario or any associated baseline projects, 3) the proposed alternative scenario, GEF focal area⁶ strategies, with a brief description of expected outcomes and components of the project, 4) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCE, SCCF, CBIT and co-financing; 5) global environmental benefits (GEFTF) and/or adaptation benefits (LDCE/SCCF); and 6) innovativeness, sustainability and potential for scaling up.

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

Global environmental challenges presented by industrial parks and zones

⁶ For biodiversity projects, in addition to explaining the project's consistency with the biodiversity focal area strategy, objectives and programs, please also describe which Aichi Target(s) the project will directly contribute to achieving..

3. It is widely accepted that industrial development contributes to the alleviation of poverty, improves access to goods and services, creates jobs and improves standards of living. At the same time, industrial growth consumes resources, water and energy at a rate that cannot be sustained and generates waste and pollutants that cannot be absorbed naturally.
4. Industrial parks and zones, where there is a geographic concentration of industrial processes, often trigger a higher concentration of pollution and environmental degradation. Specifically, industrial activities are widely regarded as one of the biggest sources of GHG emissions in developing countries, a significant driver of global climate change. Energy consumption - from fossil fuel combustion, electricity and heat energy production - is an important source of GHG emissions in industrial parks and zones. Another key source is the transportation of energy resources, raw materials and equipment. In countries without regulations on fuel type, emission control technology (uncontrolled vs. catalytic converter) and vehicle type, GHG emissions from transportation are considerable.
5. Certain industrial processes also pose a threat in terms of chemical waste and emissions released to the environment. Of these, persistent organic pollutants (POPs), are a particular threat as they are highly toxic and are associated with adverse health impacts. In industrial areas where there is a high concentration of metal processing companies such as foundries, u-POPs are directly released into the workplace, which poses a threat to workers and the wider environment.
6. Industrial parks and zones can trigger negative socio-economic impacts on local communities at all stages - pre-construction, construction and operation - which in turn impact on the quality of life of their surrounding communities. If an industrial zone does not have an effective environmental management plan, then there is great risk of chemicals and pollutants contaminating water, land, or air, thereby impacting negatively on the environment and human health. Some pollutants resist breakdown and accumulate in the food chain when consumed by fish or wildlife, which are then consumed by humans. Chemicals can also enter sediments and harm coastal areas, thereby posing a threat to human health and the economic livelihood of communities on the coast.
7. Efforts have been made on a global scale to enforce the use of waste processing and treatment systems and promote the use of equipment that consumes less energy, as a means of reducing negative environmental impacts. Nevertheless, the costs associated with implementing new technologies often serves as a barrier for their adoption, resulting in a significant percentage of industrial areas that operate on inefficient technology.
8. UNIDO has a specialised division for the implementation of the Stockholm Convention, which focuses on eliminating or reducing releases of POPs and u-POPs. Working with industry, UNIDO helps to optimize production processes to reduce POPs and u-POPs emissions and helps develop policies and strengthen the capacity of public and private sector institutions to implement their countries' National Implementation Plans for the Stockholm Convention.
9. UNIDO has developed a methodology with 5 pillars for developing Eco-Industrial Parks (EIPs), which offers the potential for greater efficiency in the use of materials, water and energy and application of cleaner technologies. The net consumption of materials, water and energy in the industrial park and the generation and disposal of waste, air emissions and effluents can be reduced through inter-firm collaboration through the sharing of and learning from good environmental techniques and practices and the mutually advantageous exchanges of previously discarded by-products (including heat and water). This can bring down costs, improve profitability and contribute at macro level to inclusive and sustainable industrial development.⁷

Environmental, social and public health impacts of industrial development in Peru

10. Peru experienced sustained rapid economic growth over recent years, partly driven by widespread development in the processing and manufacturing sectors. Gross domestic product (GDP) grew 184% from 1990 - 2012 whilst emissions increased 224% in the same time period; evidence that Peru's economy is increasingly carbon intensive. Peru has the poorest performance in Latin America in terms of natural

⁷ **Source:** Van Berkel, R. "Global Assessment of Eco-Industrial Parks in Developing and Emerging Economies." *United Nations Industrial Development Organization*, Nov. 2016.

resource use, environmental quality and environmental management indicators and ranks 73 in a list of 169 countries.⁸

11. In the period 2000-2012 GDP registered an average growth of 5.45%, while manufacturing industry grew 5.4% In 2015, industrial production accounted for 13.5% of Gross Domestic Product (GDP) and 9,5% of the total employed population.⁹ Industrial growth carries enormous challenges for the global and local environment. In Peru, industrial agglomerates have emerged impacting adversely on environmental quality and resources, notwithstanding their merits of drawing foreign investment and creating employment. Local and regional environmental impacts include air pollution, soil and water, deterioration of environmental quality and public health. Global effects extend to the emission of greenhouse gases contributing to climate change, ozone depletion and transboundary pollution as reported by the National State of the Environment Report (MINAM, 2013).
12. Even though, according to the national GHG inventory, the manufacturing industry is not the largest overall contributor to GHG (8.1% approximately, counting emissions from industrial processes and energy consumption), GHG emissions have increased by approximately 47% between 2000 and 2012.¹⁰ The Ministry of Production (PRODUCE) and the Ministry of Environment (MINAM) have collaborated in the preparation of Nationally Appropriate Mitigation Actions (NAMAs), including cement, bricks and steel production, focused on improving the industry productivity by implementing clean and efficient technologies and practices (PRODUCE 2017). Currently, the most advanced NAMA led by PRODUCE, is the NAMA for the Cement industry, expected to start its implementation late 2017.
13. The release of emissions and contaminants is associated with inefficient processes and obsolete technologies and equipment. The transfer of environmentally sound technologies is one of the key means to reduce GHG emissions. In Peru, the deployment and diffusion of low-carbon technologies and energy conservation measures needs to be addressed, especially in energy-intensive industrial areas and agglomerates. Better articulated supportive policies need to be adopted and enforced to catalyze a transformational process in the sector towards a low-carbon development path.
14. Under the recently approved National Green Growth Strategy (MINAM, 2016) and the National Strategy for Climate Change (MINAM, 2015), specific strategies and objectives have been set related to the transition towards a more sustainable green, low carbon economy. These include guidelines for carbon inventories in key industrial sectors and specific goals for emissions reductions, included in the Nationally Determined Contributions (NDC) committed via the Paris Agreement on Climate Change.
15. Management of chemicals and chemicals waste within industrial areas has also become a matter of concern in Peru. Relevant chemicals include heavy metals (such as lead in paint, solvents and unintentionally produced POPs (u-POPs) which are released either as product ingredients or as unintended by-products from the oil processing industry and industrial processes, especially from boilers, burners, furnaces, and ferrous and non-ferrous metal production. Numerous companies lack the know-how and technologies for environmentally-safe chemical waste reduction and removal.
16. Informal businesses and human settlements usually flourish in the vicinity of industrial activity, which adds a complex social component to the environmental, safety and public health agenda. There is increasing pressure to relocate industries to new locations outside urban areas as a result of the expansion of housing into designated industrial areas. This happens as the neighbours perceive companies as a threat to environmental safety and public health.
17. Planned industrial zone (IZ) development exploiting synergies between industries, zonification of activities and overall management structures for delivery of services and infrastructure (logistics, energy, water, sewage systems, waste collection and recycling or disposal), has not taken place so far. The PRODUCE National Programme for Production Diversification (PNDP) considers adequate selection of sites but also the provision of public infrastructure and environmental regulation for park construction and operation. However, it fails to define modalities for environmental management of industrial zones.

⁸ **Source:** Emerson, Jay, and Daniel C. Esty. "Environmental Performance Index 2010." *Yale Center for Environmental Law & Policy*, Yale University, 2010.

⁹ **Source:** INEI. "Encuesta Nacional de Empresas 2015." Instituto Nacional de Estadística e Informática, Jan. 2017.

¹⁰ **Source:** Ministerio del Ambiente. "INFOCARBONO" database, available at: <http://infocarbono.minam.gob.pe/>

18. PRODUCE has made progress in the elaboration of first proposals for IZ development that include: (i) design of the institutional and governance model of the National System of Industrial Parks; (ii) elaboration of the regulatory framework of the system, which aims to promote industrial parks in accordance with adequate land use and urban development plans; (iii) demand studies of specific productive infrastructure in different regions of the country; and (iv) preliminary inventories of potential sites for new industrial parks in twenty departments. However, these proposals are still in their infancy.
19. Planned IZ development in Peru has, for the most part, excluded women. In Peru, only 24% of manufacturing enterprises are led by women, of which 66% are micro enterprises; which are effectively excluded from large infrastructure development projects such as industrial parks. In early 2017, PRODUCE and UNIDO held a workshop on gender-responsive green industrial policies. Consultations were held with key stakeholders from the textile, agroindustry, brick production, tannery and wine industries, to understand the challenges faced by women in the manufacturing sector in Peru. The participants identified the use of subjective criteria in recruitment processes and gender stereotyping as barriers for women's participation in industry and emphasised the need for gender sensitization programmes for a wider range of stakeholders¹¹.
20. To this must be added the increase in emergencies caused by natural phenomena, which rose by 54.6% between 2003 and 2013 and were related to climatic variability. Given the geographic, socio-economic and environmental peculiarities of the country, there is strong nexus between the development of more sustainable productive systems and adequate urban planning and public services on one hand, and resilience to the impacts of climate change. Mainstreaming of climate change into industrial zone planning processes is therefore paramount as part of a strategy for disaster and risk management and reduction.
21. Degradation of environmental conditions involves potable water resources, river and sea water quality, air pollution, diffusion of chemicals in soils, and a loss of biodiversity. This is most clearly demonstrated in Peru's coastal area and specifically, the Lima Metropolitan Area (LMA) where the largest concentration of population¹² is found in the desertic alluvial plain (formed by Rimac river) enclosed between the foot of the Andes Mountains and the Pacific Ocean; where the average rainfall is below 10 mm/yr. Lima and adjacent Callao are the industrial centres of the country accounting for more than two thirds of the nation's industrial production. Industrial activities are concentrated in Callao and to the east and south of Lima Region, also the country's main sea port and the international airport are located in Callao, generating intensive transport.

(2) The baseline scenario or any associated baseline projects.

Baseline scenario

22. Despite efforts to promote environmental management systems and regulations in recent years, Peru faces a number of environmental challenges, the majority of which are concentrated in regions of high industrial activity, such as Callao and Lima. Additionally, there are a number of barriers to addressing these challenges, which include: policy and institutional framework, technology, information, delivery skills and financing.

Baseline scenario in Callao and Lima

23. In Callao, industrial areas coexist with residential areas as well as with a few agricultural production sites. It has a total surface area of around 4,600 hectares and 3,180 businesses. A total of 25,000 people are employed here and the Callao District includes several industrial areas (e.g. Gambetta, Faucett, and Argentina Street) hosting businesses from a variety of industrial sectors (e.g. food processing, chemicals and plastics production, foundries and metal processing, logistics). 20% of the country's manufacturing

¹¹ **Source:** Workshop "Women in Green Industry" held in Lima, Peru on May 11th 2017. Press release: <http://www.produce.gob.pe/index.php/k2/noticias/item/423-produce-emprededoras-lideran-el-24-de-empresas-de-manufacturera-en-el-pais>

¹² Lima's estimated population is 9,751,717, according to Lima Population. (2017, July 28). Available at: <http://worldpopulationreview.com/world-cities/lima-population/>

industry is located in the Callao District. The Callao port handles around 75% of imports and exports of the country. Between 2005 and 2010 the export volume of small and medium enterprises located in Callao District increased by a factor of 30.

24. In the Callao region, the variations and changes experienced in the environment affect living conditions and economic and productive activities of all kinds.¹³ According to the environmental diagnosis of the Regional Annual Environmental Assessment and Enforcement Plan – PLANEFA (2017)¹⁴, the main environmental problems in Callao are: (i) urbanization processes and their impacts on the environment; (ii) inadequate provision of basic sanitation services; (iii) inadequate final disposal of solid waste; (iv) conflicts arising from unclear environmental competences; (v) inadequate habits of the population; (vi) air pollution by emissions, and noise; (vii) contamination by lead and other heavy metals; (viii) loss of natural ecosystems; and (ix) contamination of the Callao Bay.
25. The industrial activities in Lima and Callao generate a wide range of pollutants. Significant GHG emissions of industrial activities are mainly caused by food, fish processing, chemical, metal/foundries, plastic and textile industries due to industrial operations with high heat requirements, inefficient technology (low-tech and old technology), losses due to bad insulation and inadequate operation and maintenance. Further inadequate operation of cooling systems lead to liberation of refrigerants agents with very high GWP (global warming potential). Substantial other air pollutants acting as precursors for GHG like NMVOC, SO₂, NO_x and CO were reported as well (e.g. by the Regional Health Department of Callao (DIRESA-Callao)).
26. Untreated effluents that are discharged together with domestic waste water affect rivers which are classified for irrigation and domestic water supply. Due to the strong discharge of the rivers, pollution extends along the nearby sea coast endangering protected marine ecosystems and fishery. Treatment plants receive domestic waste water discharge only, industrial effluents remain untreated. The effluents from industries are mostly disposed directly into the ocean without proper treatment. The company visits during project preparation phase, as well as discussions during the workshops held, highlighted water pollution as major concern. Even toxic bath/waters are disposed untreated to the sea.
27. In addition, contamination of the rivers and soil by heavy metals especially lead from storages was reported exceeding the national threshold of 10 µg/dl in surface water causing severe health problems. Chemical storage was identified to be inappropriate in numerous cases. Solid waste from Callao industries amounts to 100 t/day and landfilling poses another danger for groundwater contamination since it is not based on state-of-the-art design. Substantial PCDD/PCDF emissions are produced from poor combustion and untreated emissions from the metallurgic industry. With three landfills servicing industries in Callao, the majority of companies have not yet applied measures to reduce and treat waste, waste water and off-gas at plant level. Contaminated sites caused by industrial activities slow future development of land due to financial risks of investors.
28. Peru's National Implementation Plan (NIP) for the Stockholm convention, indicates that there is a widespread lack of resources, awareness and capacity at the national level to determine the levels of POPs and u-POPs generated and released in production processes. Additionally, there are no safety and occupational health criteria for the handling of hazardous chemicals in the manufacturing sector, which poses a risk to the workers exposed to these toxins, as well as the wider community. The NIP further indicates that there is no legislation that regulates unintentional emissions of air pollutants generated by industrial processes and that the culture of Resource Efficient and Cleaner Production has had limited uptake in industrial processes.¹⁵

¹³ **See:** Annex H “Environmental and Social Management Plan”, prepared during the PPG for this project (July 2017).

¹⁴ **Source:** Callao Regional Government. *Resolución Ejecutiva Regional N° 000045-2017*. Resoluciones Ejecutivas Regionales del Gobierno Regional del Callao. 2017

¹⁵ **Source:** GEF/PNUMA, “Plan Nacional de Implementación del Convenio de Estocolmo Sobre los Contaminantes Orgánicos Persistentes en el Perú”, Proyecto GEF/PNUMA N° GFL-2328 - 2761 – 4747, Lima: 2007.

Barriers and gaps that need to be addressed

a) Policy and institutional framework barriers

29. A complex, yet weak, institutional structure: Coordination between leading public entities including the PRODUCE, MINAM, OEFA and the Regional and District Environmental Departments needs improvement. Though there are a number of initiatives targeting specific sectors and issues (for example for lead pollution, mercury pollution, foundries, battery recycling); their effectiveness is hampered by governmental inertia and lack of trust. Poor dissemination of results has led to a loss of legitimacy from society including citizens and the private sector.
30. A complex regulatory framework and lack of clarity regarding the responsibilities of authorities. A "second generation" of regulations is being developed in order to overcome limitations of the earliest environmental laws. Also, the National Environmental Management System is still a recent structure: the decentralised levels of government, regional, provincial and district in some sectors (manufacturing industry not being one of them), are still in the learning process about its operational mechanisms.
31. Performance of environmental assessment and enforcement of environmental legislation is inadequate due to shortages in personnel, lack of efficient monitoring equipment, and limited technical know-how. Furthermore, regional governments do not have sufficient competences to legislate in environmental matters pertaining to industrial activities. Many companies do not seem to take appropriate action, in response to poor enforcement and a general culture of low compliance. Furthermore, data on environmental management in the industrial sector, required in order to evaluate environmental performance for certification, is limited and a well-structured data collection and monitoring system is missing.
32. There are substantial gaps in policy instruments for the development and regulation of industrial parks: The National System for Industrial Parks is still in its infancy; effective mechanisms for sustainable industrial zones still need to be identified and operationalized. Leadership from the national and subnational governments is needed for this to occur. Additionally, better articulated supportive policies need to be adopted and enforced to catalyse a transformational process in the sector towards a low-carbon development path. The transfer of environmentally sound technologies is one of the key means to reduce GHG emissions. In Peru, the deployment and diffusion of low-carbon technologies and energy conservation measures needs to be addressed, especially in energy-intensive industrial areas and agglomerates.

b) Technology barriers

33. The majority of company managers, engineers and technology suppliers still see environmental compliance as a burden rather than an opportunity for improved process operations, savings and growth of their market share. By consequence, the delivery market for clean and low-carbon technologies is not yet developed. In many areas, suppliers of such technology are hardly found or are absent altogether, which is another impediment for promotion and awareness-raising among potential customers. The limited number of professional suppliers focuses on the large and profitable industries serving global markets.

c) Information barriers

34. Environmental understanding, awareness and involvement on the part of the general public is often impeded by lack of information, or the means by which it is provided -irregularly and in a non-standard and non-comparable format, and often from scattered sources. Problems of access to environmental information, especially for people impacted by projects or vulnerable to climatic impacts which are mainly women, can be attributed to many factors: lack of technology, the communication language used in a multilingual country, the capacity of the public to assimilate technical information, and territorial isolation, among others. The system therefore needs to be strengthened at the three levels of government administration —national, regional or departmental and local— so as to facilitate citizen participation, on one hand, and to raise the degree of awareness about the prevention of pollution, environmental degradation, and natural disasters. The capabilities of the district and local governments also need to be strengthened, as they account for the bulk of complaints over lack of information and transparency.¹⁶

¹⁶ OECD on environmental performance review, 2016

35. Knowledge and expertise on good environmental practices, green or low carbon technology, or sound management of chemicals and chemicals waste issues of global concern, are low in Peru. Access to this know-how or to the most appropriate technical and technological solutions and equipment is also limited: although environmental regulations have created a market for environmental services and equipment in the past 20 years, the predominant low compliance culture has hindered its growth. Small and medium enterprises lack awareness of environmental norms and standards related to their sectors and few companies are proactive and duly capitalized. Most have a short-term horizon based on short-term gains and reduction of operational costs, which creates a poor business environment for innovation and continuous technological upgrading through investment which prospers in a context of low labour costs and lack of internalization or compensation of all externalities generated. This context is also fertile soil for informal activity.

d) Delivery skills and Mechanisms

36. The high turnover of technical personnel in the manufacturing industry constitutes another significant obstacle, as constant training is required. Upscaling of dual technical-education systems, such as the National Technical Service System SENATI, would help improve the skills of technicians and increase the effectiveness of specific training in the use of high-tech machinery and equipment. Dual-education includes professional practices of students in the companies as part of the technical training program. In addition, vocational and skills training for higher-level employees and entrepreneurs need to be made more widely available, also differentiated according to skills and tailored towards the needs, abilities and availabilities of the target recipients i.e. women.
37. The roster of environmental consultants has grown, but most specialize in environmental management and conservation more than environmental technology and eco efficiency.

e) Financial barriers

38. Access to financial instruments for innovation and “greening” of production processes is still limited in Peru, especially for women. Financial actors have implemented pilot experiences in providing green credits, mainly sourced from international agencies or the national development bank of Peru COFID. Pilots include commercial credits for micro-enterprises, such as the MICROGLOBAL Program which integrate environmental criteria in its loan assessments procedures.
39. Though there are a growing number of credit lines oriented to environmentally sound investments, such as the Environmental Credit Line (Línea de Crédito Ambiental) funded by SECO and implemented by Banco de Crédito, Banco Continental BBVA and Scotiabank Peru¹⁷ the selection criteria often limits the participation of companies from a given sector. Whereas the Technical Assistance Fund (Fondo de Asistencia Técnica – FAT), recently launched by COFIDE, focuses on larger investments (USD 10-20 M) in renewable energy and energy efficiency technologies.
40. Despite recent efforts, environmentally responsible “green” financing in Peru is, at best, incipient. The banking sector is not taking the lead in inducing a market transformation or in offering specific services for SMEs; and the specific knowledge needed in this field is rarely available in commercial banks. Green credit lines, such as the SECO-LCA, therefore remain primarily driven by international agencies.

Baseline activities

41. The baseline activities encompass a set of national, regional and municipal policies, programmes and initiatives, underway without GEF financing. These initiatives include programmes with technical assistance and financial support from multilateral and bilateral agencies; initiatives driven by industry associations, universities and research institutes in the area of intervention. These initiatives, to which the project is expected to contribute, are outlined in the following paragraphs:

¹⁷ For more information, see for example: <http://www.cooperacionsuizaenperu.org.pe/centro-de-ecoeficiencia-y-responsabilidad-social/proyecto-noticias/515-Martes,%2004%20de%20mayo%20de%202010>.

Governmental baseline initiatives that the project will build on:

42. With a view to establishing a strategic approach for developing industrial parks, the Government of Peru ratified the Law on “Techno-Ecological Industrial Parks” (PITES; No. 30078-2011) and approved a legislative decree (1199) for the creation of a National System for Industrial Parks, which encompasses the projects under the PITES initiative. These initiatives, however, neglect to consider sustainability aspects in the development of industrial parks. The Project, therefore, encompasses a wide range of environmentally-sound management practices, including: collective infrastructure and utility services, company-level resource efficiency and cleaner production, industrial symbiosis and synergies, and integration with the local community, to support the development of industrial parks that are economically, socially and environmentally sustainable.
43. In recent years, the Government of Peru has made significant effort to strengthen environmental enforcement through the Agency for Environmental Assessment and Enforcement (OEFA). By the end of 2017, PRODUCE will have transferred the mandate for supervising, auditing and sanctioning in the framework of environmental regulations in all manufacturing industries and commercial activities to OEFA. This is expected to reduce one of the main institutional barriers to ensuring compliance with emission limits and implementation of environmental impact assessments (such as DIAs and EIAs) for investment projects and adjustment instruments (such as DAA, PAMA) for ongoing activities. Though this initiative opens a pathway for environmentally sound investment projects, companies have limited access to appropriate financing mechanisms. The Project will therefore engage with a range of financial actors in an attempt to secure and expand available “green loan” instruments for projects. The General Directorate for Industrial Environmental Affairs (DGAAMI) within the Ministry of Production is the National Sectoral Authority in the environmental field for the manufacturing industry and domestic commerce. The DGAAMI has the mandate to promote environmental management and build capacities on good environmental practices. PRODUCE’s Regulation 017-2015 for Environmental Management of the manufacturing industry and domestic commerce¹⁸ aims to promote and regulate environmental management.
44. In 2016, the Government of Peru ratified the Law on Integrated Solid Waste Management (D. Leg 1278). This law represents a paradigm shift for the manufacturing and waste sectors, in that it promotes an integrated waste management approach, with minimization and valorization of waste as the central principle. It enables the use of discarded materials from productive activities to be used as inputs for manufacturing processes, by allowing their transfer between production processes. As such, this law creates opportunities for industrial synergies and symbiosis¹⁹. The Law also establishes a regulatory scheme, under which PRODUCE is responsible for regulating industrial solid waste management²⁰ to increasing materials efficiency and reduce the production of waste²¹. There is a policy-implementation gap due to companies’ limited capacity to identify and capitalise on opportunities for industrial symbiosis. The Project will therefore build on this initiative, by offering training modules on industrial symbiosis and synergies, so that companies can take full advantage of the opportunities presented by this law.
45. Peru has a national chemicals management profile, which is currently being updated within the framework of the "Safe Chemicals" project and the "Artisanal and small-scale gold mining regional project in South America". Additionally, under the Strategic Approach to International Chemicals Management (SAICM), institutional and technical capacity building workshops on chemicals management (including safe toys, chemicals and waste) have been held since 2011. However, this initiative has still not achieved full outreach. The proposed GEF Project will build upon this first initiative and will expand the content and target groups for wider application, including reduction of chemicals use and substitution of chemicals.

¹⁹ **Source:** Ministerio del Ambiente. “Reglamento de la Ley de Gestión Integral de Residuos Sólidos”. Resolución Ministerial N° 174-2017-MINAM. 2017

²⁰ **Source:** DL 1278, Octava Disposición complementaria transitoria.

²¹ **Source:** DL 1278, Octava Disposición complementaria transitoria.

46. The Technological Institute of Peru (ITP) seeks to promote industrial development via the national network of Centres for Innovation and Technology Transfer (CITEs). These centres, located throughout the country, provide capacity building and technical assistance to companies with a view to improving their competitiveness, supporting them in adopting new technologies and developing new products. Currently, an environmentally sound mining CITE is being developed in the Madre de Dios Region; a private CITE specialized in “Materials” has been launched for the city of Lima and, close to Lima, in Ancon, a CITE that offers specialised energy services to industries has been established. These centres offer an opportunity for the transfer of efficient technologies and best environmental practices to industrial sectors, however their service portfolio is limited in terms of environmental awareness. The Project therefore seeks to build the capacities of selected CITEs so as to ensure that the services they supply to companies imbed sustainability aspects.
47. The Government is currently implementing a series of recommendations put forward by the Partnership for Action on Green Economy (PAGE) in the framework of the Country Project for Peru²², which aims to integrate the concept of green growth into development policies and support the Peruvian government in moving towards a more sustainable industry. These include: (i) to select appropriate measures to reduce resource-intensity of productive processes in strategic subsectors; (ii) to promote a “green” development path, (iii) to increase economic diversification and strengthen value chains; (iv) to foster regional economic development and support small and medium enterprises (SME); (v) to stimulate new job creation; (vi) to increase the level of training, promote organizational capacities and provide technical assistance; (vii) to encourage the creation of industrial parks and clusters; and (viii) to expand access to financing instruments for investment in clean technologies; (ix) to create fiscal incentives to promote green innovations; and (x) to improve information to enable efficient analysis of industrial sectors and sub-sectors and evaluation of policy interventions and development plans. These recommendations are highly relevant to this GEF Project and will form a basis for the development of policies on financial and non-financial incentives for promoting low-carbon and clean technologies and environmentally-friendly practices.
48. Given the volume of industrial activities and the export of goods in the area of Callao, the Government of Peru has a substantial investment portfolio dedicated to improving infrastructure and connectivity (including gas pipelines, roads, airports and ports) in this region. The Ministry of Transport and Communication alone is implementing investments amounting to USD 300 million in Callao, with USD 35 million expected to contribute to the improvement of the project target area and the reduction of negative environmental impacts.
49. The Government has established a Development Plan for 2011-2021 for the region of Callao with four key pillars: (i) overcoming poverty and inequality (ii) development of eco-efficiency and competitiveness, (iii) strengthening governance and (iv) environmental management and land planning. The second pillar is subdivided into two principal objectives: (i) development of advanced road systems and communications to support regional development and (ii) enabling conditions for a competitive and sustainable economic growth which improves the quality of life of the society. The investment in road systems and connectivity alone amounts to over USD 900,000,000, which will play an influential role in shaping flows of goods, services, knowledge and people and thereby accelerate the development of the region. The Development Plan, however, is focussed on large investment flows and does not encompass initiatives at the company-level, hence the project will build on the key pillars and support companies in implementing low-emission, cleaner production technologies and processes.

Financial institutions baseline initiatives that the project will build on

50. The Environmental Credit Line (Línea de Crédito Ambiental) funded by the State Secretariat of Economic Affairs (SECO) and implemented by selected commercial banks with the technical assistance of the National Cleaner Production Centre in Peru, Centre for Eco-efficiency and Social Responsibility (CER), accounted for 38 soft environmental loans (with a value of USD 14,786,000) from 2010-2017. 21 of these loans were administered in the last 3 years (CER/Grupo GEA, 2017) for the industrial conversion of products and processes. There are important lessons to draw from this experience, including the design of

²² **Source:** PAGE “Perú: La transición hacia una industria verde. Perspectivas de la industria manufacturera”. 2015

bankable proposals; the assessment process and procedures carried out by banks; and the conditions under which loans are issued. These will feed into the Project for the development of socio-economic projects.

CSO and agency baseline initiatives that the project will build on

51. CER provides technical assistance and advisory services for the implementation of eco-efficiency projects. Through the ECOADEX initiative, in cooperation with the Association of Peruvian Exporters (ADEX) and MINAM, CER supports SMEs in implementing cleaner production, reducing operational costs and increasing their competitiveness, in addition to complying with environmental regulations. The Project hopes to build on the experiences and lessons learned generated through ECOADEX and to employ the technical assistance of CER in delivering training modules on eco-efficiency and cleaner production.
52. UNIDO's Programme for Country Partnership (PCP) is an innovative model of partnership at the country level that brings together actors in a multi-stakeholder platform to leverage investment funding and deliver large-scale development impact. Since 2016 UNIDO and PRODUCE have been developing a multidisciplinary technical cooperation framework for the PCP Peru to support the national development agenda. The PCP Peru focuses on four key interlinked components: (i) quality and innovation; (ii) value chain and enterprise development; (iii) sustainable industrial parks and zones; and (iv) industrial resource and energy efficiency and renewable energy. The Government of Peru has expressed a strong national interest in the development of sustainable industrial parks and zones and prioritised a number of activities under this component, including a sustainability analysis of a master plan for a proposed industrial park and a national strategy for the development of sustainable industrial parks. The knowledge gained through these initiatives will feed into the review of the regulatory framework for industrial zones and the networks developed through the PCP Peru will facilitate outreach, dissemination and replication of the Project results.
53. UNIDO's Programme on resource efficient and cleaner production (RECP) aims to accelerate the application of preventive environmental strategies to processes, products and services to increase efficiency and reduce risks to humans and the environment. The RECPnet, with over 65 members around the world, seeks to promote the application, adaptation, scaling up and mainstreaming of RECP concepts, methods, policies, practices and technologies in developing and transition economies. This Project will capitalise on the knowledge and experiences of the RECPnet and advocating the relevance, needs and benefits of RECP best practices for enterprises.

Problem statement

54. The development problem addressed by the proposed Project "Sustainable industrial zone development in Peru (GEF ID 9206)" is formulated as follows: *"The use of inadequate or obsolete equipment and processes in undercapitalized SME industries, in combination with a deficient policy, capacity building and support infrastructure, utility services and lack of territorial planning, leads to a loss of productivity, reduced value creation and high social, environmental and economic externalities."* The externalities include public health and safety risks and accidents, contamination of the environment by a range of pollutants and chemical waste, and the release of, amongst others, the greenhouse gases CO₂ and CH₄ into the atmosphere, contributing to global warming. This provides a rationale for GEF involvement under the focal areas Climate Change Mitigation and Chemical Waste.

(3) The proposed alternative scenario, GEF focal area²³ strategies, with a brief description of expected outcomes and components of the project.

55. The alternative scenario foresees to enhance regulatory mechanisms to develop a Sustainable Industrial Zone in Callao, Peru. This will lead to reduced unintentional u-POPs, greenhouse gases (GHG), air pollutants and improve sound chemicals management and foster the increased adoption and diffusion of

²³For biodiversity projects, in addition to explaining the project's consistency with the biodiversity focal area strategy, objectives and programs, please also describe which [Aichi Target\(s\)](#) the project will directly contribute to achieving.

low-carbon and clean technologies and practices. The key components of sustainable industrial zones can be defined as: (1) management, (2) company level resource efficiency and cleaner production, (3) industrial symbiosis and synergies, (4) integration with local community and natural environment, (5) spatial planning and zoning, and (6) collective zone level infrastructure and utility services.

Development objective

56. The objective of the Project has been formulated as follows “To enhance regulatory mechanisms for sustainable industrial zone development and increased adoption and diffusion of low-carbon and clean technologies and practices, to reduce unintentional POPs (u-POPs), greenhouse gases (GHG), air pollutants and improve sound chemicals management in Peruvian sustainable industrial zones.”

Long-term solution

57. The proposed solution is oriented towards: (i) strengthening of institutional and technical capacities of key government entities involved in industrial policy and industrial zone development; (ii) strengthening of know-how and technical skills taking gender mainstreaming into consideration along the value chain to identify, implement and sustain low-emission, cleaner production technologies and processes; (iii) the design and establishment of a technical unit for industrial zone development in Peru; and (iv) demonstrating the potential and benefits of clean technologies in selected industries.
58. Being a multi-focal area initiative, the Project builds upon the climate and chemicals nexus by promoting cleaner (“green”) industry and is aligned with CW-1 Program 1 by demonstrating new tools and economic approaches for managing harmful chemicals and waste in a sound manner. The Project is aligned with CW-2 Program 3 by targeting the reduction of unintentional POPs and stocks of POPs in industry. The Project is aligned with GEF-6 CCM-1 Program 1 by timely development, demonstration and deployment of low-carbon technologies and mitigation options, specifically energy-efficient technologies increasing productivity of industrial production processes. Specifically, the approaches followed would fit under the SAICM approach to chemical waste. Some activities under the Project may contribute to CW-2 Program 5 by addressing ODS – however, these benefits are not specifically pursued and not claimed ex-ante by the Project.

Project strategy

59. The Project strategy is to develop a Sustainable Industrial Zone model which can be replicated in industrial areas in Peru, based on policy development, capacity building and pilot demonstration projects to reduce u-POPs and GHG emissions. The project will strengthen the country’s capacities to implement sustainable industrial zones in the medium-term, as well as to promote cleaner production methodologies in industry sub-sectors and enforce compliance with (increasingly stringent) environmental standards. To this purpose, the Project (Component 1) will contribute to building institutional capacities with a focus on both men and women in key government entities (primarily PRODUCE). Underpinning this capacity building is the design of tailored planning tools and assessment methodologies, as well as updating of information on industrial activities and related socio-economic and environmental aspects which is currently incomplete or insufficiently validated.
60. In spite of sustained interest of (larger) industries to cluster at convenient locations, the planning process of industrial zones, followed by site preparation, provision of common infrastructure and services, and posterior occupation of industrial lots by the private sector; is not well articulated and structured. Financial risks are high for the public and private sector and by consequence investment decisions are postponed or abandoned. Among other instruments, the Project envisages developing and putting into practice a road map for the development of sustainable industrial zones and as such, accelerate the deployment of relevant programs of PRODUCE and other stakeholders. Indirectly, this result is expected to leverage capital from development banks in the medium term. The results delivered under Component 1 directly benefit the national government, companies and industrial conglomerates that make up subnational productive systems, and investors.

61. Similarly, professional skills and know-how are addressed which will include a gender dimension (Component 2) targeting industrial zone planners, suppliers of cleaner production methodologies, and experts in handling and effective management of chemicals (SAICM). With industrial planning benefits expected to materialize in the medium term, the application of RECP and sound chemicals management methodologies is envisaged to deliver tangible environmental and economic benefits in the short-term already for both men and women (during Project execution). Some clean and low-carbon technical and technological upgrades have payback times of less than 1-2 years, offering financial gains to a business owner before conclusion of the Project.
62. The Project aims to expand the supply of RECP and sound chemicals management related services to address current “hot-spots” in the short-term and prepare the country for addressing the huge, latent demand for such services in the medium- and long-term. Market confidence in the quality and objectiveness of supplied services is improved by introducing a national registry for qualified RECP professionals. This registry will also ensure continued supply of consultancy services beyond the duration of the Project. Awareness raising and training of industry staff, targeting a 30% participation of women, and public officers is further envisaged to strengthen reporting and verification of GHG emission reductions and handling and transport of chemicals, enabling the progressive incorporation of industry sub-sectors into the national Register for Pollutants Emissions and Transfer (RETC) which in turn, facilitates reporting by Peru to the relevant international conventions.
63. Component 3 will promote pilot investments in cleaner production technologies and chemical waste management to demonstrate their benefits and achieve the expected GEB. Companies from the following industrial sectors will be targeted: foundries; metal processing; plastics; textiles; food; ship building; fish processing; chemistry; repair workshops; and paints. Moreover, the Project will apply principles for sustainable industrial zone development and improve overall coordination with the support of the technical unit for sustainable industrial zone development, in Callao and other areas, and investing in upgrading of collective infrastructure and services such as improved roads, circulation plan and logistics; treatment of industrial wastewater and recycling of industrial residue streams, among others.
64. The demonstration pilot is expected to deliver tangible environmental benefits under the GEF CCM and CW focal areas and contribute to a gradual process of transformation in the area that is already taking place. The steady expansion of Callao Port, a shift from bulk commodity transport and shipping to container handling, warehousing and logistics puts a claim on the limited physical space. Concurrent claims derive from continuous urbanization and associated capital investment in fixed (real estate) assets, as well as the needed extension of the international airport Jorge Chávez. While challenging, mixed use of land is a reality in Peru; hence, the Project aims to generate useful lessons and experiences for industrial zone development that can feed into planning tools for replication elsewhere, especially in relation to engagement with the surrounding population (community). The ongoing PCP Peru will facilitate replication in industrial areas, feeding on the knowledge gained through this national programme with PRODUCE. Sustainable industrial parks and zones are a key component of the PCP Peru and the Government of Peru has expressed a strong national interest in the development of these areas. Moreover, the chosen intervention area in Callao exhibits one of the highest contamination levels in Peru affecting the metropolitan area. Mitigation of GHG and u-POPs emissions in the area is a national priority for which the present Project is instrumental. As such, the Project fits into a broader set of national initiatives supported by multilateral and bilateral agencies and development banks.
65. The estimated total project budget is US\$ 48,571,804 including a grant of US\$ 4,114,000 that is sought from the GEF to cover incremental costs. The proposed GEF-funded activities will accelerate the development of sustainable industrial zones in Peru, including market development for low-emission and cleaner production technologies and adequate chemical waste management. GEF-funded activities will further create investment opportunities, thereby mobilizing capital resources from third parties.

Project components

66. The envisaged Project outcomes, outputs and activities are described in the following paragraphs. Please refer to the Strategic Results Framework for the proposed progress indicators and targets (Annex A).

Outcome 1.1 Regulations for the planning and management of sustainable industrial zones including policies on industrial pollution management and responsibilities in industrial zones developed and proposed to the government for approval.

67. This outcome will result in improved regulations on the planning and management of sustainable industrial zones. This includes strengthened and accelerated processes for institutional and policy development with new methodologies and tools for planning and assessing the environmental performance of industrial zones. Awareness on the cross-cutting character of sustainable industrial parks and zones policies will be increased at government level, with reference to territorial planning, decentralized and regional development, environmental protection, job creation, public health and occupational safety, as well as Peru's commitments to international conventions.
68. This outcome will deliver improved institutional capacity to address the identified barriers related to information and the policy and regulatory framework. Substantial commitment from incumbent authorities (PRODUCE, MINAM, MEF, local and subnational governments), as in-kind contributions, will be provided for reviewing and discussing politically and technically viable options. Additional support is expected for channelling proposals (concept resolutions and secondary legislation) through the applicable legislative bodies.

Output 1.1.1 Regulation, planning aids, and policies for sustainable industrial zone master planning developed and submitted to the government for approval.

This output encompasses a number of activities to develop a sustainable industrial zones regulatory framework which will enhance government capacities, as follows:

Activity 1.1.1.1 Assessment and development of the sustainable industry zones regulatory framework.

69. This activity comprehends a detailed analysis of policies and regulations affecting the establishment of new sustainable industrial zones (green field) and the transformation of existing industrial conglomerates/areas into sustainable industrial zones (brown field), with a view to facilitating the adoption of innovative technologies and management practices for u-POPs and GHG emission reduction. This review will provide recommendations to streamline regulatory frameworks amongst the different government agencies and define and apply key criteria for sustainable industrial zones in Peru, and to the preparation of policies. Additionally, this review will integrate recommendations for the management of climate risks into the existing policy framework in Peru.

Activity 1.1.1.2 Engagement of the public and private sector in the sustainable industrial zone development with a multi-stakeholder approach

70. There are current challenges in Peru in developing fundamental basic regulations on environmental industrial management at industrial zones. In this regard the Ministry of Production has stressed the importance of support in this matter. Given the multi-disciplinary and complex nature of sustainable industrial development and industrial zones, the project will actively apply multi-stakeholder approaches focusing on government agencies. This approach will engage the key ministries for sustainable industrial development, aiming to facilitate the exchange of viewpoints and policy issues and to define specific actions for the short- and medium-term, as well as considering the OECD Implementation Action Plan under MINAM (see Environmental Performance Review, OECD, 2016). Further, as part of the process to optimise the formulation and development of related regulatory frameworks for sustainable industrial zones, pro-active consultation with the private sector (enterprises, SNI, CCL, academy, among others) will be sought (e.g. roundtable discussions, company visits). During this process, efforts will be made to assess climate change

risks from the perspective of both the public and private sector, in order to support proactive risk management.

Activity 1.1.1.3 Development of a road map for sustainable industrial zone development.

71. This activity aims to strengthen the development process of sustainable industrial zone development with a view on increasing overall cost-efficiency, environmental performance and identifying risk factors (such as: planning issues, land use conflicts, social impacts, environmental constraints, climate change and natural disaster risk, etc.) at an early stage. By carefully structuring the development process, investment risks can be controlled and reduced. Adequate structuring of the process facilitates negotiations with municipalities and local stakeholder groups. The reduced overall risk profile allows engaging with the private sector in an early stage, both for investment in infrastructure and industrial services (such as waste management), as well as securing commitment from industries to actually establish their production facilities within a projected industrial zone.
72. Various guidelines and pilot strategies have been developed in the past decades which are directly and indirectly related to the concept of sustainable industrial zones. UNIDO, World Bank and GIZ are currently developing a common understanding on eco-industrial parks (i.e. sustainable industrial zones) in specific guidelines and are consolidating requirements into a practical framework which can be applied to greenfield and brownfield industrial parks throughout the world. These initiatives will feed into the development of a “road map” - consisting of a structured process and guidelines for industrial zone development in Peru. It will be formulated based on international experience, specifically best practices from OECD countries, case studies in other countries in Latin America, and experiences obtained so far in Peru. The roadmap will be aligned with national mitigation and adaptation measures (planning for climate impacts and decreasing vulnerability). Master planning for industrial parks will inherently involve mitigation measures, as the infrastructure proposed under the SIZ methodology envisages shared infrastructure and the exchange of materials, energy, water and by-products.

Activity 1.1.1.4 Compilation of information for updating of baseline information concerning industrial zones in Peru and associated social, economic and environmental externalities, with a focus on SMEs in Lima and Callao provinces.

73. This activity aims to strengthen national capacities to collect quality data on industrial activities in industrial areas, including the volume and type of primary material streams, industrial outputs and environmental impacts such as u-POPs and GHG emissions.
74. PRODUCE will be provided with basic equipment and software licence to collect the required information of companies in the industrial area of Callao. UNIDO will provide training in order to develop sufficient national capacities for sustained data collection activities. The model will then be replicated using the same technology and methodology in other industrial areas of Peru.
75. Proposed actions encompass a series of specialized consultancies to update and enhance the existing information base. The expected deliverables include reports, maps and graphics, and electronic databases in a suitable format for incorporation in public sector information systems.

Activity 1.1.1.5 Design of methodologies and tools for planning, analysis and evaluation of industrial zones in Peru, including business needs, infrastructure and services, and reduction of vulnerabilities to climate change.

76. Recent experiences in Peru have made evident the lack of methodologies and tools to support the planning process of industrial zones, assess different scenarios and sustain the development process towards a productive system that (i) creates value, (ii) is socially and environmentally sustainable, and (iii) is resilient with respect to the effects of climate change and other natural risks. Moreover, there is a need for better understanding the specific needs of industries to operate efficiently, which is key for the design of infrastructure (logistics) and to ensure adequate utility services. The climate agenda has illustrated the urgent need to move towards climate resilient industry, hence, the methodologies and tools to be developed will include sustainable energy solutions and emissions reductions. Specific emphasis will be placed on developing tools to facilitate measurement and regulation of u-POPs and GHG emissions industrial processes.

77. Besides support for planning processes, this activity further aims to increase insight into the functioning of existing industrial agglomerates and areas with dense manufacturing enterprises as present in Lima and Callao. Among other indicators, the number and volume of internal transactions within an industrial area provides insight in its complexity and potential for value creation. Acknowledging the low levels of interconnectivity of value chains, on average, in Peru compared to other countries in the region, there is substantial scope for improvement. A better understanding of transactions and the demand for business-to-business services provides an entry point for addressing sprawling of an informal service sector to promote formal employment creation – a key condition for anchoring industrial development in surrounding communities.
78. GEF funding for this activity will be used to hire specialized consultants in close engagement with the national counterpart (PRODUCE). With a view to strengthening in-country knowhow on industrial development, preference will be given to national firms or institutes able to deliver the requested services (potentially: national universities), supported by international experts as and when appropriate. Alongside the delivery of requested tools and methodologies, this output can support the production of technical / scientific papers as part of the Project's Knowledge Management strategy.

Outcome 1.2: Policies on financial and non-financial incentives for promoting low-carbon, clean technologies and environmentally-friendly practices developed and submitted to the government for approval.

79. This outcome will result in an improved business context for companies to adopt, cleaner production technologies and environmentally-friendly practices, including adequate usage and handling of chemical substances. This includes improved fiscal and tax instruments, specifically with regards to their effect on SME industries. In addition, SMEs will be able to access investment capital under favourable conditions, given new credit lines in this market, which still heavily relies on multilateral and bilateral cooperation agencies. With a view on long-term market development and sustainability, this outcome will also result in increased interest among key national financial institutions (such as COFIDE and BCP) to offer “green loans”.
80. Non-financial incentives are equally relevant, as companies face multiple administrative hurdles to establish themselves and start operations. This is further complicated by financial and information barriers. Industrial zones can provide an opportunity for simplification of procedures, including processes for obtaining environmental permits. Moreover, promotional activities and “match-making” between companies is envisaged to facilitate knowledge sharing and improve awareness on cleaner technologies and access thereto.
81. Key partners for this outcome include PRODUCE the Ministry of Economy and Finance (MEF), the Superintendencia Nacional de Aduanas y de Administración Tributaria (SUNAT), financiers including COFIDE, BCP, and SECO, MINAM and OEFA. GEF resources will be used to hire one or more experts for engaging with the sector and the organization of meetings and events; to cover travel costs and hosting of events; and to produce promotional material. As a result of this effort, the Project aims to leverage additional capital on top of the (loan) co-finance already committed.

Output 1.2.1 Proposal for financial and non-financial mechanisms and incentives drafted and submitted

82. This output comprises a number of activities to ensure the active engagement of relevant stakeholders to elaborate a set of financial and non-financial mechanisms and incentives for the adoption of low carbon technologies, sound chemicals management and environmentally friendly practises by industry. These incentives will be discussed by legislative bodies and the relevant stakeholders for possible adoption and enforcement.

Activity 1.2.1.1 Design and submission of financial and non-financial mechanisms and incentives for cleaner production focused on SME.

83. A review of incentives offered for promoting low-carbon and clean technologies in small and medium size enterprises, e.g. the MYPEs Verdes Program, will be carried out, including fiscal and tax benefits; national and local schemes for encouraging sound chemical waste management and GHG emission reduction; and private-sector driven mechanisms such as branding of environmentally responsible production (“green

products”). Entry points in national legislation for enabling of incentives will be identified and specific proposals drafted. It is expected that MEF will lead the development of this activity in close coordination with PRODUCE and MINAM.

Activity 1.2.1.2 Advocacy with existing financial actors offering loan instruments for investment in low-carbon and clean technologies to secure continuation and expansion of these services.

84. These activities will engage with a range of financial actors and make a strong attempt to secure and expand available “green loan” instruments (such as the Línea de Crédito Ambiental – LCA) provided by SECO (Switzerland) and implemented by CER in Peru through the following banks: BCE, Interbank, and Scotiabank Peru. Besides advocacy with SECO and other potential bilateral financiers, the Project will establish a dialogue with the national banks for mainstreaming of cleaner production lending into the portfolio based on multiple capital sources. The results of this activity will as well contribute to the development of the “green industry policy” and the “MYPEs Verdes Program”.
85. Besides making available additional capital for “green” investments, issues related to the operation of existing instruments as well as limitations concerning eligibility for specific sectors and segments, primarily SME will be assessed. Proposals for improvement will be drafted in close dialogue with financial sector counterparts. In addition to bilateral meetings, it is envisaged to organize a plenary event on “green industrial investments” targeting the bank sector, government and international financing agencies. Engagement with ASBANC will be sought as one of the pivotal entities to communicate with the sector. Second-tier financial institutions including COFIDE will be involved in this dialogue to explore opportunities for increasing lending capacity to the industrial sector (with a focus on SME) during and after the Project’s duration.

Activity 1.2.1.3 Development of mechanisms to facilitate the application of environmental management instruments

86. This activity involves engagement with national and municipal authorities, regulatory bodies and industry sector associations to review current administrative processes for SME industries and identify opportunities for improvement, simplification and streamlining. Efficiency gains are expected for individual SME companies as well as for industrial zones. Small and micro-enterprises may benefit from simplification of permitting procedures or combined collection of municipal taxes and levies. In line with the environmental sectoral regulation, holders of investment projects (new activities) or ongoing activities of micro or small enterprises located in the same geographical area and which generate similar or cumulative impacts may request the competent authority to ensure that the environmental management instruments to which they relate are provided.

COMPONENT 2. CAPACITY BUILDING ON SUSTAINABLE INDUSTRIAL ZONE PLANNING

Outcome 2.1 Improved level of expertise in sustainable industrial zone themes amongst representatives of private and public sectors.

87. This outcome will result in strengthened capacity of national policy makers and planners in PRODUCE and other government institutions to facilitate substantive and comprehensive planning of sustainable industrial zones, focusing on brown field operations. Public officers from national, regional and municipal governments will have the means to support and implement plans for sustainable industrial zones, with a focus on SME. Personnel from PRODUCE, MINAM, MEF and MINEM, and other institutions including the private sector (SNI, CONFIEP Chambers of Commerce, etc.) will be invited. This outcome will also result in increased market demand through enhanced awareness and know-how among industrial business on clean technologies, including their potential for increasing productivity, reducing pollutants (uPOPs and GHG), resource-efficiency and cost reduction which can translate into higher profitability and competitiveness.
88. Capacity building further extends to the supply chain for RECP methodologies by raising the skills and competence of practitioners and increasing the number of service suppliers in these fields. A national database of qualified RECP professionals will be delivered to increase industry confidence in the quality of

the RECP services supplied. Partnerships with relevant stakeholders such as universities, NGOs, CER and industry associations will be established, not only to act as a host for the training programmes, but also as part of an effort to institutionalize training curricula as part of the Project's exit strategy. The PMU will engage CER and relevant universities, such as the Catholic University of Peru (PUCP), the National University of Engineering (UNI) and the National University of Callao, to deliver training modules in line with UNIDO methodologies.

Output 2.1.1 Training modules delivered for planning of sustainable industrial zones.

Activity 2.1.1.1 Design and deliver training modules for planning of sustainable industrial zones

89. The training modules will address the 6 key components of SIZ: 1) sustainable industrial zones and parks management, (2) company level resource efficiency and cleaner production, (3) industrial symbiosis and synergies, (4) integration with local community and natural environment, (5) spatial planning and zoning, and (6) collective park and zone level infrastructure and utility services. The PNDP, which is responsible for the design of master plans for a first batch of identified industrial zones will be considered for this activity which will draw upon the tools and methodologies delivered under Output 1.1.1.
90. Given the national relevance and scope of this training, participants will be invited from all regions of the country where industrial zone development is relevant. Subnational governments are expected to bring in specific experiences with industrial zones and benefit from the training to improve local initiatives.
91. Trainings will also aim to enhance institutional and technical capacities within PRODUCE for evaluation of industrial zone development scenarios and plans.

Output 2.1.2 Training modules delivered for resource efficient and cleaner production, clean and low-carbon technologies.

Activity 2.1.2.1 Update information regarding the capacity needs for sustainable zone development focusing on policy development, management and planning skills, services required for the industry and financial incentives development

92. In the PPG phase workshops and surveys were carried out to assess the capacity needs among relevant stakeholders. There is a need to update the status of the capacity needs to enable government officials to develop sound industrial zone management and planning skills. The assessment should include an evaluation of the needs in the area and at national and subnational level. The report should provide a clear definition of the subjects and training courses to be developed for government officials, local authorities, services providers and company managers.

Activity 2.1.2.2 Design and deliver training modules for resource efficient and cleaner production technologies.

93. The activity will design and deliver training modules to increase know-how on cleaner production methodologies. The activity will target the industrial (manufacturing) sector but will extend to PRODUCE, and other relevant public officers, representatives from business associations, financiers, and relevant consultants and professionals.
94. Following UNIDO's RECP methodology, it is planned to deliver three main training modules and adopt these to local conditions: (a) Training in clean and low carbon technology assessments to be developed with the participation of local technology providers; (b) Train-the-trainer courses on resource efficient and cleaner production; (c) Training of service suppliers on the application of industrial clean development methodologies and standards as well as SAICM related topics..
95. A number of training courses will be organized together with local experts, with the aim of enhancing knowledge on the impact of GHG emissions and chemical waste (POPS, u-POPs, heavy metals, ODS) on human livelihoods, public health and the environment; the system of Global Conventions to combat contaminants and global warming and Peru's commitments under these conventions; and the importance of resource-efficient production and technologies to reduce externalities and foster value creation across the national economy.

Output 2.1.3 Training modules delivered for sound chemicals management.

Activity 2.1.3.1 Design and deliver training modules for sound chemicals management.

96. This activity encompasses the implementation of training modules to improve the knowledge and understanding of sound chemicals management in industrial areas and enable public and private stakeholders to promote projects to up-take the implementation of specific instruments for the sound management of chemicals and waste. The activity is focused on the industrial (manufacturing) sector but will extend to PRODUCE and other relevant public officers, representatives from business associations, financiers, and relevant consultants and professionals. Training modules on u-POPs reduction will primarily be delivered to foundries and replication toolkits will be developed and distributed in a number of industrial zones or parks, so as to enhance the potential for u-POPs reductions in Peru.
97. UNIDO has developed two industry-specific training courses on sound industrial chemicals management which foster the up-take of SAICM: *Chemical Leasing* and *Innovative Approaches to the Sound Management of Chemicals and Waste Management of Chemicals (IAMC)*, both trainings form part of the IOMC Internet-based Toolbox for Decision Making in Chemicals Management (IOMC Toolbox).²⁴ The training modules will be aligned with national conditions and a number of trainings will be organized for government officials and professionals from the private sector. The trainings will be delivered in cooperation with the academy such as the Pontifical Catholic University of Peru (PUCP), University of Engineering and Technology (UTEC), the National University of Engineering (UNI), among others in order to create synergies and prepare the ground for up-scaling.

Output 2.1.4 Upgrade of the existing national database for environmental consultants in the field of low carbon, cleaner production (RECP) and sound chemicals management.

Activity 2.2.1.1 Upgrade of the national database of PRODUCE for environmental consultants in the field of cleaner production and sound chemicals management.

98. Manufacturing companies are not familiar with cleaner production services and therefore face significant challenges in identifying and contracting qualified consultants to assess their production processes and facilities. Though PRODUCE has a database on national service providers, there is no information on cleaner production service suppliers and therefore no reference standards with respect to the type and quality of the services they deliver. PRODUCE therefore requested support in upgrading the existing national database, which would facilitate setting up a certification scheme for green industry consultants.
99. This instrument was devised during the PPG as a measure to increase trust and transparency enabling the sector to engage with the market as a group and to identify and promote standardized products and services such as Quick Scans and Audits in energy efficiency, process innovation, sound chemicals and chemical waste management, etc. This in turn, provides an entry point for the implementation of government programmes and incentives for technological upgrading.

Outcome 2.2 Improved and disseminated collaboration between companies, government and financial institutions in environmental management and concluded investments.

100. The outcome will result in enhanced collaboration among project partners for improving the management, infrastructure and utility services in sustainable industrial zones. Such zones are characterized by large heterogeneity, poor integration of local industries into agglomerates or local value chains, and absence of a dedicated and collective infrastructure and utility services for the local industries. In the specific case of the Callao pilot project, the technical unit within the PMU will support the SIZ development, delivering technical services and supporting inter-institutional collaboration. The Project area is challenging given the complex institutional context involving the Regional Government (Province of Callao), Callao District (Municipality) and the presence of entities of national strategic importance, including the Port of Callao, the International Airport Jorge Chavez, and Marine and Army facilities.
101. Besides delivering a tailored proposal for the project target area, this outcome will produce useful models for establishing technical units in other industrial zones (greenfield and brownfield) of the country and collect lessons learned and experiences to feed into the roadmap (as described in 1.1.1.2), thereby contributing to the replication of sustainable industrial zones in Peru. This outcome will further enable local

²⁴ IOMC Toolbox for Decision Making in Chemicals Management. Available at: <http://iomctoolbox.oecd.org/default.aspx?idExec=b092d221-a3ec-432b-9edc-82c87bce413c>

SME industries in prioritized subsectors to prepare proposals for investment in low-carbon, cleaner production and sound chemical management projects.

Output 2.2.1 Technical Unit for sustainable industrial zone development established

102. This output encompasses a number of activities to design a technical unit for sustainable industrial zone development, within the PMU, to support the pilot project in Callao and, ensure the effective implementation of cleaner production services and coordination between public and private stakeholders and investors. The Technical Unit will initially be established within the PMU during the set up and basic training. Over the lifespan of the project, the TU will be transferred to the industrial area in order to carry out the technical activities and serve as a platform for stakeholder dialogue and SIZ networking. Activities 2.2.1.1 and 2.2.1.2 are designed to develop the capacities of the project stakeholders so that they can establish technical units, with a view to have one of these partners (e.g. CER or ITP) take over the operation of the TU during the project implementation. In this manner, the national experts trained during the project will continue delivering these services beyond the project life span. Furthermore, a model will be developed for replication in other industrial areas. The pre-identified activities are listed below:

Activity 2.2.1.1 Developing national capacities for the establishment of technical units for sustainable industrial zones

103. This activity aims to develop national capacities for the establishment of technical units for sustainable industrial zones. Trainings will be delivered to PRODUCE on the required methodology for assessing the industrial zone (diagnostics, SWOT analysis) and determining the appropriate structure of the technical unit based on the local conditions.

104. This will contribute to increased coherence between hosted enterprises and facilitate the identification of common interests and the delivery of required services and infrastructure.

Activity 2.2.1.2 Design a technical unit for sustainable industrial zone development of Callao

105. This activity will encompass the design of a technical unit, in the PMU, for the pilot project in Callao. Underpinning the design process are several tools, including a SWOT analysis of the industrial zone, mapping of stakeholders and, if relevant, the design of a business model.

106. This activity will include, but is not limited to, the (i) delimitation of covered geographical area and sub-sectors; (ii) vision, mission, and strategic plan for medium- and short-term; (iii) engagement of stakeholders; (iv) indicative budget for a 3-year period; and (v) assessment of legal requirements and implications.

Activity 2.2.1.3 Improved collaboration between stakeholders, including companies, national and subnational governments.

107. This activity aims to sustain interaction between public and private actors in the area by implementing instruments for management of change, with the support of the PMU. For the Callao pilot project, it will primarily target the involved public entities including the municipality of Callao, the regional government, and the industries with major environmental and social impact in the area – primarily the metal foundries and largest chemical plants. Liaison will be made with other actors, including the Regional Environmental Committee of Callao, national government entities investing in infrastructure and public services, and the private sector.

108. Awareness raising workshops and training events will be held in order to engage the project stakeholders and address a series of overarching challenges: (i) to generate trust between public and private sector entities and establish a common work agenda to the (social and economic) benefit of both; (ii) to create awareness of the urgency to address current social and environmental externalities; (iii) to disentangle barriers between and within institutions currently limiting effective governance and enforcement; (iv) to increase problem ownership of public and private partners and transform this into a concrete set of actions; and (vi) to increase awareness and basic understanding of sector and country commitments to comply with global environmental conventions, and operational mechanisms for reporting under development in Peru (specifically the RETC).

Activity 2.2.1.4 Establishment of the sustainable industrial zone technical unit.

109. This activity will accompany key partners (government, industries and investors) to establish the envisaged technical entity within the PMU, potentially following the model of Centres for Innovation and Technology (CITE). Project support will consist of specialized advice including presentation of best practices, legal support and detailing of internal procedures.

COMPONENT 3 PILOT DEMONSTRATION OF CLEAN AND LOW-CARBON TECHNOLOGIES

Outcome 3.1 Potential companies and services determined in industrial zone Callao, strategy on clean and low-carbon technology developed.

110. This outcome will result in strategies for clean and low-carbon technology adoption for selected companies in the pilot project target area. Companies will have the means to select and monitor performance improvements in terms of both increased resource productivity, and of decreased pollution intensity (GHG and u-POPs) and waste generation. The outcome will also result in the increased potential of SMEs to obtain financing for investments in low-carbon and cleaner production technologies, through quality investment proposals based on cleaner production assessments and feasibility studies.

Output 3.1.1 Detailed feasibility studies for technology application and transfer and cleaner production assessments carried out.

111. This output will assist SME industries in the prioritized sub-sectors to implement RECP assessments as a tool to reduce u-POPs, GHG and report to SAICM. Technical assistance will be provided to prepare investment proposals for presentation to the Project. Companies will be identified using the selection criteria established under UNIDO's RECP methodology. This process will be led by the PSC and will build upon the private sector engagement activities carried out during the PPG. Based on a ranking of socio-economic benefits, reduction potential of GHG emissions and u-POPs, project assistance will be provided to selected companies to deliver detailed feasibility studies for submission to financiers. The envisaged activities are as follows:

Activity 3.1.1.1 Implementation of RECP assessments and pre-feasibility studies for technological upgrading.

112. This activity will cover the implementation of RECP assessments, to be carried out by the private sector specialists trained as part of Outcome 2 of the Project and selected in a recruitment process led by the PMU, at a minimum of 35 companies in Callao. This activity builds on UNIDO's RECP Programme in Peru and audits performed during the PPG phase.

Activity 3.1.1.2 Selection of proposals from SME industries for investment in low-emission production technologies.

113. This activity consists of a comprehensive selection process for proposals on technological upgrading in SME industries in the project area. The envisaged selection process will be driven by the PMU. Participating small and medium enterprises will be offered direct technical assistance to detail and implement their proposals for GHG emission reductions, uPOP reductions, chemical waste management plans in alignment with SAICM guidelines.
114. Participating SMEs will receive a range of incentives, including: (i) access to technical assistance for detailing of proposals and investment plans (feasibility studies, see 3.1.1.3); (ii) technical assistance for monitoring and reporting of achieved environmental benefits (aligned with RETC or similar reporting mechanisms); (iii) access to loan instruments under partnerships with financial sector institutions; and (iv) limited investment subsidy using GEF project funds (under 3.4.1.2).

Activity 3.1.1.3 Technical and economic feasibility studies for application of low-carbon, cleaner production methodologies in selected companies

115. This activity will provide the technical support for drafting and finalization of technical and economic feasibility studies for the implementation of u-POPs and GHG reduction technologies and cleaner technology investments. Depending on the complexity of the proposals received and available budget,

approx. 20 studies will be completed which will provide the basis for subsequent investment (as described in 3.4.1.2).

Outcome 3.2 Inclusive socio-economic projects assessed and initiated

116. This outcome will result in greater investment in socio-economic projects, through the delivery of pre-feasibility and feasibility studies and investment plans. This will translate into improved infrastructure and services in Callao and reduced environmental and public health risks. For projects which are not directly related to the reduction of GHG and u-POPs emissions, funding will come from co-financing sources.

Output 3.2.1 Set of inclusive socio-economic projects identified and initiated.

Activity 3.2.1.1 Feasibility studies of options to improve infrastructure and utility services in industrial zone in Callao, including assessment of industry needs, reduction of GHG, improved logistics and facilities, and investment plan.

117. This activity will deliver pre-feasibility and feasibility studies for a number of prioritized improvements of the physical infrastructure and utility services in Callao including assessment of industry needs, reduction of u-POPs and GHG, improved logistics and facilities, and investment plan, such as: (i) circulation plan for heavy transport and upgrading of road infrastructure; (ii) assessment of current railway infrastructure connecting port facilities with annexed industrial areas (including Callao), opportunities for modal shift (truck to train), and investment plan; (iii) assessment of current industrial wastewater flows and opportunities for centralized treatment systems to reduce environmental and public health risks.
118. Studies may further address improvements at the systemic level including: (iv) detailed mapping of the area as input for future planning, covering aspects such as: land tenure and vested rights for existing infrastructure (pipelines, electricity, railway, path of way, etc.) and other constraints; (v) opportunities for synergies between key industries, including reutilization of waste streams, collective waste recollection and disposal chains, introduction of innovative schemes for more efficient use of energy and chemicals including: recovery of low-temperature wastewater, standardization of processes and equipment, and chemical leasing; and (vi) mapping of local soil and air contamination and identification of “hot-spots” of Chemicals of High-Concern (CoHC) and possibilities for elimination thereof.
119. The set of studies will be evaluated by the Project Management Unit and presented to the Project Steering Committee to receive feedback with respect to scope, prioritization and linkages with parallel initiatives and investments. The studies will be ranked in terms of social, economic and environmental impact, technical feasibility, available budget and cost-effectiveness, among others.

Outcome 3.3 Increased public awareness on sustainable industrial zones

120. This outcome will result in increased awareness of key project stakeholders on sustainable industrial zones, including feasible environmental interventions, clean technologies and socio-economic projects.

Output 3.3.1 Public awareness and communication events held and project results disseminated.

Activity 3.3.1.1 Design and implementation of promotional activities, communication plans and management of change activities.

121. This activity covers the design and implementation of activities targeted at disseminating the objectives and instruments of the Callao Pilot among stakeholders and beneficiaries in the covered area. With a view to ensuring public acceptance of infrastructural works and changes in the approaches to utility services (such as waste management and recycling), communication plans will be drafted for engagement with affected actors and communities. Given the existing public concern about soil and air pollution in certain areas (most notably by heavy metals, specifically lead), attention will be given to management of local expectations, as not all environmental issues have a short-term solution.
122. Activities will be focused on informing the public and relevant stakeholders on the more relevant problems of the zone and the benefits of implementing low-carbon and cleaner production technologies at company and zone level and of implementing socio-economic projects and retrofitting industry.

Outcome 3.4 New installations of clean technologies and practices in selected companies implemented and financed.

123. This outcome will result in: (i) investment in a range of low-emission, cleaner development technologies in selected SME companies in Callao; and (ii) investment in upgrading of the collective infrastructure and utility services used by industries in the project area. The investments will be done by the business owners using equity and debt finance, respectively by public and private investors under a convenient partnership arrangement (PPP). Significant synergies with parallel initiatives in Callao are expected which may translate into substantial leveraged investment in sustainable industrial development. Associated additional reductions of GHG and u-POPs emissions are therefore expected after Project termination.

Output 3.4.1 Access to alternative finance established; clean technology investment projects selected.

124. This output will deliver cleaner production technological upgrades in selected companies based on RECP methodologies to demonstrate their technical and financial feasibility and deliver direct GHG emission and u-POPs reductions. It will further co-implement one or more investments in the collective infrastructure and utility services benefitting industries in Callao. The activities are described as follows:

Activity 3.4.1.1 Investment in improved infrastructure and utility services in Callao, enabling a low-GHG and u-POPs emissions development path compared to the baseline scenario.

125. There are a number of needed infrastructure and community projects to be implemented in order to achieve sustainable industrial development in the Callao pilot. With the support of national and local governments and as a result of the training activities, a number of projects will be initiated. The Ministry of Transport and Communications has offered to support some projects from the available budget for the region. The investment in community projects offered by the MTC will be more than US\$ 35 million as stated in the co-financing letter.

126. Actions foreseen include the final engineering and procurement of infrastructural works and utility services. GEF funds will be used to co-finance one or more initiatives that deliver direct and verifiable reductions of GHG gases and u-POPs, and removal and/or reduction of chemical waste in the area, including identified hot-spots.

Activity 3.4.1.2 Implementation of low-emission, cleaner production technologies and processes in SME industries in the Callao pilot

127. This activity encompasses direct investment in cleaner production technologies and processes (see Annex M for potential investments) in selected SME industries in the project area. The investment will be composed of business equity and debt capital, presumably obtained from environmental credit lines (such as SECO). A grant subsidy will be offered for the first set of investment projects in low carbon and clean technologies activities (covering an estimated amount of USD 20,000 to 50,000 per company). The subsidy offer criteria for enterprises will be proposed by the PMU and approved by the PSC.

128. The co-financing grants for low carbon and clean technology investments will be pre-selected by the PMU and approved by the Project Steering Committee, as an independent body. Beneficiary companies will be required to present investment proposals, based on the feasibility studies carried out under outcome 3.2. Investments subject to partial co financing from GEF can include: hardware cost for equipment, including installation, additional working-capital required for implementing the investment, external consulting necessary for the investment, the cost of measurements, evaluation and monitoring of the project which may be included in the total loan value, credit fees of the financial intermediary, and taxes and fees paid for importing and implementing the investment, with the exception of VAT. The financing scheme employed will require the beneficiary company to present the invoice of the full payment for their share of the investment, after which the project will pay the agreed co-financing amount directly to the technology provider.

129. The purpose of the subsidy is: (i) to demonstrate the technical and operational feasibility of the technologies, (ii) to demonstrate the benefits of enhanced technology on business performance and labor conditions; (iii) to trigger interest and confidence of industries and investors; (iv) to demonstrate the

positive impacts on the environment and public health; (v) to provide a reference for developing a market for cleaner production technologies and services in the country; (vi) to ensure follow-up with selected companies for verification and reporting of expected environmental benefits; and (vii) to create an entry point for financiers to partner with companies for continuous financing after Project closure.

130. With increasing availability of cleaner technology in Peru and following a learning curve, project investment costs and financing costs (real and perceived project risks) are assumed to decrease, allowing subsidies to be reduced or faded out in the medium- to long-term (5-10 years) after Project termination.

COMPONENT 4. MONITORING AND EVALUATION

Outcome 4.1: Monitoring and evaluation procedures.

131. This outcome will ensure overall quality and performance of the Project's implementation process and ensure timely reporting to the Project Steering Committee, PRODUCE, UNIDO and the GEF. Co-funding to this outcome will be provided by UNIDO (cash and in-kind) to complement the GEF resources assigned.

Output 4.1.1 Monitoring and evaluation mechanism implemented.

132. This output covers a continuous review process to monitor project progress and compliance with UNIDO guidelines, best practices project monitoring and oversight by the Project Management Unit (PMU) in close coordination with the Executing Partner(s) and the other partners represented in the MSC, as well as the mid-term and terminal evaluation of the Project.

Activity 4.1.1.1 Design and implementation of a Monitoring and Evaluation plan defining roles and responsibilities of implementing partners, reporting protocols, progress indicators and targets.

133. This activity covers the organization of an inception workshop, the definition of progress and impact indicators and the design and implementation of a detailed monitoring plan and methodology that takes into consideration GHG emission reductions. Gender aspects will be considered in order to facilitate gender mainstreaming throughout project implementation. The following activities will be implemented using GEF and UNIDO resources: (i) hosting of inception workshop; (ii) design of monitoring plan and tools for data collection and recording, taking into consideration strategies for chemicals and waste and GHG emission reductions; and (iii) M&E and gender specialists to provide backstopping.

Activity 4.1.1.2 Monitoring of project progress and compliance with UNIDO and GEF guidelines and safeguards on social (including gender) and environmental impact.

134. This activity covers a continuous review process to monitor project progress and compliance with UNIDO guidelines, best practices and safeguards concerning social, economic, environmental, and human development. Special attention will be given to identify opportunities to strengthen the position of women. Relevant project activities, specifically related to training, communication with civil society groups, and implementation pilots in Callao will be reviewed on gender-specific issues and opportunities. The activities implemented will be: (i) short- and/or longer-term consultancies to measure and validate project progress and identify key issues; (ii) short-term consultancies to follow up upon environmental issues, including preservation of natural resources; gender aspects; and human development aspects. As well as regular monitoring and site visits by the PMU (Ministry of Production).

Activity 4.1.1.3 Implementation of Mid-term Review and independent Terminal Evaluation.

135. This activity encompasses the implementation of an independent mid-term review and the independent terminal evaluation (TE). The mid-term review will be carried out 18 months after the start of Project operations. The TE will be implemented in the last three months before operational project termination. The TE evaluation will be carried out by independent international and national consultants contracted by UNIDO. The evaluation team will collect gender-disaggregated data, so as to provide a numerical representation of gender equality and information which could help gear services towards the specific needs of men and women.

(4) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing.

136. The conclusions drawn from the PPG phase indicate that the development problem described in the PIF remains valid and that without an intervention the environmental costs to companies and the community will increase significantly. The data collected allowed for deeper understanding of the perennial problems, the approach needed and a realistic assessment of the potential reduction of environmental impacts through this intervention.
137. The Project aims to apply environmentally sound and resource efficient production as a tool for identifying clean and low-carbon technology investments in companies, supported by incentives and financial mechanisms. The project further aims to develop a Monitoring, reporting and verification (MRV) system for tracking GHG and u-POPs reductions. The PPG phase revealed a substantial lack of information regarding company performance and environmental impacts, in addition to the loss of productivity caused by these. This can be attributed to a lack of tradition of sharing information and coordination between technology providers, the manufacturing industry and the public sector. The Project aims to close these gaps by complementing and validating information and making this accessible to the key stakeholders. Furthermore, the Project adds value to the baseline by providing technical assistance to demonstrate high-potential business cases and secure investment in technology that meets social and environmental standards. Without the leading role of the Project, individual actors are unlikely to integrate current initiatives to achieve a solid framework for the promotion of clean and low-carbon technology.
138. Baseline contributions by the project partners cover, among others: (a) policy making processes by federal ministries, legislative bodies and agencies; (b) technical analysis and advice for the design of specific regulation; (c) communication and logistical support to the Project; (d) revision and updating of regulatory instruments and financial instruments; and (e) government engagement with involved sectors and the general public. In-kind and cash baseline contributions include investment by companies, supported by financial institutions, in clean and low-carbon technology; following the development of market studies and corporate business plans; co-organization of training events and promotional events; participation in meetings and work groups. GEF resources are critical for closing the identified gaps by addressing issues that are beyond the capacity of individual stakeholders. The Project will further make an attempt to mobilize additional bilateral funding by promoting partnerships between national and foreign industries.

(5) Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF).

Estimated direct emission reductions

139. The project envisages investment in a number of local enterprises. In addition to GHG and u-POPs reduction potential, criteria for selection of the target companies will include social benefits, including inclusiveness and gender equity aspects.
140. The National Implementation plan for the Stockholm Convention on Persistent Organic Pollutants in Peru establishes the uPOPs emissions for the relevant sectors as: 72.23 g TEQ/y for the production of ferrous and non-ferrous metals and 5.00 g TEQ/y for the production and use of chemical substances/products..
141. The total uPOPs reduction from this project will be approximately 1,492,700 µg TEQ/y (1.493 g TEQ/y). To achieve this target, the project will support the implementation of BAT/BEP in a minimum of 35 companies from the foundry, chemical and metal processing sector.
142. Further uPOPs emission reductions are expected from replication in companies specialised in the production of ferrous and non-ferrous metals and metal processing, through the use of the replication toolkits which will be produced during the project. The potential replication of BAT/BEP, as result of technical guidelines and policy implementation in a minimum of 5 industrial areas (see figure I.1), is expected to reach 20% of the companies from these sectors. Therefore, the total uPOPs reduction at the end of the project's life is estimated at 8.92 g TEQ/y.

143. The global GHG benefits of the Project are associated with (i) the implementation of energy efficiency measures in industrial zones in Peru, thereby off-setting grid electricity and fossil fuel (natural gas); (ii) training and technical assistance to companies in the Project's target area to implement and enhance energy management practices (in preparation to ISO 50001). The expected benefits are relevant for Peru to meet its obligations under the UN Framework Convention for Climate Change (UNFCCC).
144. Direct GHG emission reductions will be achieved by pilot investments in EE technologies to be implemented during the Project's time horizon using equity and debt capital.
145. Summarizing, the project is expected to result in a total lifetime direct GHG emission savings of 305,987 tCO₂eq. Indirect bottom-up GHG savings of 1,046,731 tCO₂eq, as result of replication and spill-over in Callao area and other industrial zones under development. Total GHG emission savings of 1,352,719 tCO₂eq, during the Project's impact horizon (10-year period after project closure).

Cost-effectiveness

146. For CW benefits, the GEF budget of US\$ 2,295,691 (CW-2 Program 3), the cost-effectiveness for the Project is of the order US\$ 257,365 per g TEQ uPOPs emissions avoided.
147. For CCM benefits, the given GEF budget of US\$ 1,518,309 (CCM only), the cost-effectiveness for the Project is of the order of US\$ 4.96 per tCO₂eq (direct emissions) avoided. Note that additional GHG benefits including avoided methane releases from wastewater and organic effluent streams, are not accounted for.

(6) Innovation, sustainability and potential for scaling up

148. The project will facilitate and co-finance investment in innovative, clean technologies in selected companies in the industrial area of Callao, to reduce u-POPs and GHG emissions. To ensure the sustainability of this initiative, these technologies will be procured, rather than leased and the legal ownership of the equipment (transferred through a bill of sale) will be in the name of the company.
149. By facilitating access to financial instruments for investment in new technologies, the project will promote innovation in companies; particularly those who reduce their operation costs through the implementation of RECP and can afford to upgrade their technology and change their processes.
150. The dissemination of results from pilot demonstrations will scale-up the adoption of clean and low-carbon technologies in other industrial areas, thereby fostering productivity, improving efficiency and mitigating climate change. The project will aim to ensure this replication by showcasing the demonstration projects in targeted promotional events and workshops and disseminating replication toolkits for GHG and u-POPs reduction. Detailed case studies capturing the benefits will be prepared and highlighted to industries from relevant sectors. Furthermore, the training and promotional events will target a wide range of industrial actors, from diverse industrial areas, so as to trigger the development of a peer-to-peer network for knowledge sharing.
151. The software licence and methodology for collecting baseline data on industrial zones will be owned by PRODUCE, so that it can be used to gather critical data on other industrial areas following the completion of the project. Training will be provided to PRODUCE technical staff to assist in sustaining this initiative. The national registry of qualified RECP and sound chemicals management professionals will also be owned and managed by PRODUCE. This registry will be continuously updated to include new service providers.

A.2. Child Project? If this is a child project under a Program, describe how the components contribute to the overall Program impact.

N/A

A.3. *Stakeholders*. Identify key stakeholders and elaborate on how the key stakeholders engagement is incorporated in the preparation and implementation of the project. Do they include civil society organizations (yes /no)? and indigenous peoples (yes /no)? ²⁵

152. There has been no report of indigenous people living in the target area of the project, nor is the project expected to impact on the land, territories or other resources of indigenous people, hence the key stakeholders do not include members from these communities.

PROJECT PARTNERS			
TYPE	NAME	MANDATE	ROLE IN THE PROJECT
NATIONAL GOVERNMENT	Ministry of Production (PRODUCE)	<p>PRODUCE is the national authority responsible for the design, and implementation of sectoral and national policies for industrial sectors and fisheries.</p> <p>The Vice Ministry of SME and Industry is responsible for accelerating industrialization, processing and manufacturing activities and promoting SME development. The Vice Ministry promotes business development, innovation (technology and digitalization) and seeks to ensure the sustainable use of natural resources and environmental protection.</p> <p>The General Directorate of Environmental Affairs for Industry - (DGAAMI), under the Vice Ministry of SME and Industry, is responsible for promoting pollution prevention, and environmental protection, along with the sustainable use of natural resources for industrial manufacturing and domestic trade.</p> <p>The Directorate-General for Innovation, Technology, Digitization and Formalization (DGITDF) is responsible for fostering innovation and technology in the productive sector and strengthening entrepreneurship and business management through digitization and formalization, with a view to increasing productivity. DGITDF</p>	<p>PRODUCE will take on the role of executing agency of the project.</p> <p>The Project Management Unit (PMU) for the implementation of the Project will be established under the Vice Ministry of SME and Industry of PRODUCE and a National Project Director will be nominated to oversee the project implementation. All project activities will be coordinated by this PMU.</p> <p>The Project will be implemented in consultation with PNDP.to facilitate up-scaling and replication.</p>

²⁵ As per the GEF-6 Corporate Results Framework in the GEF Programming Directions and GEF-6 Gender Core Indicators in the Gender Equality Action Plan, provide information on these specific indicators on stakeholders (including civil society organization and indigenous peoples) and gender.

	<p>formulates proposals for national regulations, programmes and projects for technology transfer and oversees the monitoring and evaluation of Centres for Innovation and Technology Transfer (CITE).</p> <p>The National Programme for Productive Diversification – PNDP, is in charge of promoting industrial parks and zones.</p>	
Ministry of Environment	<p>MINAM is the national authority responsible for designing, and implementing environmental policies; sub-divided into two Vice Ministries: Strategic Development of Natural Resources and Environmental Management. Additionally, MINAM is the political and operational GEF focal point for Peru.</p>	<p>MINAM will participate in the Project Steering Committee, and will take part in activities at local level. MINAM will support the activities of the project and participate in discussions on regulatory mechanisms and policies.</p>
Ministry of Economy and Finance	<p>MEF is in charge of planning, managing and overseeing matters related to budget, treasury, debt, accounting, fiscal policy, public investment and economic and social policy.</p> <p>General Directorate of International Economy, Competition and Productivity Affairs (DGAEICP) is in charge of proposing, formulating and directing policy measures related to tariffs, customs, restrictions on trade, public procurement and competition. Additionally, MEF ensures the consistency of economic integration policies put forward by line ministries with the national economic policy, in order to promote the efficient allocation of resources and continuous increase in productivity and competitiveness.</p>	<p>The MEF will be invited to participate in the Project Steering Committee. The Outcome 1.2 achievement will be closely coordinated with the DGAEICP.</p>
Ministry of Energy and Mining	<p>The Ministry of Energy and Mines is responsible for supervising and regulating the energy and mining sectors, to ensure a rational use of natural resources and protect the environment.</p> <p>The Directorate General of Energy Efficiency (DGEE) is in charge of proposing and analysing policies on</p>	<p>MINEM will be invited to participate in the Project Steering Committee. The DGEE will participate in the implementation of the Component 3 of the Project.</p>

		energy efficiency and non-conventional renewable energies, and promoting a culture of energy efficiency and energy planning.	
	Ministry of Transport And Communication	The Ministry of Transport and Communications (MTC) is responsible for the development of transportation systems, communications infrastructure and telecommunications in Peru. Its work is crucial for socio-economic development as it enables national, regional and international integration, trade facilitation, and promotes poverty reduction and the well-being of citizens.	The MTC will be invited to participate in the Project Steering Committee, and will help to identify socio-economic projects for the development of the industrial zone. The MTC has already committed a substantial amount of resources to carry out projects in the area.
REGIONAL AND MUNICIPAL GOVERNMENT	Regional Government of Callao	The regional government of Callao (GORE) is the government of the Constitutional Province of Callao. It includes seven districts: Callao, Ventanilla, Carmen de la Legua Reynoso, Bellavista, La Perla, La Punta and Mi Peru. GORE Callao, promotes harmonious human development, regional identity and environmental awareness; through the provision of public and private services which service the entire population. GORE aims that Callao becomes an safe and well organised territory, with lower levels of risk and vulnerability	GORE CALLAO will be invited to participate in the Project Steering Committee, and will take part in capacity building activities in Callao.
	Municipal District Government Of Callao	The Municipal District government of Callao (MDGC) is the institution responsible for promoting the integral development of the Callao area, reducing social gaps, generating favourable environments for investments, preserving the environment and its cultural heritage, and providing efficient public services.	MDGC will be invited to participate in the Project Steering Committee, will benefit from capacity building activities and foster investments in socio economic projects in Callao.
INDUSTRY AND SECTOR ORGANIZATIONS	National Society of Industries	The National Society of Industries (SNI) is a non-profit institution which promotes the development of the manufacturing industry, boosts market economy and contributes to the economic development of Peru.	The SNI will play a key role in linking the project with industries and will support dissemination activities. Additionally, SNI will contribute to the up-date and promotion of the data base for environment service providers. SNI will be invited to participate in the Project

			Steering Committee.
	Chamber of Commerce Of Lima	The Chamber of Commerce of Lima (CCL) promotes enterprise development, by facilitating business opportunities, providing services and boosting industry competitiveness.	The CCL will support dissemination activities and contribute to the up-date and promotion of the national database for environment service providers. CCL will be invited to participate in the Project Steering Committee,
UNIVERSITIES AND RESEARCH INSTITUTES	Catholic University Of Peru	The Catholic University of Peru, PUCP, has experience working in international cooperation projects with UN Environment, advancing and measuring sustainable consumption and production (SCP) for a low-carbon economy in newly industrialized countries. Additionally the university was a member of the Eco-innovation Committee Peru.	The PUCP is expected to support dissemination activities and participate in and provide trainings.
	National University of Engineering	The National University of Engineering, UNI, holds a Center for Renewable Energy and Rational Use of Energy (CER-UNI) and a Center for Information and Communication Technologies (CTIC). CER-UNI is specialized in applied research, technological development and technology transfer of renewable energies. It is recognized as a pioneer and continuous promoter of renewable energy projects in Peru.	UNI is expected to support dissemination activities and participate in and provide trainings.
	National University Of Callao	The National University of Callao has expanded greatly over the years, now encompassing eleven departments, fifteen professional schools, and a postgraduate school, but has retained its technical nature.	The National University is expected to support dissemination activities and participate in and provide trainings.
	Engineering and Technology University (UTECH)	UTECH is a private non-profit university located in Lima. UTECH provides services tailored for businesses, such as training for executives and research related to the industrial sector.	UTECH is expected to provide technical assistance to the RECP work at company level, supporting training and development of feasibility studies for low carbon technology implementation. It will, furthermore, advise on the implementation of sound chemicals management assessments and SAICM activities and the identification of relevant technology for companies
	TECSUP	TECSUP is a private, non-profit educational organization dedicated to training and training professionals, as well as providing consulting, research and technology application services.	TECSUP is expected to provide technical assistance to the RECP work at company level, supporting training and development of feasibility studies for low carbon technology implementation. It

		It offers services related to the application of technology in the operation and maintenance of industrial activities. Currently it has three locations in Lima, Arequipa and Trujillo.	could advise on the implementation of sound chemicals management assessments and SAICM activities and the identification of relevant technology for companies.
	National Service of Training in Industrial Work (SENATI-CTA)	SENATI aims to provide professional training for the industrial and related activities. SENATI has established a System of Training and Professional Training that responds to the real demands of the productive activity. The environmental technology center within SENATI aims to contribute to the sustainable development of the industry.	SENATI-CTA is expected to provide technical assistance to the RECP work at company level, supporting training and development of feasibility studies for low carbon technology implementation. It could advise on the implementation of sound chemicals management assessments and SAICM activities and the identification of relevant technology for companies.
CIVIL SOCIETY ORGANIZATIONS (CSOS)	NCPC Peru, Grupo GEA	Grupo GEA is the host institution of CER. Grupo GEA was founded in 1992 and its mandate is to encourage the transition towards sustainable development by promoting clean technologies and environmentally-friendly practices, especially in enterprises, cities, communities and academic spheres. GEA as member of the UNIDO/UNEP RECPnet, has been trained in the RECP methodology and is one of UNIDO's partners for providing RECP services to industry.	GEA is expected to provide technical assistance to the RECP work at company level, supporting training and development of feasibility studies for low carbon technology implementation. It could advise on the implementation of sound chemicals management assessments and SAICM activities and the identification of relevant technology for companies.
OTHER DONORS	SECO Green Credit Trust.	The Swiss State Secretariat for Economic Affairs (SECO) supports sustainable industrial production in developing and transition countries. SECO has established the Green Credit Trust (GCT) designed to increase the attractiveness of Environmentally Sound Technology (EST investments). The GCT has been operational since 2004 in Colombia and Peru.	The SECO GCT will support the application of clean and low carbon technologies in SME that comply with the requirements of their up-coming Green Credit Programme
PRIVATE SECTOR	Scotia Bank Peru	Scotia Bank Peru is committed to contributing to the development of Peru. It is guided by the principles of the Global Compact, the ICC Business Charter for Sustainable Development, Carbon Disclosure Project and Ethical Funds; in addition to national agreements such as the Association of Good Employers,	Scotia Bank is expected to offer a credit line to companies in the industrial zone of Callao for the uptake of clean and low carbon technologies.

		focused on improving labour, environmental, and anti-corruption standards.	
	Credit Bank Peru	The National Credit Bank of Peru (BCP) is the largest bank and the leading supplier of integrated financial services in the country. BCP provides its customers with short and medium-term loans in local and foreign currencies, foreign trade-related financing, lease financing, and financial advisory. Its main activities include asset management, foreign exchange transactions, treasury, custody and trust, investment advisory services, and research activities.	BCP is expected to provide a credit line to companies in the industrial zone of Callao for the uptake of clean and low carbon technologies.

Table 7: Project partners for sustainable industrial zone development in Peru.

A.4. Gender Equality and Women's Empowerment. Elaborate on how gender equality and women's empowerment issues are mainstreamed into the project implementation and monitoring, taking into account the differences, needs, roles and priorities of women and men. In addition, 1) did the project conduct a gender analysis during project preparation (yes /no)?; 2) did the project incorporate a gender responsive project results framework, including sex-disaggregated indicators (yes /no)?; and 3) what is the share of women and men direct beneficiaries (women X%, men X%)?

153. The implementation of a GEF multi-focal area project allows for a synergistic approach to improving the environmental and social sustainability of industrial zones. The project seeks to take on a holistic approach to safeguarding the environment, by ensuring the participation of women in the design, implementation and review of this project. Moreover, the project seeks to imbed gender considerations in the design of regulations, planning aids, and policies for sustainable industrial zones, so that the approach taken in the pilot project can be replicated in other industrial areas. The project hopes to address some of the social and economic inequalities between men and women in the target area, so as to ensure greater global environmental benefits for all.
154. The government of Peru has developed a wide range of gender-sensitive policies to promote equality and mainstream the gender perspective. The lead governing body for gender policy is the Ministry of Women and Vulnerable Populations (MIMP) and the National Plan for Gender Equality 2012-2017 (PLANIG) is the instrument for compliance with Law No. 28983, Law on Equal Opportunities between Women and Men²⁶. Its objective is to mainstream the gender perspective into public policies of the Peruvian state, at its three levels of government, guaranteeing equality and effective protection of human rights for women and men, non-discrimination and the full development of individual potential and collective capacities. During the project design phase (PPG), interviews were held with gender officials from MIMP - in addition to other stakeholders - and an analysis of the MIMP's main policy documents was included in the gender analysis.
155. The gender analysis builds upon a preliminary assessment of the policy framework around gender and green industry in Peru and identifies a number of gender barriers in industrial zones, with a specific focus

²⁶ These policies are being added to those established for Peru under the framework of the Beijing Platform, solidifying thus its commitment to the eradication of gender gaps

on the project target area. Moreover the gender analysis presents a number of recommendations for mainstreaming gender in the project components.

156. One conclusion drawn from the gender analysis is that women are often disproportionately affected by the environmental impacts of manufacturing activities, which are concentrated in industrial parks and zones. Although chemicals pose a risk to all human beings, especially if not properly managed, they affect women and men differently. For instance, due to biological differences and their higher proportion of body fat, women store more environmental pollutants than men in their tissues and are hence more vulnerable to the adverse impacts of fat-soluble chemicals. Women's exposure to chemicals can cause reproductive health problems such as birth defects, low birth weight, miscarriages or premature births, and a significant part of the chemical burden experienced by mothers can be passed on to their babies during gestation and breastfeeding²⁷ Relatively high levels of POPs have even been found in human breast milk.²⁸
157. The analysis highlighted that women are often engaged in jobs which expose them to dangerous chemicals or pollutants because they require less physical strength, but also because they are unaware of the adverse health consequences. Women often receive inadequate training or education, for instance, on better amalgamation practices and are excluded from decision-making, while men continue to own and control most of the assets and hence have access to less dangerous and better paid jobs²⁹. For this reason, it is evidently essential to involve women in awareness raising and training activities.
158. The key to enhancing women's opportunities, and hence their position in industry and more specific in sustainable industrial zones is to provide them with access to know-how and technologies. Specific emphasis will be given to ensuring the participation of women in "Output 2.1.1. Training modules delivered for planning of sustainable industrial zones", "Output 2.1.2. Training modules delivered for resource efficient and cleaner production, clean and low-carbon technologies", "Output 2 1.3. Training modules delivered for sound chemicals management" and "Output 3.3.1. Public awareness and communication and project results disseminated". To ensure this, target figures for the percentage of female participants in project activities are included in the logical framework of the project.
159. In order to define gender-responsive indicators and targets for the logical framework, sex-disaggregated data was collected from the 2015 National Business Survey and a number of databases (run by PRODUCE, MINAM and the Callao Municipality) were consulted. Given that only 30% of the specialists registered on PRODUCE's database of professionals with experience in environmental technical assistance are female and that only 24% have industrial experience, the target participation rate for women in this project is 30%. Hence, the share of direct beneficiaries for the project is 30% women and 70% men.
160. This process clearly highlighted both the lack of sex-disaggregated data analysis and the absence of gender mainstreaming or targeted gender strategies. These matters need to be addressed in order to ensure that women have equal opportunities to contribute to the sustainable industrial development of Peru.
161. Given this background, the project will incorporate gender elements in the project design, implementation and review, following the recommendations of the gender analysis. Efforts will be made to achieve a minimum target of 30% female and 70% male participation in project activities, particularly trainings and awareness raising events. Additionally, the monitoring and evaluation process will include the collection of sex-disaggregated data in order to monitor gender mainstreaming progress. The results of the mid-term review and the terminal evaluation will be documented and disseminated so as to promote the integration of the gender perspective in similar projects.

²⁷ UNDP, Gender Mainstreaming: A Key Driver of Development in Environment and Energy, "Chemicals Management". Available at: <http://www.undp.org/content/dam/aplaws/publication/en/publications/environment-energy/www-ee-library/chemicals-management/chemicals-management-the-why-and-how-of-mainstreaming-gender/Chemicals%20Management%20and%20Gender%20Mainstreaming.pdf>.

²⁸ UNDP, "Chemicals and Gender", UNDP Publications.2011

²⁹ WECF, "Women and Mercury in ASGM: Impacts on Women's Health and that of Future Generations". Available at <http://www.wecf.eu/english/articles/2013/10/minamata-sideevent.php>.

A.5 Risk. 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):

Risk	Rating	Mitigation actions
Delay in the approval of the proposed regulations for the planning and management of sustainable industrial zones	Medium	The development of official guidelines, prior to the elaboration of full regulations, is expected to ensure faster approval. The institutional capacity building component of the project will provide training to the government and other stakeholders and may reduce the risk.
Lack of participation of representatives from the government, industrial zone environment committees and businesses in the trainings and / or reluctance to transfer the knowledge to other stakeholders.	Low	Competences gained in the training encompass a variety of technologies, planning and environmental protection approaches; these represent a competitive advantage for the careers of the representatives trained. The endorsement from the respective institutions and the thorough selection criteria for the participants and instructors may reduce the risk.
Reluctance from companies to collaborate with the Regional Government of Callao and other public entities to engage with the PMU	Medium	The PMU will offer sub-contracting opportunities for local companies in areas such as facilities management and environmental consulting, which will help incentivise companies to join the registry and improve their collaboration with the regional authorities.
Limited number of companies willing to be assessed and interested in clean technology investments.	Low	Baseline data and information on companies already gathered in the project formulation phase. This, along with dissemination workshops on opportunities for companies, should facilitate the recruitment and reduce the risk.
Limited interest in investing in socio-economic projects that change core processes of the firm.	Low	Suitable experts on socio-economic projects involving clean and low-carbon technologies will elaborate cost-benefit analysis together with the company's management, to illustrate the benefits of implementing such projects.
Delay in the selection of the stakeholders to implement the awareness-raising component may affect the dissemination of results.	Low	Support from the central government in the establishment of criteria for the selection of stakeholders will reduce the risk.
Lack of sufficient financial resources for investments in clean and low-carbon technologies.	Medium	The project envisages a variety of financing sources for companies including green credit lines or bank guarantees (in case of insufficient collateral), which should help improve creditworthiness and should reduce the risk of limited access to finance.
Skilled and/or properly trained labour to operate and maintain the clean & low-carbon technology not available.	Low	The implementation of the new technologies will be accompanied and supervised by the technology suppliers. Emphasis will be put on training to ensure that workers can operate and maintain the technology properly. A Technical Unit will provide continuous support to companies.
Delays in project implementation and/ or low quality performance.	Low	Following carefully the established monitoring and evaluation plan will allow for timely implementation and high quality results.
Increased rainfall due to climate change causes flooding and damages newly-installed equipment	Low	Climate considerations will be made when selecting locations for installing equipment in companies.

A.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.

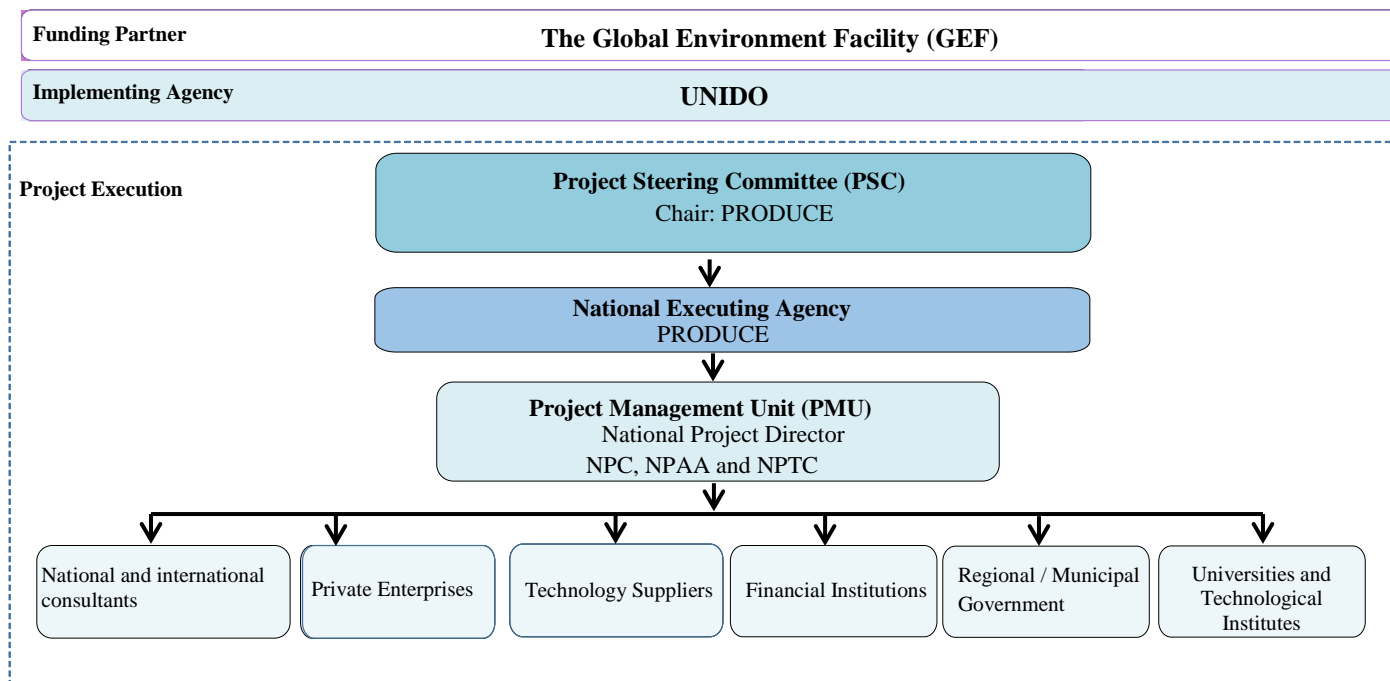
Management arrangements

Institutional Arrangements

162. The project will be implemented by UNIDO and its Industrial Resource Efficiency (IRE) Division with headquarters in Vienna, supported by the UNIDO Regional Office in Colombia. Overall responsibility for project execution will lie with PRODUCE, as the national executing agency, responsible for coordination with other ministries and agencies in implementing the project activities.
163. UNIDO, in close consultation with PRODUCE, will oversee the overall implementation, internal monitoring and reporting to GEF, according to established UNIDO rules and regulations and applicable GEF requirements.
164. A Project Management Unit (PMU), including coordination staff, will be established within PRODUCE to undertake the day-to-day project management activities, on behalf of the Project Steering Committee and in coordination with UNIDO. The PMU will be led by the National Project Director (NPD), appointed by PRODUCE. The PMU will report to PRODUCE and UNIDO and will adhere to the regulations of UNIDO/GEF as a general rule for executing the project.
165. The technical implementation of the project activities, led by PRODUCE as the Executing Agency, will be supported by Executing Partners, which include industrial associations, chambers of commerce, NGOs and universities. The final selection of these partners will be carried out through an open bidding process.
166. A Project Steering Committee (PSC), chaired by PRODUCE, will be established to ensure the proper and effective coordination and collaboration among various ministries, the implementing agency, local authorities and stakeholders. The PSC will provide strategic guidance for the project's execution and PRODUCE and UNIDO will invite members, experts and relevant stakeholders for specific meetings, as required.
167. The PSC will be responsible for coordinating project activities at a macro level, by facilitating coordination of project activities across institutions and reviewing project activities and their adherence to the project document, in line with the GEF regulations on major and minor amendments. Additionally, the PSC will make decisions on the issues brought to its notice by UNIDO and other cooperating institutions and advise regarding efficient and timely execution of the project. Furthermore, the PSC will be responsible for initiating remedial action to remove impediments in the progress of project activities that were not envisaged earlier. Corrective actions decided by the PSC shall be done in accordance with the GEF Council Document GEF/C.39/Inf.03.
168. UNIDO's role in the PSC is to provide supervision and technical support. For this purpose, UNIDO will appoint a Project Manager (PM) and mobilize services from its other technical, administrative and financial branches at UNIDO Headquarters and at the UNIDO Regional Office in Colombia.

Project Implementation

The structure of the project implementation arrangement is shown in the following illustration:



Lead Executing Agency - PRODUCE

169. PRODUCE is responsible for coordinating the project execution at the national level, with the support of national and international consultants. PRODUCE will also take on specific responsibilities for execution, which include, but are not limited to i) the development of regulations for the planning and management of sustainable industrial zones including policies on industrial pollution management and responsibilities in industrial zones and ii) the development of policies on financial and non-financial incentives for promoting low-carbon, clean technologies and environmentally-friendly practices, both i) and ii) to be submitted to the government for approval.
170. Additionally, PRODUCE will provide guidance for trainings to project stakeholders on sustainable industrial zone strategies and measures and RECP and will supervise the adoption of clean technology by industry.
171. PRODUCE will prepare, in coordination with UNIDO, a proposal for the PMU and establish this unit within the Ministry's premises. PRODUCE will also assign a NPD to oversee the PMU and participate in the selection process for the PMU coordination team.

Implementing Agency - UNIDO

172. In the context of technical implementation, UNIDO will provide the Project with knowledge transfer, technical expertise and experiences gained in other countries.
173. Upon request of PRODUCE, UNIDO will also provide execution support to this Project in the form of recruitment of experts and procurement of goods and services, within the allocated budget for the project activities.
174. UNIDO will issue, whenever feasible, sub-contract agreements to experts and institutions (that the PSC considers capable of supporting the project implementation) to implement predefined Project activities. International and national consultants, technical services, technical suppliers and others will be recruited

based on Terms of Reference (ToRs) that will be prepared by UNIDO in collaboration with the PMU. They will be selected jointly by PRODUCE and UNIDO and contracted directly by UNIDO.

175. UNIDO will cooperate with a number of national service providers. Contractual arrangements will be issued in accordance with UNIDO's procurement procedures. UNIDO may also enter into other contractual agreements with selected institutions, either international or within Peru in order to support the execution of specific project components.
176. UNIDO will oversee the co-financing of technologies deemed to deliver direct and verifiable reductions of GHG gases and u-POPs, and removal and/or reduction of chemical waste. Full or partial title and ownership of equipment purchased under the project may be transferred to national counterparts and/or project beneficiaries during the project implementation as deemed appropriate by the UNIDO Project Manager in consultation with project stakeholders.

Project Management Unit

177. The field-based activities will be undertaken by the PMU with advisory support from the PSC and UNIDO. The PMU will provide all relevant information to the evaluation experts for both the midterm review and the final evaluation. The PMU will be comprised of a NPD, a National Project Coordinator, a National Project Administrative Assistant and a National Technical Consultant. With the exception of the NPD, a seconded PRODUCE employee, the PMU team will be recruited by PRODUCE and UNIDO and contracted under an Individual Service Agreement, subject to UNIDO rules and regulations and United Nations recruitment process.
178. The National Project Coordinator (NPC) will lead and coordinate the day-to-day management of project execution and the national project staff, in close consultation with the NPD, including administration of the project (with support of the NPAA) in conjunction with UNIDO, accounting for the timely execution of the project and activities. The NPC will be responsible for the administrative project design, including the preparation of work plans, drafting of terms of references, contracts, preparation of technical specifications for equipment purchased under the project, cost estimation, activity scheduling, and reporting on the forward planning of project activities and budget expenditures, with the support of the NPAA. The NPC will prepare all financial, technical and monitoring reports in line with GEF and UNIDO regulations and procedures and ensure the implementation and organization of workshops, meetings, training events and similar. Overall, the NPC will coordinate and monitor the activities of the project team and national consultants and liaise with UNIDO to obtain the assistance needed during project implementation, including technical directives for project activities or assistance in identifying and recruiting experts.
179. The National Project Administrative Assistant (NPAA) will provide assistance to the NPD and NPC in the preparation of documents, communication and outreach and the organization of workshops and training related to the project. The NPAA will support the NPC in the administrative, financial and operational management of the project, and support activities related to the consultation of stakeholders, meetings of the PSC, including facilitating logistics, preparing the meeting minutes and keeping records of day-to-day project execution). The NPAA will be responsible for maintaining up-to-date project files and supporting materials, as well as maintaining a national web site to inform the public on the project activities. Finally, the NPAA is expected to provide all other required assistance to the project team in order to fulfil the tasks in a timely manner.
180. The National Technical Consultant (NTC): will be responsible for the daily communication with technical project partners and assigned project work (such as organizing workshops/meetings/training and the preparation of technical background documents. The NTC is expected to provide technical expertise, if needed, for drafting of policies related to sustainable industrial zones and assist in the (a) feasibility study for technology application and transfer and cleaner production assessments, (b) identification of demonstration projects; and (c) technical oversight of implementation of project demonstrations. The NTC will support trainings and workshops on sustainable industrial zones with technical advice and participate in day-to-day activities related to project implementation.

Executing Partners

181. During the PPG phase, a number of national entities were identified as potential executing partners to support the implementation of specific activities and to ensure the achievement of the outputs envisaged in the project design. UNIDO and PRODUCE will carry out an open bidding process for the final selection and recruitment of these partners, under sub-contracting agreements. The following institutions provided letters of intent or co-financing for the project:
182. SNI could play a key role in linking the project with industries, by encouraging its members to participate in awareness raising and dissemination activities. Additionally, SNI could support the establishment of a data base for environmental service providers.
183. The Chamber Of Commerce of Lima could support the implementation of planned dissemination activities and stakeholder engagement events, and data base for environmental service providers.
184. GEA could provide technical assistance to the RECP work at company level, supporting training and development of feasibility studies for low carbon technology implementation. It could, furthermore, advise on the implementation of sound chemicals management assessments and SAICM activities and the identification of relevant technology for companies.
185. The National University of Callao, PUCP and UNI, could support the execution of training and assessment activities, both in content and logistical support. Additionally the universities could identify and engage relevant stakeholders in the community to support the project dissemination strategy.
186. PRODUCE and UNIDO have agreed to sign a Letter of Agreement on the execution support services to be delivered by UNIDO, as well as details on the administrative roles and responsibilities of each institution in order to achieve the project goals.

Coordination

187. The PSC, supported by UNIDO and the PMU, will coordinate and network with related initiatives and institutions in the country. Linkages will be made, wherever possible, to the “National Platform for Sustainable Cities and Climate Change in Peru” project, funded by the Global Environment Facility, which seeks to enhance integrated sustainable urban planning and management in the Lima Metropolitan Area (LMA). As both projects seek to strengthen local capacities and inter-institutional coordination, through training seminars for national and district authorities, efforts will be made to create synergies and enable mutual support and learning.

Additional Information not well elaborated at PIF Stage:

A.7 Benefits. Describe the socioeconomic benefits to be delivered by the project at the national and local levels. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

188. The project's objective is to promote the adoption of clean and low-carbon technologies in order to reduce the use of chemicals, solid and hazardous waste and the generation of GHG emissions. To achieve this, the project will provide individual companies in Callao with better access to clean and best available technologies and technical assistance to support the development of feasibility studies and business cases, so that they may access appropriate financial instruments and funding mechanisms. The participating companies will benefit from increased efficiency and performance, reduction of operational costs and improved competitiveness. Their adoption of clean technologies may also result in an improved corporate reputation in the eye of the public and national regulators from improved compliance with environmental regulations.
189. The employees of the participating companies will benefit from access to capacity building trainings, and improved working conditions, including improved gender equality, health and safety. Their community will have access to cleaner air and less pollution from solid wastes, resulting in a better quality of life. Additionally, through community outreach initiatives, the local community will be able to interact and

engage with companies in the industrial zone and jointly develop solutions to societal- and environmental-problems.

190. The local, regional, and national government agencies will benefit from streamlined and optimised policy frameworks to support sustainable industrial zone development. They will gain access to capacity building trainings, lessons learned from international good practices and new tools (such as risk assessment and evaluation tools for monitoring company performance). Additionally, the government will benefit from strengthened stakeholder collaboration (public-private) and increased compliance with national regulations on behalf of companies.
191. The results of the project, in terms of reductions in GHG emissions and effective policy development will feed into UNIDO's global knowledge pool, to enable replication first within Peru and then in other countries. By scaling-up and mainstreaming this approach, the project will trigger wider adoption of clean and low-carbon technologies, translating into greater reductions in GHG emissions.

A.8 Knowledge Management. Elaborate on the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives (e.g. participate in trainings, conferences, stakeholder exchanges, virtual networks, project twinning) and plans for the project to assess and document in a user-friendly form (e.g. lessons learned briefs, engaging websites, guidebooks based on experience) and share these experiences and expertise (e.g. participate in community of practices, organize seminars, trainings and conferences) with relevant stakeholders.

192. An integral part of this project is the dissemination and replication of the project results within and beyond the industrial zone. Participating companies will carry out pilot demonstrations of clean and low-carbon technologies and share the results in targeted promotional and “match-making” events, to improve private sector awareness of cleaner technologies. Replication toolkits will be prepared and disseminated in relevant sectors. Thus, the companies located in Callao will play a leading role in demonstrating new tools and economic approaches and promoting the sustainable industrial zone initiative. The results, in terms of low-carbon technologies and GHG and u-POPs reduction will also feed into UNIDO's regional and global knowledge pool, to enable replication in other developing countries.
193. The project will draw from the experience gained world-wide by UNIDO in the promotion of Eco-Industrial Parks (EIP). UNIDO's EIP approach is an inclusive and sustainable development strategy, which integrates industry and natural resources to increase productivity, improve eco-systems and foster innovation. Examples of the effective transfer of clean technologies, application of resource-efficient methods and reuse of waste energy and materials (industrial symbiosis) will feed into the implementation of the project.
194. Lessons drawn from international certification systems, including the use of minimum standards for process planning, environmental and economic performance, applicable to industrial zones will feed into the Project. This will then be used to support process planning, environmental and economic performance of businesses inside the industrial zone, technical quality and socio-cultural conditions. Additionally, the project will support the production of technical / scientific papers, to facilitate knowledge sharing in academic circles worldwide.
195. In addition to generating data on manufacturing activities in industrial zones, the project will support the development of methodologies for data collection and analysis and equip the Ministry of Production for this purpose. The model will then be replicated using the same technology and methodology in other industrial areas in Peru. Furthermore, the results will be documented in public sector information systems, for use by the central government, INEI and local governments. Deliverables will include reports, maps and graphics, and documents uploaded to electronic databases.
196. The project will build on the lessons learned from the UNIDO Sustainable Industrial Parks development in Latin America and the Caribbean (PaIS), through exchanges via the expert group platform created under the framework of PaIS. This will facilitate access to information and specific know-how on SIZ development and promote South-South engagement for the mutual benefit of both projects.
197. The “capacity building” component of the project will enable public officers from national, regional and municipal governments to support and implement master plans for sustainable industrial zones. This component will also raise the skills and competence of RECP and sound chemicals management

practitioners, who will then be incorporated into a national registry for qualified RECP professionals. This registry will increase industry awareness of RECP services and SAICM activities and confidence in the quality and objectiveness of the experts.

198. The project will identify and participate, wherever relevant, in scientific and/or policy-based networks, which may be of benefit to the project implementation through lessons learned. The project will also share experiences and lessons learned that might be beneficial in the design and implementation of similar projects in the future, through UNIDO's global knowledge pool. Identification and analysis of lessons learned will be an on-going process, yet there is a strict requirement to communicate these at least once every 12 months, as one of the project's central contributions. Particular emphasis will be laid on identifying best practices and lessons learned which can be replicated in the PCP Peru, which foresees the implementation of a national strategy for the development of sustainable industrial parks and zones. UNIDO-GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned.

B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

B.1 Consistency with National Priorities. Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions such as NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.:

199. Peru's Intended Nationally Determined Contribution (INDC) envisages a 30% reduction of emissions by 2030, in relation to the Greenhouse Gas (GHG) emissions of the projected business as usual scenario³⁰. To meet this target, Peru has begun implementing innovative projects to increase social and physical resilience, on the one hand, and initiatives to enable the transformation of the national energy matrix (through fuel switches and renewable energy promotion) on the other. The project will contribute to Peru's INDC in promoting and co-financing investments in clean and low-carbon technology under Output 3.4.1, so as to reduce GHG emissions, chemicals and waste generation.
200. Regarding focal areas Chemical and Waste the project is in line with subsequent strategies and conventions: NIP Stockholm convention National Implementation Plan: Chapter 3.3 action plan on dioxins and furans shows the priorities in the elimination of PCDD/F and chapter 4.5 addresses the strategy on contaminated sites. Under outcome 2.1 a national registry for qualified consultants in the field of sound chemicals management will be established and training modules for sound chemicals management will be delivered.
201. Regarding focal area Climate Change mitigation the project is in line with subsequent strategies and conventions:
202. Second National Communication (NC) to the UNFCCC submitted in 2016: The Peruvian industry shows in general low efficiency in the use of raw material, fuel and energy. This is due to the use of obsolete equipment and inadequate management of energy utilization. According to the NC necessary upgrades are needed in the use of renewable energy, energy efficiency, waste treatment technology and clean vehicles. Under outcome 2.1 training modules will be delivered for resource efficient and cleaner production, clean and low-carbon technologies. Additionally under outcome 1.2 policies on financial incentives for promoting low-carbon, clean technologies and environmentally friendly practices will be developed. Pilot demonstrations of clean and low-carbon technologies will also be implemented in selected companies in Callao.
203. Biennial update report submitted to UNFCCC in 2014: A nationally appropriate mitigation action (NAMA) on GHG mitigation is being executed in the industrial construction sector with the objective to promote energy efficiency and best practices. The proposed sustainable industrial zone initiative builds upon Peru's formal communication to the UNFCCC. Peru has not conducted a GEF National Portfolio Formulation Exercise to date. Under outcome 2.1 training will be delivered to representatives of government, environmental committees and businesses in Callao incorporating modules on energy efficiency and best practices.

³⁰ **Source:** Republic of Peru "Intended Nationally Determined Contribution (iNDC) from the Republic of Peru." *UNFCCC*, September 2015.

204. Technical needs assessment (TNA) Peru (2012): According to the TNA the industrial sector is being developed quickly. Mitigation actions are proposed with regard to climate change and air pollution especially through energy efficiency and renewable energy programs in the various manufacturing sectors as well as through waste management. Proposed practices concerning waste are reduction, reuse and recycling. Suggested technologies concern these three practices as well as incineration, anaerobic digestion and composting.

C. DESCRIBE THE BUDGETED M & E PLAN:

205. Project monitoring and evaluation (M&E) are conducted in accordance with established UNIDO and GEF procedures. The M&E activities are defined by Project Component 4 and the concrete activities for M&E that are specified and budgeted in the M&E plan (please refer to the table below). Monitoring will be based on indicators defined in the Strategic Results Framework (which indicates the means of verification), and the Annual Work Plans. Monitoring and Evaluation will make use of the GEF CCM and CW Tracking Tool, which will be submitted to the GEF Secretariat three times during the duration of the project: at CEO Endorsement, at mid-term review, and at project closure.

206. UNIDO as the GEF Implementing Agency will involve the GEF Operational Focal Point and project partners at all stages of the project monitoring and evaluation activities in order to ensure the use of the evaluation results for further planning and implementation. According to the Monitoring and Evaluation policy of the GEF and UNIDO, follow-up studies like country portfolio evaluations and thematic evaluations can be initiated and conducted. All project partners and contractors are obliged to (i) make available studies, reports or other documentation related to the project and (ii) facilitate interviews with staff involved in the project activities.

Type of M&E activity	Responsible Parties	Feeds into	Time frame	GEF Grant Budget (\$US)
Monitoring of project impact indicators (as per LogFrame)	UNIDO Project Manager (PM); Project Management Unit (PMU); MSC;	Project management; Semi-annual progress report; Annual GEF PIR	Quarterly	0
Periodic progress reports	UNIDO Project Manager (PM); Project Management Unit (PMU); MSC; expert consultancy	Project management; Semi-annual progress report; Annual GEF PIR	Quarterly	0
Measurement GEF Tracking Tool specific indicators	UNIDO Project Manager (PM); Project Management Unit (PMU); MSC; expert consultancy	Mid-term Review and Terminal Evaluation Reports	Mid-term of project and at project completion	0
Mid-term review	UNIDO Project Manager (PM); Project Management Unit (PMU); expert consultancy	Project management for the remaining duration	Mid-term of project	100,000
Independent terminal project evaluation	Independent evaluators in cooperation with UNIDO ODG/EVA.	Terminal Evaluation Review (TER)	Project completion (at least one month prior to the	100,000


Type of M&E activity	Responsible Parties	Feeds into	Time frame	GEF Grant Budget (\$US)
		conducted by UNIDO EVQ and/or GEF IEO	end of the project and no later than six months after project completion)	
Lessons Learnt	PMO, UNIDO PM	Terminal evaluation	Project completion	0
TOTAL indicative cost				200,000

Table 9: Project monitoring and evaluation plan

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies³¹ and procedures and meets the GEF criteria for CEO endorsement under GEF-6.

Agency Coordinator, Agency Name	Signature	Date (mm/dd/yyyy)	Project Contact Person	Telephone	Email Address
Mr. Philippe R. Scholtès, Managing Director, Programme Development and Technical Cooperation - PTC, UNIDO GEF Focal Point		02/16/2018	Ms. Petra Schwager	+ 43 1 26026 3749	p.schwage r@ unido.org

³¹ GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, SCCF and CBIT
GEF6 CEO Endorsement /Approval Template-August2016

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).

Component 1.	Policy framework for sustainable industrial zone development				
	Indicator	Baseline value	Target value (EOP)	Means of verification	Assumptions
Outcome 1.1. Regulations for the planning and management of sustainable industrial zones including policies on industrial pollution management and responsibilities in industrial zones developed and proposed to the government for approval.	Number of measures proposed and adopted to enhance institutional and regulatory framework for sustainable industrial zone development	Current institutional and regulatory proposals do not specifically target sustainable industrial development	At least 3 institutional or regulatory enhancement instruments proposed and adopted (3);	Copy of official gazette (<i>El Peruano</i>)	Political and social conditions in the country are stable and allow the timely approval of regulations proposed
Output 1.1.1. Regulation, planning aids, and policies for sustainable industrial zone master planning developed and submitted to the government for approval.	Number of policy instruments for SIZs developed	Current policy instruments, such as the <i>Law on PITES</i> , neglect to consider sustainability (such as gender and socio-environmental aspects) for industrial zones	At least 3 policy instruments developed (3)	Stamped documents acknowledging submission of policy instrument proposals to PRODUCE	The government of Peru and the district government of Callao are committed to adopting regulatory and planning instruments and policies for SIZ.
	Number of documents outlining a roadmap for SIZ development in Peru (taking into account environment, social and gender dimensions) developed	Current guidelines for eco-industrial parks (EIP), and Sustainable Industrial Areas (SIA), for instance, are primarily conceptual in nature. There are currently no <i>strategic</i> guidelines / roadmaps for SIZ development in Peru	Road map for Callao and Peru (including gender and environmental measures) developed and lessons learned documented (1)	Stamped documents acknowledging submission of road map proposal to PRODUCE	
	Number of databases with information on industrial zones in Peru and associated environmental pollutants	Current databases lack substantial information on environmental pollutants. In Peru there are currently no databases that track	At least one database on environmental pollutants caused by industry developed (1)	Report on the operation of the database	

		volume and type of material streams, industrial output or residual flows			
Outcome 1.2. Policies on financial and non-financial incentives for promoting low-carbon, clean technologies and environmentally-friendly practices developed and submitted to the government for approval	Number of policies focusing on low carbon and clean technologies developed	Current policies on fiscal and tax incentives do not have a specific focus on low-carbon and clean technologies for SIZ	At least 3 policies drafted and submitted to the national Government (3)	Copy of policy instrument proposals	Policy makers are willing to support the development of policies on financial incentives for low-carbon and clean technologies
Output 1.2.1. Proposal for financial and non-financial mechanisms and incentives drafted and submitted.	Number of financial mechanisms developed for companies in the industrial area	Currently there are no policies on fiscal and tax incentives specifically for companies located in the Callao industrial zone	At least two proposals for financial and non-financial mechanisms drafted (2)	Stamped documents acknowledging submission of policy instrument proposals to PRODUCE	Policy makers are willing to support the development of policies on financial incentives for low-carbon and clean technologies
Component 2.	Capacity building on sustainable industrial zone planning				
	Indicator	Baseline value	Target value (EOP)	Means of verification	Assumptions
Outcome 2.1. Improved level of expertise in sustainable industrial zone themes amongst representatives of private and public sectors	Number of representatives from governmental institutions, private sector and consultants trained in SIZ development (male/female ratio)	Representatives from the public and private sectors have received no specific training in SIZ themes	At least 30 people trained in capacity building seminars on SIZ, 30% women and 70% men. (30)	Training participant survey	A sufficient number of professionals from identified stakeholders are interested in participating in training activities
	Number of jobs created (in terms of consultants capable of providing SIZ and environmental advisory services)	Currently there are 447 consultants (out of 733) in PRODUCE's database with environmental advisory expertise; of these few have experience applying these concepts	10 professionals providing SIZ and environmental advisory services 30% women, 70% men (10)	National database of industrial professionals qualified in environmental services.	

		to SIZ.			
Output 2.1.1. Training modules delivered for master planning of sustainable industrial zones.	Number of training modules	Current training modules do not encompass the 6 key components of SIZ	At least 5 training modules developed and delivered	Training reports Training participant survey	A sufficient number of professionals from identified stakeholders are interested in participating in training activities
	Number of people trained (male/female ratio)	Representatives from the public and private sectors have received no specific training in the 6 key components of SIZ	30 people trained, 30% women and 70% men (30)	National database of industrial professionals qualified in environmental services.	
Output 2.1.2. Training modules delivered for resource efficient and cleaner production, clean and low-carbon technologies.	Number of training modules	Current training modules do not apply the concepts of RECP to SIZ	At least 10 training modules developed and delivered (10)	Training reports Training participant survey	
	Number of people trained (male/female ratio)	Currently there are 447 consultants (out of 733) in PRODUCE's database with environmental advisory expertise; the majority of which are from the private sector	30 people trained, 30% women and 70% men (30)	National database of industrial professionals qualified in environmental services.	
Output 2.1.3. Training modules delivered for sound chemicals management.	Number of training modules	Current training modules do not apply the concepts of sound chemicals management to SIZ	At least 7 training modules developed and delivered (10)	Training reports Training participant survey	
	Number of people trained (male/female ratio)	Currently there are 447 consultants (out of 733) in PRODUCE's database with environmental advisory expertise; of these there is no record of how many have been trained on sound chemical	20 people trained, 30% women and 70% men (30)	National database of industrial professionals qualified in environmental services.	

		management			
Output 2.1.4. Upgrade of the existing national database for qualified consultants in the field of low carbon and cleaner production (RECP) and sound chemicals management	Number of databases on qualified consultants in the field of low carbon and cleaner production (RECP) and sound chemicals management	Current databases do not specify on expertise in RECP or sound chemicals management	One national registry with at least 100 qualified consultants (100)	Database of consultants	A sufficient number of qualified consultants are interested in joining the national registry
Outcome 2.2. Improved and disseminated collaboration between companies, government and financial institutions in environmental management and concluded investments	Number of letters of intent for cooperation signed between the PMU and key project stakeholders	Currently there is no unit in Callao for environmental advisory and technical services	Five letters of intent for cooperation signed between the PMU and key project stakeholders (5)	Project reports	Stakeholders are willing to actively engage and cooperate in order to support the establishment of a management unit
Output 2.2.1. Technical Unit for sustainable industrial zone development established	Technical unit specific to the needs of the industrial zone developed	Currently there is no unit in Callao for environmental advisory and technical services	One proposal for a technical unit for industrial zones submitted (1)	Technical unit proposal	Stakeholders are willing to actively engage and cooperate in order to establish a technical unit

Component 3.	Component 3: Pilot demonstration of clean and low-carbon technologies				
	Indicator	Baseline value	Target value (EOP)	Means of verification	Assumptions
Outcome 3.1. Potential companies and services determined in industrial zone Callao, strategy on clean and low-carbon technology developed.	Number of companies identified	Eleven companies have signed co-financing letters, demonstrating their interest in participating in the project (11)	90 companies identified (90)	List of identified companies	Sufficient number of companies interested in applying clean and low carbon technologies.
Output 3.1.1. Detailed feasibility studies for technology application and transfer of cleaner production assessments carried out.	Number of feasibility studies conducted	There are have been no feasibility studies for low carbon / Clean technology carried out in the project target area	35 feasibility studies completed and submitted to companies	Documents of feasibility studies	Companies are willing to cooperate on environmental saving quantifications
Outcome 3.2. Inclusive socio-economic projects assessed and initiated	Number of socio-economic projects	Current investment projects in Callao (for instance by the MTC) are largely focussed on infrastructure, but do not fully integrate socio-economic aspects	At least 5 socio-economic projects	Projects reports	Sufficient members of the community are interested and actively support projects
Output 3.2.1. Set of inclusive socio-economic projects identified and initiated	Number of people benefiting from community projects (male/female)	There is currently no data on the number of people benefiting from community projects	1,000 male; 1,000 female.	Project reports	Sufficient members of the community are interested and actively support projects
	Amount of investments in socio-economic	Current and planned investments in	Investment of USD 35 million in socio-	Project reports	

	projects (USD millions)	road systems and connectivity for Callao amount to USD 900 million, but it is unclear whether they incorporate socio-economic and environmental aspects	economic projects		
Outcome 3.3. Increased public awareness on sustainable industrial zones	Number of institutions willing to participate in the project, following awareness raising events	Following an initial stakeholder engagement event, 4 institutions submitted co-financing letters for the project	At least 8 institutions participate in the industrial zone development project (8)	Meeting minutes and record of participation.	Institutions are interested in participating in awareness raising activities.
Output 3.3.1. Public awareness and communication events held and project results disseminated.	Number of public awareness raising events	Currently there are no recorded awareness raising events on SIZ	At least 10 public events for awareness raising carried out (10)	List of participants in awareness raising events.	Institutions are interested in participating in awareness raising activities.
	Number of people reached (male/female)	There is no record of community members attending awareness raising events on SIZ	At least 1000 people participate in awareness raising events (1000), 30% women and 70% men	List of participants (male/ female)	
	Number of gender-specific training	There is no record of community members attending gender specific trainings in the project	At least two gender specific training (2)	List of participants (male/ female)	

		target area			
Outcome 3.4. New installations of clean technologies and practices in selected companies implemented and financed.	Number of companies adopting best practices	There is currently no data available	35 companies adopt clean and low carbon practices	Company reports	Companies are interested in and have access to new installations of clean technologies and practices
	Total direct GHG emission reduced (ton CO ₂ eq);	There is currently no data available	305,987 tCO ₂ eq	GHG Tracking reports	
	Quantity of u-POPs eliminated and safeguarded	There is currently no data available	1,492,700 u-POPs (µg TEQ/a))	uPOPs Tracking reports	
Output 3.4.1 Access to alternative finance established; clean technology investment projects selected	Number of financial mechanisms available to companies for clean and low carbon investments	The selection criteria of current financial mechanisms often limits the participation of companies from a given sector and do not target SIZ	At least 3 financial mechanisms for clean and low carbon investments	List of loans granted to companies	Financial institutions are interested in implement financial mechanisms for clean and low carbon investments.
Component 4.	Component 4: Monitoring and Evaluation				
	Indicator	Baseline value	Target value (EOP)	Means of verification	Assumptions
Outcome 4.1 Monitoring and evaluation procedures.	Number of monitoring and evaluation frameworks developed	There is currently no monitoring and evaluation framework for this project	One monitoring and evaluation framework for the project developed	M&E framework Project reports	Project stakeholders are interested in cooperating to develop a monitoring and evaluation framework
Output 4.1.1 Monitoring and Evaluation mechanism implemented	Number of independent evaluations carried out	No independent evaluations have been carried out	One mid-term evaluation and one terminal evaluation carried out	Evaluation reports	Project stakeholders are interested in cooperating to obtain data for monitoring purposes

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 the GEF Council		
<p>Germany’s Comments:</p> <p>The proposal highlights that the concept of sustainable industrial zones is new in Peru, which makes a sound and comprehensive analysis of status quo of industrial areas and industries even more important. Germany suggests undertaking intensive analysis of status quo of industrial areas in Peru to understand the country and the local political, economic, environmental and social framework conditions.</p>	<p>During the PPG phase an extensive analysis of the socio-economic and environmental conditions for industry was undertaken, providing an overview of the status quo in Peru. The results are indicated in the baseline, ESMP and gender analysis respectively.</p>	<p>Section A.1. (<i>Environmental, social and public health impacts of industrial development in Peru; Baseline scenario in Callao; Barriers and gaps that need to be addressed</i>), Section A.4. <i>Gender Equality and Women's Empowerment</i>, ESMP and gender analysis.</p>
<p>Germany’s Comments:</p> <p>The project objective aims to pilot low-carbon technologies and practices in one Peruvian sustainable industrial zone (IZ Callao). For sustainable industrial zone development, the successful management is highly important, including pro-active service orientation, intensive stakeholder dialogue, facilitating networking and monitoring responsibilities within the Industrial Park and this during all phases of the “life cycle” of an industrial zone, including introduction, planning/design and operation). Successfully supporting and enabling organizational and management structure in Callao to perform these tasks should have role model character for new industrial parks (according to proposal nationwide 8 Industrial Parks are planned / “Several thousand companies are located in industrial clusters not specified as industrial parks showing the potential for up-scaling”). The proposal mentions a “management board”, but doesn’t specify further the status quo (capacities, mandate etc.) of IZ Callao regarding an organizational and management structure. Germany considers it important that the proponent further specifies on the existence of these</p>	<p>In order to address this issue, the project activities now foresees the creation of a technical unit, rather than a “management board”, which will take on the technical implementation of the project activities in addition to providing guidance on service orientation, stakeholder dialogue and networking. This model will be an innovative approach for Peru and is designed to support the sustainable industrial development.</p>	<p>Section A1 - description of outcome 2.2; output 2.2.1.1; 2.2.1.2; 2.2.1.3 and outcome 3.1 and output 3.1.1.2.</p>

<p>structures as well as associated challenges. Germany therefore recommends aligning adequate budget to related activities and to reflect this aspect adequately in the project structure, capacity building component and with regard to a sufficient time scheduling.</p>		
<p>Germany's Comments:</p> <p>Component 3 concentrates on clean and low-carbon technologies pilot demonstrations in 35 companies. Still the proposal does not sufficiently conclude how the piloting of improved environmental performance in these companies will be reflected and accompanied on park management level. Germany recommends that during PPG the advisory approaches for supporting the adoption of industrial park management plans, the installing of monitoring instruments and information management systems on park management level are assessed and integrated into the project structure. This can include monitoring and collecting data on pollution parameters, risk management, occupational health and safety, energy and resource efficiency.</p>	<p>Component 1 of this project (under Activity 1.1.1.4) consists of building national capacities for sustained data collection activities, so as to ensure adequate information management systems and support monitoring processes. Furthermore, this activity foresees the replication of this model, using the same technology, in other industrial areas in Peru.</p> <p>Activity 1.1.1.5 consists of the design of methodologies and tools for planning, analysis and evaluation of industrial zones in Peru, including business needs, infrastructure and services, and reduction of vulnerabilities to climate change.</p>	<p>Section A1 - description of outcome 1.1; output 1.1.1.</p>
<p>Germany's Comments:</p> <p>The German Development Cooperation is implementing in Mexico the "Programa Gestión Ambiental Urbana e Industrial II (PGAU II)" project on urban-industrial management. The project COPLAN ("Plataforma de Cooperación de América Latina del Norte") has supported on regional level the establishment of networks and exchange platforms to strengthen transfer and capacities on environmental and climate-friendly technologies. Germany recommends that during PPG and in the final project outline the cooperation and knowledge exchange to thematically close projects in Latin America (also central and north) are integrated.</p>	<p>The knowledge management approach for the project includes plans for the project to learn from other regional initiatives, including the PCP Peru and the UNIDO Sustainable Industrial Parks development in Latin America and the Caribbean (PaIS) project.</p>	<p>Section A.8 <i>Knowledge Management</i>.</p>
<p>Germany's Comments:</p> <p>As a holistic approach sustainable industrial development should as well consider climate change impacts. Not only in terms of emission reduction (mitigation) but also in terms of adaptation to climate change related risks, thus</p>	<p>Climate considerations will be made when selecting locations for installing equipment in companies. They will be included in the environmental impact assessment for all company improvements proposed.</p>	<p>Section A.5 <i>Risk</i> on page 39 and paragraph 204 on page 46, and table 17 on page 28 of the ESMP.</p>

<p>preparing industries and industrial zones for extreme weather events. Callao is in direct proximity to the sea, flood risk therefore might be a crucial concern. In Peru, climate change is characterized in terms of two key impacts: i) retreating glaciers, restricting water supply in coastal and highland regions and ii) the El Niño phenomenon, leading to both heavy rains and droughts. Germany recommends including activities on strengthening resilience through climate risk management in industrial zones /parks in the final project document.</p>	<p>Additionally, economic impacts of environmental pollution problems and climate change risks will be assessed and quantified, as detailed in the ESMP.</p>	
<p>Comments from the GEF Secretariat at Work Plan Inclusion</p>		
<p>No remaining comments</p>		
<p>Comments from STAP</p>		
<p>STAP suggests that there is a need to better develop mechanisms to ensure that training received, particularly by companies with long term operations, is mainstreamed into company standard operation procedures, such that sound environmental considerations are, de facto, a part of doing business.</p>	<p>Component 3 of this project (Activity 3.1.1.1) will deliver cleaner production assessments (RECP and sound chemicals management). This includes an RECP implementation plan, which will enable companies to integrate environmental considerations in their management and operation procedures.</p> <p>Furthermore, the project will build the Government's capacities for monitoring the environmental performance of industries, which will drive companies to imbed environmental considerations in their activities.</p>	<p>Section A1 - description of outcome 1.1 and output 1.1.1; outcome 3.1 and output 3.1.1.</p>
<p>STAP, however, would encourage project proponents to treat improvements in energy systems for GHG mitigation and different potential BAT/BEP for chemicals and waste reduction as concomitant factors.</p>	<p>Potential technologies for cleaner production upgrades will be assessed according to their potential for both GHG emission and chemicals and waste reductions.</p> <p>UNIDO's RECP methodology provides a holistic approach to delivering integrated solutions for environmental improvements in industrial activities. Therefore the interlink between energy efficiency and chemicals and</p>	<p>Section A1 - description of outcome 3.4 and output 3.4.1.</p>

	waste reduction is imbedded in this approach.	
The scientific information revealing the environmental pollution in the industrial areas of focus should be carefully considered for properly defined goals of reduced pollutant releases during the project implementation phase.	The baseline study carried out during the PPG phase revealed a substantial lack of quality data on the environmental performance of industrial activities in the target area. The project will therefore build national capacities for data collection and monitoring to ensure that there is accurate scientific information on environmental pollution.	Section A1 - description of outcome 3.4 and output 3.4.1.

A. Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: USD 150,000			
<i>Project Preparation Activities Implemented</i>	<i>GETF/LDCF/SCCF/CBIT Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent to date</i>	<i>Amount Committed</i>
Analyses, studies and surveys	16,183	16,183	
Baseline and company visits	59,807	59,807	
Stakeholder engagement	42,662	42,662	
Finalization of CEO endorsement	31,348	20,941	10,407
Total	<u>150,000</u>	<u>139,593</u>	<u>10,407</u>

The following activities were carried out during the PPG phase:

- Stakeholder engagement activities (consultations, workshops, stakeholder validation workshop)
- Collection of baseline data in the project target area
- Analysis of baseline and ongoing/planned initiatives
- Preparation of environmental and social management plan (ESMP)
- Gender analysis
- Obtaining of co-financing letters from donors, NGOs, agencies and government
- Finalization of project documents

³² If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue to undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities. Agencies should also report closing of PPG to Trustee in its Quarterly Report.

ANNEX D

CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

N/A

GEF Grant Budget Component 1						
Component 1. Policy framework for sustainable industrial zone development	Responsible Parties	Year 1	Year 2	Year 3	Year 4	Total
Output 1.1.1 Regulation, planning aids, and policies for sustainable industrial zone master planning developed and submitted to the government for approval	UNIDO PRODUCE	79,000	36,000	27,300	12,200	154,500
Output 1.2.1 Proposal for financial and non-financial mechanisms and incentives drafted and submitted	UNIDO PRODUCE	32,400	27,700	12,900	7,500	80,500
TOTAL Component 1		111,400	63,700	40,200	19,700	235,000
GEF Grant Budget Component 2						
Component 2. Capacity building on sustainable industrial zone planning	Responsible Parties	Year 1	Year 2	Year 3	Year 4	Total
Output 2.1.1. Training modules delivered for planning of sustainable industrial zones	UNIDO PRODUCE	21,500	16,900	10,900	9,000	58,300
Output 2.1.2. Training modules delivered for resource-efficient and cleaner production, clean and low-carbon technologies	UNIDO PRODUCE	36,500	18,900	15,700	9,100	80,200
Output 2.1.3. Training modules delivered for sound chemicals management	UNIDO PRODUCE	25,000	17,200	15,600	9,600	67,400
Output 2.1.4 Upgrade of the existing national database for environmental consultants in the field of low carbon, cleaner production (RECP) and sound chemicals management	UNIDO PRODUCE	5,400	3,900	1,600	1,600	12,500
Output 2.2.1 Technical Unit for sustainable industrial zone development established	UNIDO PRODUCE	33,600	28,000	22,000	13,000	96,600
TOTAL Component 2		122,000	84,900	65,800	42,300	315,000

GEF Grant Budget Component 3						
Component 3. Pilot demonstration of clean and low-carbon technologies	Responsible Parties	Year 1	Year 2	Year 3	Year 4	Total
Output 3.1.1 Detailed feasibility studies for technology application and transfer and cleaner production assessments carried out	UNIDO PRODUCE	165,000	174,000	129,000	119,700	587,700
Output 3.2.1. Set of inclusive socio-economic projects identified and initiated	UNIDO PRODUCE	20,000	31,800	31,400	26,800	110,000
Output 3.3.1. Public awareness and communication events held and project results disseminated	UNIDO PRODUCE	34,100	50,200	50,000	57,000	191,300
Output 3.4.1. Access to alternative finance established; clean technology investment projects selected	UNIDO PRODUCE	62,700	1,079,700	1,083,200	54,400	2,280,000
TOTAL Component 3		281,800	1,335,700	1,293,600	257,900	3,169,000

GEF Grant Budget Component 4						
Component 4. Monitoring and Evaluation	Responsible Parties	Year 1	Year 2	Year 3	Year 4	Total
TOTAL Component 4	UNIDO PRODUCE	10,000	50,000	70,000	70,000	200,000

Project Management Costs (PMC)	Responsible Parties	Year 1	Year 2	Year 3	Year 4	Total
TOTAL PMC	UNIDO	51,500	42,500	50,500	50,500	195,000

TOTAL						4,114,000
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ANNEX F

TIMELINE OF THE ACTIVITIES

Separate file with file name: “GEF 9206_SIZ Peru_Timeline.xls”

“The Government of the Republic of Peru agrees to apply to the present project, mutatis mutandis, the provisions of the Revised Standard Technical Assistance Agreement concluded between the United Nations and the Specialized Agencies and the Government on 30 March 1956.”

Part 1: Chemicals and Waste

The benefits envisaged by the implementation of the project will result from industrial process improvement, training and policy development. Reduction of u-POPs will be achieved by implementing BAT/BEP in companies, including: (i) minimization of open burning, (ii) optimization of combustion processes, (iii) flue gas cleaning process (iv) afterburners technology. The application of best available techniques for chemicals, as listed in Annex C of the Stockholm Convention, is also expected to result in numerous co-benefits.

The CW reduction will be assured by (i) developing national capacities to assess, advise, and implement technologies at company level within relevant sectors in selected industrial areas, (ii) developing national policies and standards for environmental management in industrial areas, (iii) sharing existing toolkits and disseminating case studies from the project.

The technology to be implemented by the companies, will be selected according to the following criteria, in order to ensure its acceptance and uptake: Technical feasibility, Costs including environmental and health cost, Cost efficiency, Efficacy, Risk, Availability, Operator friendliness (ease of use), local and traditional techniques and/or knowledge; economic aspects.

The project, to be implemented by PRODUCE as a *pilot project*, aims to develop a model for replication in existing and planned industrial zones and parks in Peru. Therefore the policy and training components, for which replication toolkits will be produced, will play a crucial role in mainstreaming the reduction of u-POPs and other chemicals at national level.

During the PPG phase, a survey was carried out in companies in Callao and seven companies were audited. The information obtained was used to estimate reduction potential of u-POPs in the area and the potential for spill over in existing and future industrial areas and parks.

In order to address the level of u-POPs emissions, the project will focus on the production of ferrous and non-ferrous metals (foundries) and metal processing. The potential replication of BAT/BEP, as result of technical guidelines and policy implementation in a minimum of 5 industrial areas (see figure I.1), is expected to reach 20% of existing foundries and metal processing companies. Therefore, the total u-POPs reduction at the end of the project's life is estimated at 8.92 g TEQ/y.

Table H.1 Annual u-POPs emissions
National Implementation plan for the Stockholm Convention on Persistent Organic Pollutants in Peru

Cuadro N° 2.14 Liberaciones de dioxinas y furanos de las 10 categorías fuentes. Perú. Año Base 2003						
Matriz de selección	Liberaciones anuales (g EQT/a)					Comentarios
Categorías	2003	2006	2010	2020	2030	% Tasa de crecimiento
Incineración de desechos	38,5700	40,2090	42,5080	48,8480	56,1340	1,4
Producción de metales ferrosos y no ferrosos	72,2300	83,6190	101,6400	165,5600	269,6800	5
Generación de energía y calor	64,0000	74,0880	90,0540	146,6900	238,9400	5
Productos minerales	0,4600	0,6069	0,8886	2,3048	5,9782	10
Transportes	0,8700	1,0013	1,2171	1,9826	3,2294	5
Proceso de combustión a cielo abierto	182,8400	190,6300	201,5300	231,5900	266,1300	1,4
Producción y uso de Sustancias/ productos químicos y bienes de consumo	5,0000	5,7847	7,0313	11,4530	18,6560	5
Varios	0,6200	0,7119	0,8654	1,4096	2,2961	5
Disposición final/ rellamamiento sanitario	59,5200	64,0920	70,7460	90,5610	115,9300	2,5
Identificación de posibles puntos calientes						
Total	424,0900	460,7400	516,4800	700,3900	976,9700	

The reduction potential of 8.92 g TEQ/y is supported by the data collected from the company audits on energy consumption, raw materials, products and annual production. Using the Toolkit for Identification and Quantification of Releases of Dioxins, Furans and Other Unintentional POPs under Article 5 of the Stockholm Convention, UNEP, 2013, the following calculations - taking into account emissions/releases to air, water, land and product - were produced.

The data from the audits was used to extrapolate the reduction potential of the project, which will involve 35 companies from the 3 sub-sectors with the highest potential for u-POPs reduction: chemistry, foundries and metal processing. The direct u-POPs reduction from the implementation of BAT/BEP in these companies will be approximately 1,492,700 µg TEQ/y (1.493 g TEQ/y).

Table H.2 Calculation of the u-POPs reduction (bottom-up approach)

Sub-sector	No. of companies	Total u-POPs reduction for 35 companies, µg TEQ/y
Chemistry	15	627,825
Foundries	5	399,935
Metal	15	464,940
	35	1,492,700

Part 2: GHG Reduction

The global GHG reduction benefits of the Project are associated with (i) the implementation of energy efficiency measures in industrial zones in Peru, thereby off-setting grid electricity and fossil fuel (natural gas); (ii) training and technical assistance to companies in the Project's target area to implement and enhance energy management practices (in preparation to ISO 50001). The expected benefits are relevant for Peru to meet its obligations under the UN Framework Convention for Climate Change (UNFCCC).

The ex-ante estimate of expected GHG reductions will be based on typical energy saving potentials and investment costs for cost-effective measures in the most relevant sub-sectors of the manufacturing industry sector in the project's target area. The initial baseline assessment during the PPG phase revealed that there is significant lack of data on production processes and energy use. To overcome this barrier, the project will provide technical assistance for industrial data collection, which will facilitate the identification of the GHG reduction potential of given initiatives and investments.

The survey completed during the PPG phase was intended to provide data for the calculation of the expected project benefits (u-POPs and GHG reduction potential), however, the data collected was inconclusive, particularly with respect to GHG emissions. Therefore, the project includes an outcome on awareness-raising to foster knowledge-sharing.

Furthermore, due to the barriers in data collection, additional information was needed for a better approximation of the expected global environmental benefits. Ultimately, the potential GHG reductions were calculated by assessing the area's industrial energy consumption and savings potential by applying aggregated sector data. Reference data was taken from assessments of energy use and savings potential carried out in industries in the project target area.

Information sources:

1. Working Document "Estado de la eficiencia energética en Perú: identificación de oportunidades", prepared by CREARA Energy Experts for the Corporación Andina de Fomento (CAF) in 2016.³³
2. Working Document "Estado de la eficiencia energética en Colombia: identificación de oportunidades", prepared by CREARA Energy Experts for the Corporación Andina de Fomento (CAF) in 2016.³⁴
3. Document "Crecimiento Económico, Población, Características Sociales y Seguridad Ciudadana en la Provincia Constitucional del Callao", by the Instituto Nacional de Estadística e Informática (INEI), 2016.³⁵
4. Directory of manufacturing companies in Callao (2010), which provides a listing of companies according to subsector, number of employees and size (large, small and micro).

Document #1 provides useful data on prioritized EE interventions in Peru's manufacturing industry as well as a general analysis of the sector's energy consumption. This is complemented by a similar study for Colombia (Document #2). Document #3 provides a breakdown of industrial and commercial activity in Callao Province. Document #4 provides limited subsector information enabling a classification thereof in terms of number of companies and employment.³⁶

Summary Greenhouse Gas emission reductions:

Direct GHG emission reductions will be achieved by pilot investments in EE technologies to be implemented during the Project's time horizon using equity and debt capital. Equity is provided by company owners (US\$ 1.5M) plus tailored

³³ Source: <http://scioteca.caf.com/handle/123456789/963>.

³⁴ Source: <http://scioteca.caf.com/handle/123456789/960>.

³⁵ Source: <https://www.inei.gob.pe/callao/>.

³⁶ Within limitations. Note that the INEI document lists a total of 66,545 companies distributed over the categories large (377), medium (106), small (2,371) and micro (63,691), while the Directory includes 1433 entities (categories large, small and micro). Since 2012, the INEI classification is used but a new Census has not been carried out as yet. The present GEF project is not focused on the micro companies.

GEF grants (US\$ 2.28M). Loans (such as green loans provided by SECO) will be up to US\$ 5M which adds to a total sum available for EE investments of the order of US\$ 7M). Summarizing, the project is expected to result in:

- Total lifetime direct energy savings of 325,179 MWh (electricity) and 2,585,098 GJ (natural gas).
- Annual direct energy savings of 32,518 MWh/yr (electricity) and 258,510 GJ/yr (natural gas) in Year 4 of the project.
- Total lifetime direct GHG emission savings of 305,987 tCO₂eq.
- Indirect bottom-up GHG emission savings of 1,046,731 tCO₂eq, as result of replication and spill-over in Callao area and other industrial zones under development.
- Total GHG emission savings of 1,352,719 tCO₂eq.

The energy savings and GHG emissions calculations are based on the data provided in Documents #1 and #2 (CAF, 2016). The methodology utilized is the "Revised methodology for calculating GHG benefits of GEF energy efficiency projects (version 1.0)" – using the Demonstration and Diffusion Module.

Options relevant for the manufacturing industry with a payback time of 5 years or less are related to: (1) Energy management; (2) Electricity (lighting, electric motors and cooling); and (3) heat (EE burners). Based on the listing above, a tentative cost of 300 USD/MWh (CAPEX) is taking as a reference value for cost-effective EE technologies, and 40 USD/MWh (CAPEX) for heat technology (burners). Feasibility studies in companies will identify the more relevant options for technology upgrade to reduce GHG emissions.

Tentative EE interventions per prioritized subsector:

The following table provides a tentative overview of applicable, cost-effective EE interventions in the prioritized subsectors.

TABLE H.3. APPLICABLE EE INTERVENTIONS IN PRIORITIZED MANUFACTURING INDUSTRY SUBSECTORS					
	Energy management	Electricity			Heat
	EM 50001	Lighting	Motors	Cooling	Burners
2. Food processing	x	x	x	x	x
5. Foundries	x		x	x	x
6. Metal (mechanics)	x	x	x	x	
8. Fish processing	x	x	x	x	x
9. Plastics	x		x	x	
10. Chemistry	x		x	x	x
11. Textiles	x	x	x	x	x

Separate file with file name: “GEF 9206_SIZ Peru_ESMP.docx”

Separate file with file name: “GEF 9206_SIZ Peru_Gender Analysis.docx”

ANNEX K **TRACKING TOOL FOR CLIMATE CHANGE MITIGATION PROJECTS (CCM-TT)**
Separate file with file name “GEF6_Peru_CCM_Tracking Tool.xlsx”

ANNEX L TRACKING TOOL FOR CHEMICALS AND WASTE (CW-TT)

Separate file with file name “GEF6_Peru_CW_Tracking Tool.xlsx”

Component 3 will identify potential pilot projects for the uptake of clean and low carbon technologies and sound chemicals management, as a result of RECP assessments. The assessments are expected to identify options for the optimization of the use of resources (water, energy and materials), to increase the competitiveness and improve the environmental performance of participating companies.

UNIDO has over 20 years' experience implementing RECP all over the globe and has collected case studies on the most relevant technologies for improve the environmental performance of industries. The following options could be implemented in the project target area, according to the needs of the individual companies.

Improved energy systems for GHG mitigation

Thermal energy:

Steam and/or hot water production: maximal energy efficiency is sought through process re-design or rehabilitation in boiler houses. Thereby, possible applications for using waste heat with waste heat boilers, economisers (heat exchangers) and condensing systems for stack gases are evaluated to produce hot water, steam or to heat boiler feed. Optimal installations and controlling of oxygen content in the flue gas are further means to improve the fuel/air ratio and efficiency of the burner. In addition, efficiency monitoring (e.g. by energy management system ISO50,001) and the application of combined heat and power (CHP) and renewable energies (biomass and solar) are evaluated.

The temperature level of industrial waste heat is often too low for direct reuse. Thus, this valuable source of heat is often released unused to the environment although. Industrial heat pumps are suited for waste heat recovery from production processes, waste water, extracted air and other sources and are further evaluated considering the overall efficiency and cost-effectiveness.

Compressed air:

Compressed air systems are subjected to efficiency testing, since experience shows that they can show low levels of efficiency due to leaks or poor design. The internal use of waste compressor heat also forms part of the assessment since through heat recovery water can be heated to about 55°C to serve as water for practical use. An optimized system layout, improvement of the air pressure reduction valves, controlled condensed water outflow and maintenance are all part of an optimized compressed air production that will be included in the proposed project.

Cooling:

Cooling systems are evaluated for their energy efficiency potential. This is a central issue, particularly in food & beverages and seafood factories where these systems are used for cooling, freezing, cold storage and air conditioning. In addition to optimal power, pressure and temperature levels and control, the use of waste heat is also evaluated for internal use. Absorption cooling systems may contribute to reducing the energy intensity of refrigeration. For economical operation of this technology a cost-effective source of heat of about 80-130°C is required. At lower temperature levels also adsorption systems come into question but must be evaluated regarding capacity and cost effectiveness particularly in regard to energy prices. Modern cooling systems can also consider natural refrigerants like ammonia and CO₂, for example in shock freezing.

Appropriate technologies and practices for chemicals and waste reduction:

U-POPs: Unintentionally produced POPs may be caused by obsolete and poorly configured fossil fuel combustion systems. Of particular relevance is PCDD/F, which can be caused by inappropriate temperatures, retention times as well as oxygen content in the combustion process. The use of BAT/BEP in existing boiler systems may lead to reduction in the emission of PCDD/F and contribute to achieving GEF targets. Parameters that can be controlled to reduce PCDD/F

emissions in fossil fuel combustion systems are combustion quality (content of CO, total hydrocarbons, soot formation, particle burnout), flue gas temperature and fuel parameters (sulphur, metals, chlorine).

The proposed GEF project will target the improvement of existing industrial boiler systems and facilitate the up-grade or replacement with new installations if needed. The focus will be on BAT primary measures like good combustion conditions (complete combustion of POPs), appropriate combustion technique (e.g. fluidized bed combustion with coal or renewables). Secondary BAT measures for POPs reduction from industrial boiler systems, such as air pollution control devices will be considered as appropriate (e.g. in ceramic industry). Also the following industrial source categories have the potential for comparatively high formation and release of U-POPs to the environment as a result of chemical reactions: waste incinerators, pulp production, cement kilns, thermal processes in the metallurgical industry. Co-benefits between the reduction of U-POPs and air pollutants like PM exist. In addition the GEF project will seek synergies with the climate change objective of the project.

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