GEF-6 PROJECT IDENTIFICATION FORM (PIF)

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 (select) (select)	GEF Agency Project ID:	150061
Other Executing Partner(s):	Ministry of Production (Produce)	Submission Date: First re-submission Date: Second re-submission Date:	07/23/2015 08/19/2015 12/08/2015
GEF Focal Area(s):	Multi-focal Areas	Project Duration (Months)	36
Integrated Approach Pilot	IAP-Cities ☐ IAP-Commodities ☐ IAP-Food Security ☐	Corporate Program: SGP ☐	
Name of parent program:	[if applicable]	Agency Fee ($)	462,080

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES[2]

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	**Trust Fund**	**(in $)**	
		GEF Project Financing	**Co-financing**
(select) CCM-1 Program 1 (select)	GEFTF	1,518,309	15,000,000
(select) CW-1 Program 1 (select)	GEFTF	300,000	2,000,000
(select) CW-2 Program 3 (select)	GEFTF	3,045,691	19,065,000
(select) (select) (select)	(select)		
(select) (select) (select)	(select)		
(select) (select) (select)	(select)		
(select) (select) (select)	(select)		
(select) (select) (select)	(select)		
(select) (select) (select)	(select)		
Total Project Cost		4,864,000	36,065,000

B. INDICATIVE 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	**Financing Type[3]**	**Project Outcomes**	**Project Outputs**	**Trust Fund**	**(in $)**	
					GEF Project Financing	**Co-financing**
Component 1: Policy framework for sustainable industrial zone development	TA	Outcome 1.1. Regulations for the planning and management of sustainable industrial zones including policies on industrial pollution management and responsibilities in industrial zones	Output 1.1. Regulation, planning aids and policies for sustainable industrial zone master planning developed and submited Output 1.2. Proposal for adapted financial	GEFTF	200,000	2,500,000

[1] Project ID number will be assigned by GEFSEC and to be entered by Agency in subsequent document submissions.
[2] When completing Table A, refer to the excerpts on *GEF 6 Results Frameworks for GETF, LDCF and SCCF*.
[3] Financing type can be either investment or technical assistance.

		developed and proposed to the government for approval; Outcome 1.2. Policies on financial incentives for promoting the use of clean technologies and environmentally-friendly practices developed.	incentives drafted.			
Component 2: Capacity building on sustainble industrial zone planning	TA	Outcome 2.1. Improved level of expertise in sustainble industrial zone themes amongst representatives of government, employees of industrial zone management boards and businesses; Outcome 2.2 Improved and disseminated collaboration between industrial zone management boards and companies in environmental management and concluded investments.	Output 2.1. Training modules delivered for master planning of sustainble industrial zones, and integration into host community, industrial zone certification; Output 2.2. Training modules delivered for resource efficient and cleaner production, clean and low-carbon technologies; Output 2 3. Training modules delivered for sound chemicals management.	GEFTF	800,000	2,500,000
Component 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; Outcome 3.2.Inclusive socio-economic projects assessed and initiated; Outcome 3.3. Public awareness raising on sustainble industrial zones	Output 3.1. Detailed feasibility studies for technology application and transfer and cleaner production assessments carried out; Output 3.2. Set of inclusive socio-economic projects identified and initiated; Output 3.3. Public awareness and communication and project results disseminated.	GEFTF	1,000,000	2,500,000
	Inv	Outcome 3.4.New installations of clean technologies and practices in selected companies implemented and financed	Output 3.4. Access to alternative finance established; clean technology investment projects selected.	GEFTF	2,464,000	27,565,000
Component 4: Monitoring and	TA	Outcome 4.1. Monitoring and	Output 4.1. Monitoring and	GEFTF	200,000	500,000

Evaluation		evaluation procedures	evaluation mechanism implemented.			
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
			Subtotal		4,664,000	35,565,000
			Project Management Cost (PMC)[4]	GEFTF	200,000	500,000
			Total Project Cost		4,864,000	36,065,000

For multi-trust fund projects, provide the total amount of PMC in Table B, and indicate the split of PMC among the different trust funds here: ( )

C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount ($)
Recipient Government	Ministry of Production	In-kind	1,700,000
Recipient Government	Ministry of Environment	In-kind	510,000
Recipient Government	Ministry of Housing, Construction and Sanitation	In-kind	250,000
Recipient Government	Ministry of Health	In-kind	250,000
Recipient Government	Regional government Callao & Lima municipality, dept. of infrastructure	Equity	20,000,000
Donor Agency	Green Credit Trust Fund of Seco	Grants	1,500,000
Others	Fondo para la Innovacion, Ciencia y Tecnolgia (FINCyT)	Grants	3,500,000
Others	Centro de Ecoficiencia y Responsabilidad Social (CER)	In-kind	30,000
Private Sector	Banco de Credito del Peru	Loans	5,000,000
Beneficiaries	Industrial zone enterprises	Grants	3,000,000
GEF Agency	UNIDO	Grants	125,000
GEF Agency	UNIDO	In-kind	200,000
Total Co-financing			36,065,000

D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS [a)]

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	(in $)		
					GEF Project Financing (a)	Agency Fee (b)[b)]	Total (c)=a+b
UNIDO	GEFTF	Peru	Climate Change	(select as applicable)	1,518,309	144,239	1,662,548
UNIDO	GEFTF	Peru	Chemicals and Wastes	POPS	3,045,691	289,339	3,335,031
UNIDO	GEFTF	Peru	Chemicals and Wastes	SAICM	300,000	28,500	328,500
(select)	(select)		(select)	(select as applicable)	0	0	0
(select)	(select)		(select)	(select as applicable)			0
Total GEF Resources					4,864,000	462,079	5,326,079

a) Refer to the Fee Policy for GEF Partner Agencies.

E. PROJECT PREPARATION GRANT (PPG)[5]

[4] For GEF Project Financing up to $2 million, PMC could be up to10% 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.

Is Project Preparation Grant requested? Yes ☒ No ☐ If no, skip item E.

PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

Project Preparation Grant amount requested: $150,000				PPG Agency Fee: 14,250			
GEF Agency	**Trust Fund**	**Country/ Regional/Global**	**Focal Area**	**Programming of Funds**	**(in $)**		
					PPG (a)	**Agency Fee**[6] (b)	**Total** c = a + b
UNIDO	GEF TF	Peru	Climate Change	(select as applicable)	32,877	3,123	36,000
UNIDO	GEF TF	Peru	Chemicals and Wastes	POPS	117,123	11,127	128,250
(select)	(select)		(select)	(select as applicable)			0
Total PPG Amount					**150,000**	**14,250**	**164,250**

[5] PPG requested amount is determined by the size of the GEF Project Financing (PF) as follows: Up to $50k for PF up to$2m (for MSP); up to $100k for PF up to $3m; $150k for PF up to $6m; $200k for PF up to $10m; and $300k for PF above $10m. On an exceptional basis, PPG amount may differ upon detailed discussion and justification with the GEFSEC.

[6] PPG fee percentage follows the percentage of the Agency fee over the GEF Project Financing amount requested.

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS[7]
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	*Hectares*
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	*Hectares*
3. Promotion of collective management of 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;	*Number of freshwater basins*
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)	*46,075,000 metric tons*
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)	*metric tons*
	Reduction of 1000 tons of Mercury	*metric tons*
	Phase-out of 303.44 tons of ODP (HCFC)	*ODP tons*
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	*Number of Countries:*
	Functional environmental information systems are established to support decision-making in at least 10 countries	*Number of Countries:*

* Calculated UPOPs reduction will result in 28.4 g/a TEQ with a replication factor of 30.

PART II: PROJECT JUSTIFICATION

1. *Project Description.* Briefly describe: 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 area[8] 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, LDCF, SCCF, and co-financing; 5) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF); and 6) innovation, sustainability and potential for scaling up.

a) Global environmental problems:

1. Peru has experienced sustained rapid economic growth over the last years mainly driven by widespread growth in the processing and manufacturing sectors. In the year 2008 it amounted to 15.5% of GDP. This rapid growth, however, brings enormous challenges for the local and global environment. Industrial zones emerged that while contributing to drawing new and foreign investments to the country and generating new employments have adverse impacts on the environmental quality. Waste water from industrial zones if discharged in the water receivers without

[7] Provide those indicator values in this table to the extent applicable to your proposed project. 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. There is no need to complete this table for climate adaptation projects financed solely through LDCF and/or SCCF.

[8] 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.

appropriate treatment causes severe pollution of surface water and negative impact on agriculture and aquaculture as well as on the supply of drinking water. The total solid waste from industrial zones has steadily increased in the recent years and the collection, transportation, recycling and reuse of solid waste from industrial zones is insufficient.

2. Furthermore, air pollution is highly concentrated on industrial zones with enterprises using obsolete technologies. Industrial zones represent a very important layer in the productive structure of Peru, both in the number of businesses and employment. New industrial zones are widespread in the country and have been declared in 12 Peruvian provinces. These zones are related mainly to SMEs which represent 49% of GDP, employing in total 88% of the economically active population in Peru. In terms of final energy consumption the sectors industry and mining amount to 31.4% of the total of 518,982 TJ in Peru (2007). The government has a 15% energy savings goal for the period 2009-2018, relative to projected demand for 2018, in the residential, industrial, services, public, and transportation sectors (IFC, 2011). The Ministry of Energy and Mines (MINEM) has set a goal for a 33% renewable energy share in the energy matrix by 2021.

3. The implementation of a multi-focal area project designed to transform existing industrial zones to be sustainable is based on a wide variety of environmental problems, caused by the businesses located in the zones. Therefore relevant measures are related to different GEF focal areas too, which can be complementary.

4. Concerning the global response to climate change technology development and transfer plays an important role. The transfer of environmentally sound technologies is one of the key means to reduce, or slow the growth in greenhouse gas emissions, and to stabilize their concentrations. Technological change has also the potential to significantly reduce the cost of meeting climate change goals. In Peru the timely deployment and diffusion of innovative low-carbon technologies and energy conservation measures are still inappropriate and need to be addressed especially in intensively used industrial zones. In addition supportive policies need to be developed or improved to catalyze climate change related technology transfer processes.

5. Within large industrial zones in Peru the use of chemicals and their management including chemical waste has been a problem of regional but also global concern. Numerous companies still lack of environmentally safe chemical and waste reduction and elimination know-how and technologies and are therefore urged to move their businesses to new locations outside urban areas. Furthermore chemical industry expertise on emerging chemical and waste issues of global concern tends to be low in Peru. Among these are heavy metals, e.g. lead in paints, solvents and UPOPs that are released either as product ingredients or as unintended by-products from industrial processes. In order to remove these barriers demonstration of sustainable production and consumption practices to decouple economic growth from the use of POPs and other chemicals of cocern is needed along with policy measures for cost recovery from the private sector for environmental clean up (e.g. contaminated sites).

b) Baseline scenario:

8. In the industrial zone of Callao that was selected for the proposed demonstration project industrial areas coexist with residential areas. Further selection criteria are the variety of industrial sectors with usable waste or waste heat, the global environmental impact of the businesses located in this zone, the economic importance and the representativeness for other industrial zones or clusters in Peru. The selection is based on information derived from the regional government of Callao and the municipality of Lima. The industrial zone Callao generates a wide range of pollutants. 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 location of Callao in the coastal arid environment with less than 10 mm/year precipitation and overexploitation of water resources particularly by industrial, mining and agricultural activities endanger the future availability of surface and groundwater for Callao and Lima districts with a total of more than 9 million inhabitants. Substantial other air pollutants acting as precursors for GHG like NMVOC, SO2, NOx and CO were reported as well. Significant GHG emissions of industrial activities are mainly caused by chemical, plastic, pharmaceutical, metal, textile and pulp and paper industries. 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 health problems. Chemical storage was identified to be inappropriate in numerous cases. Solid waste of Callao industrial zone amounts to 100 t/day with a maximum operating capacity of the landfill of 2,500 t/day. Landfilling since it is not based on state-of the art design poses another danger for groundwater contamination. Industrial companies have not consequently implemented methods to reduce and treat internal waste, waste water and off-gas so far. In addition contaminated sites caused by industrial activities slow future development of land due to financial risks of investors. Between 2005 and 2010 the export volume of small and medium entreprises located in Callao industrial zone increased by a factor 30.

9. In case no intervention of GEF would take place the planning of new sustainble industrial zones and the transformation of existing industrial zones to sustainable ones would be hindered caused by lacking experience, financial resources and clear regulations. The methodology of sustainble industrial zones with its combination of plant level efficiency (leading to minimization of emission generation from individual enterprises) and collective synergies (leading to optimized resource exchanges between enterprises) could not be multiplied and widely turn industrial zones into sustainble industrial zones, thus missing the ultimate aim of the Peruvian government to further reduce the net generation of wastes, effluents and emissions.

c) Baseline projects:

10. In the past the Peruvian government reacted to the environmental pollution by implementing various strategies and action programmes related to optimising industrial processes. These were diversified and not restricted exclusively to industrial zones. These action programmes were and will be implemented without GEF funding and the project proposed here. Numerous action programs have been terminated meanwhile, however with the wide implementation of industrial environmental protection measures not yet being achieved. Relevant ongoing and past activities are described in the following.

11. For example, a new law on “Parques Industriales Tecno-Ecologicos (PITES)" (Congreso, 2013) has been published to facilitate and accompany the establishment of these new industrial parks that set the foundation for industrial development that is more efficient, more competitive and cleaner than traditional industrial parks.
12. Nevertheless, the new law does not define ways to achieve this goal. At the same time however, the need to improve the environmental management of existing industrial zones is being taken up by the government. The proposed GEF project will address these needs through the development of policies and regulations for establishing new sustainble industrial zones.

13. In 2014, the National Programme for Productive Diversification (PNDP), ascribed to the Vice Ministry of MSE and Industry (Ministry of Production) was created in order to promote, and implement actions to diversify production, and therefore contribute with production and business development, generation of employment and sustainable economic growth. The programm seeks to promote, facilitate and develop productive infrastructure in the country (industrial parks, markets and other productive areas) to reduce business costs and increase productivity.

14. For the first phase, the Program is focused on the optimal development of 8 industrial parks nationalwide; this development considers not only the adequate selection of site location, but also the provision of public infraestructure as well as the legal environmental regulation for park construction and operation. However, the Program fails to define ways to regulate or improve the environmental management of industrial zones in these new sites. The proposed GEF project will address these needs through the development of policies and regulations for establishing the industrial parks proposed by the National Programme for Productive Diversification.

15. In Peru, industrial zones are areas where industries coexist with workshops and homes. Since 2011, Law No. 28183 Development Framework Industrial Parks regulates the establishment, promotion and development of industrial parks. The aforementioned new law on the development of sustainble industrial zones “Parques Industriales Tecno-Ecologicos (PITES)" (Congreso, 2013) targets on the implementation of a national strategy to promote competitiveness and profitability of the production units of the industrial and agricultural sectors. Furthermore attempts to draw a new resolution on environmental management in manufacturing industry were made

in 2014 by the Ministry of Production (Produce, 2014). The laws help public entities and private investors in the context of regional development and decentralization of economic activities. A priority is the transfer of the national policy to regional governments and to diversify exports to facilitate private investment and innovation in new businesses, though not fully achieved so far . The proposed GEF project will support this priority by facilitating investment into clean technologies.

16. Relevant activities that have been conducted include the Industrial Park Callao pilot program that was conceived and implemented from 2008-2010 on the basis of a public-private partnership, consisting of the regional government of Callao, the Ministry of Production, the Ministry of Environment and selected industries supported by the Swiss State Secretariat for Economic Affairs (Seco). The program addressed mainly aspects of corporate social responsibility (CSR). Main conclusions included the wide implementation of the sustainble industrial zone strategy to existing and new industrial zones, to technically advise industries in their environmental approach, especially in eco-efficiency and eco-innovation, to promote clean technology transfer and to provide capacity building to public institutions/private companies in the sustainble industrial zone strategy and specifically in health and occupational safety. The proposed GEF project will take up the conclusions of this initiative, include technology and safety advise and disseminate the results to other industrial zones.

17. As a result of workshops held jointly by UNDP and APCI (Agencia Peruana de Cooperación Internacional) in 2010 and 2011 four priority areas for the cooperation with the United Nations have been identified, including "Environment and Disaster Prevention". Activities within this priority area are still to be developed. The proposed project is in line with this priority.

18. In addition a work plan was developed and approved by APCI together with the German development cooperation for the development of the strategy for the priority area "Sustainable rural development, Natural resource management and Climate change in Peru 2011-2015. This initiative however, hardly affects activities in industrial zones. The proposed GEF project is in line with these priorities and will particularly build on climate change issues with the implementation of low-carbon technology and practices in businesses.

19. The cooperation program Peru-Belgium conducted a program from 2010-2013 with two priorities on "Sustainable economic development and strategic management of natural resources" and "Policy support for universal health insurance". Through sound management of natural resources, protected nature reserves, sustainable management of river basins and a country-wide payment system for environmental services this program contributed to sustainable economic development in Peru. The program had minor effects on industrial activities in industrial zones. The proposed GEF project will therefore especially build upon the activities undertaken to protect river basins with measures to improve water efficiency and waste water quality in industry.

20. Together with the city of Lima in Peru, UN-Habitat has developed the Metropolitan Urban Development Plan for Lima and Callao 2035 (PLAM 2035, Plan Metropolitano de Desarrollo Urbano Lima y Callao 2035). The plan is a toolbox aimed at enhancing budget planning, project structuring, legal instruments and urban management, in order to achieve an inclusive, connected, integrated and compact city development. The PLAM 2035 proposes to develop more than 2000 hectares new industrial land in the surroundings of Callao and Lima and to install industrial parks (Ancon and Lurin). In addition the PLAM 2035 proposes new structures (infrastructure, housing, recreational areas) within existing urban areas that might affect businesses in existing industrial zones like Callao. However, the PLAM 2035 does not define measures to deal with this new structures. The proposed GEF project will duly consider the findings and recommendations of PLAM 2035 for Callao and will contribute to improve the existing structure of the industrial zone and trade-offs between the stakeholders through community enhancement projects and industrial process optimization.

21. Peru has a national chemicals management profile. To date, the profile of chemicals is being updated as part of the activities of the projects "Safe Chemicals" and "Artisanal and small scale gold mining regional project in South America" that Peru has been carrying out under the Strategic Approach to International Chemicals Management (SAICM). In addition activities on safe toys, chemicals and waste have been conducted under this scheme focusing on institutional and technical capacity building in chemicals management in the year 2011. However, the initiative

has still not achieved full outreach. The proposed GEF project will build upon this first initiative and will extend content and target groups for wide application including reduction of chemicals use and substition of chemicals.

22. UNIDO's programme on resource efficient and cleaner production (RECP) worldwide and in Peru forms a strong baseline for the proposed GEF project. RECP builds upon industrial cleaner production in accelerating the application of preventive environmental strategies to processes, products and services to increase efficiency and reduce risks to humans and the environment. Nevertheless, sustained replication of RECP activities in industry is not fully achieved and necessary. The proposed GEF project will build upon the RECP program and supplement it by technology gap assessments in industry for identifying clean technology needs.

23. The aforementioned baseline projects and activities have not substantially removed the barriers which caused a lack of environmental awareness and environmental pollution in industrial zones. The proposed GEF project will therefore address these barriers which include the following, amongst others:

- Poor implementation of environmental legislation due to personnel shortages and lack of clarity regarding the responsibilities of authorities;
- Poor management of industrial zones, as well as a lack of political framework conditions and expertise about setting up sustainble industrial zones
- Lack of financial incentives and lack of confidence in collaborating with neighbouring businesses in industrial zones and the recycling economy
- High investment cost of clean technology and lack of awareness of alternative financial opportunities, such as Green Credit Funds.
- Lack of awareness by company managers, engineers and technology suppliers regarding available clean technology, environmental practices, and process optimisation methods, such as cleaner production.

d) Proposed alternative scenario:

24. Sustainable industrial zone development is a strategy that encourages the environmentally-friendly, economic and socially acceptable development of industrial processes. Aspects such as energy and the efficiency of resources are given the same consideration as the steps for avoiding or reducing the negative effects of waste and effluent. Sustainble industrial zones are set up to implement sustainable industrial zone development in a delineated geographic area.

25. The project concentrates on the existing industrial zone of Callao, in the Callao and Lima metropolitan district, with a total surface area of around 4,600 hectares and 3,180 businesses. A total of 25,000 people are employed here and the industrial zone is divided into several quarters, including businesses from a variety of industrial sectors. This structure and these dimensions have the advantage that, when putting sustainble industrial zone demonstration projects in place, industrial partners can be selected that have significant potential for optimisation and cooperation potential for exchanging energy and by-products. In addition, opportunities exist for working directly with local stakeholders, such as universities (R&D) and NGOs and to highlight the project results achieved for potential imitators inside the same industrial zone. In the wider Callao area 20% of the country's manufacturing industry is located. The nearby Callao port handles around 75% of imports and exports.

26. The proposed project includes components for implementing the above work steps. A net total of 35 representative businesses from different industry sectors will be involved in implementing Cleantech (hardware). The dissemination of results will include numerous companies more. The demonstration companies will be selected according to following criteria: energy, chemicals management issues, potential for industrial symbiosis, willingness to invest in clean technology, medium size, representative for other industrial zones.

27. Component 1: Policy framework for sustainble industrial zones development

The following first outcome is expected from component 1:

(1) The formulation and introduction of regulations for the planning and management of sustainble industrial zones including policies on industrial pollution management, as well as institutional and operational responsibilities in industrial zones;

28. Project component 1 starts with a review of existing policies and regulations for establishing new sustainble industrial zones or transforming existing industrial zones in sustainble industrial zones. The second step involves devising regulations, which will define the elements of an sustainble industrial zone and which should be used as planning help. Project component 1 supports authorities in their attempts to adapt existing regulations and realise the sustainable master planning, development and management of industrial zones. In particular, this should include the promotion of innovative clean technology and production methods, as well as integrated recycling and disposal concepts. The owner of this component is the government (Ministry of Production). The industrial zone Callao consists of a total of 3180 companies. Industrial parks have been declared in 12 provinces in which 16 are currently under planning with surface areas of up to 2000 hectares each and more will follow. In addition several thousand companies are located in industrial clusters not specified as industrial parks showing the potential for up-scaling.

29. In this context standardization of sustainble industrial zone planning is crucial and relevant for the targeted GEF focal areas in this project and will be duly considered in the formulation of regulations. Industrial zones are important elements in the economic development of countries like Peru especially in densly populated urban areas. In order to manage the consequences of energy and resource use as well as emissions to the environment criteria for the development of new sustainble industrial zones and the transformation of existing industrial zones are essential. There are international certification systems that are applicable to industrial zones, e.g. the DGNB certification system of the German Sustainable Building Council which help to improve the quality of planning and operation. This system requires minimum standards in process planning, environmental and economical performance of businesses inside the industrial zone, technical quality and sociocultural conditions. Its application supports integrated and target-oriented planning with a defined criteria catalogue. It has therefore a positive effect on the value of property and the efficiency of land use. The certification system assessment encompasses publicly accessible areas, the basic energy, water and resources consumption, environmental risks, context and setting like open spaces, educational institutions, supply centers and public transport.

30. The following second outcome is expected from component 1:
(2) Policies on financial incentives (tax reductions, subsidies and/or, steering taxes) for promoting the use of clean technologies and environmentally-friendly practices developed.

31. At present temporary financial incentives for technology investments exist in Peru in terms of soft loans or grants e.g. from technology funds like Fincyt (Fondo para la Innovación, Ciencia y Tecnología) and other technology funds which are mainly targeted on productivity increase or quality improvement of products. Although productivity increase at times goes along efficiency improvement the existing financial incentives provide little reward for the consequent implementation of environmentally sound technology and practices by investors and do not tap the full potential. Project component 1 will therefore target on policies on proven alternative financial incentives like tax reductions or steering taxes that will contribute to sustained change of investment behaviour.

32. Component 2: Capacity building on sustainble industrial zone planning

The following outcomes from component 2 are expected:
(1) A significantly improved level of expertise in sustainble industrial zone themes amongst representatives of government, employees of industrial zone management boards and businesses;
(2) Improved and disseminated collaboration between industrial zone management boards and industrial zone companies in environmental management leading to concluded investments in clean technology, environmentally-friendly practices and safety procedures.

33. Capacity building in project component 2 relates to government employees, industrial zone management representatives, company managers and operators with the following different training courses:

1) a selected group, consisting of government employees and industrial zone management representatives will be trained, by means of a train-the-trainers course, with topics, such as the master planning of sustainble industrial zones (sustainable building construction, efficient energy systems, resource and energy efficiency, waste/by-product management, new business models and contaminated sites remediation), effective sustainble industrial zone management (selection of companies, central service provision, maintenance, environmental management in relating to industrial zones and inter-company communication), as well as the industrial zone's integration into the host community. The theme of certification sustainable areas is of particular significance, since the project perimeter should be assessed according to such criteria. Finally, the selected trainees will train stakeholders in other industrial zones. A total of 120 people will be trained on sustainble industrial zone planning and management. In addition a group of 20 trainers will be trained as sustainble industrial zone trainers who will be able to further train planners after project implementation. The number of trainings and trainees will be verified during project preparation.
2) Other training procedures are for company representatives and selected members of the government involved in the themes of clean and low-carbon technologies and chemicals management. In particular, the requirements of SAICM are also taken into consideration.
The chemicals management training mainly targets formulators and industrial users of chemicals. It encompasses chemical reduction and sets the basis for innovation by providing an overview of the best practices and methods on how to identify potential for innovation. Solutions to reduce chemical consumption, substitute hazardous chemicals and reduce chemical waste are presented. Moreover chemical hazards management aims at enabling companies to identify and understand the potential hazards and risks related to the companies' products and operations. This covers topics such as risk assessment, fire protection, explosion prevention, the safe use, transport and storage of chemicals, hazardous waste, the use of personal safety equipment, safety rules as well as emergency response planning. At least 250 company managers shall be trained in subject-specific courses who will subsequently transfer the know-how to their staff. The number of trainees will be verified during project preparation.
3) In addition to the subject-specific training, company operators are provided in collaboration with the Ministry of Production Training in resource efficient and cleaner production (green industry). The training procedure is also implemented in the form of a train-the-trainers programme, allowing the expertise of trained specialists to be continuously multiplied. A total of 200 operators will be trained on resource efficient and cleaner production (RECP) basics. In addition 30 people will be trained as trainers for RECP who will further train technical staff during and after project implementation. The exact numer of trainees will be verified during project preparation.

34. Component 3: Pilot demonstration of clean and low-carbon technologies

The third project component relates to identifying pilot projects, which takes into consideration the requirements of an sustainble industrial zone and the specific opportunities thrown up by an existing industrial zone. This component consists of technical assistance (TA) and investment outcomes.

35. Part 1: Potential assessment
Following outcomes are expected from component 3, part 1: (1) Optimization potential of representative number of companies and services determined in the IZ Callao and strategy on most effective clean and low-carbon technology developed; (2) Interaction and needs of host community assessed regarding mutual projects on integration.

36. This section is designed to uncover examples that clearly demonstrate the application of clean technology and practices, as well as industrial symbiosis. In this way, the potential within industrial zone companies for best available technologies and best environmental practices will be identified by experts as part of a clean technology gap assessment. Already well-known industry sectors in Callao, which are significant for achieving the goals of the GEF focal areas, include metal processing, food and beverages production, seafood, chemical industry, textile, plastic, printing, pulp & paper and tanneries. The findings of these potential assessments are used in the detailed planning of project component 2 (training) and the implementation of pilot projects. In addition, in project component 3 relations with the neighbouring community are described and measures involving global environmental benefits identified.

37. The assessment of potential is designed to show what opportunities there are for obtaining global environmental benefits in businesses and the community. The following systems are to the fore but not exclusive:

38. Improved energy systems for GHG mitigation
Thermal energy:
Heat networks: higher energy efficiency can be achieved by using industrial waste heat. Companies will be assessed which generate high temperature waste heat and can be linked with neighbouring consumers. For that purpose district heating systems can be introduced. In such systems water is pumped into a heat circulation system via a pipe network. With heat exchangers the water as a means of transporting will be heated by heat generators and is supplied to the user via the water inflow, where it is introduced to the user's heat circulation system also via heat exchangers. The cooled water flows back via the outflow. As heat generators boiler systems, combined heat and power (CHP) or furnaces are possible sources. Particularly district heating with combined heat and power is a low-cost method of cutting carbon emissions, and has one of the lowest carbon footprints of all fossil generation plants.

39. 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.

40.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.

41. 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.

42. Vapour recompression: it involves taking vapor (usually water vapor) at, or a little above, atmospheric pressure and adding energy to it by compression. The result is a smaller volume of vapor, at a higher temperature and pressure, which can be used to do useful work. Modern applications are chiefly to industrial processes such as evaporation and distillation. Heat from the condenser, which would otherwise be wasted, can be recovered and used in the evaporation process. In food and beverages companies in particular, these technologies can achieve significant savings in terms of both energy and water consumption, through the optimised use of waste heat from steam. For instance in beer brewing (wort production) the vapour formed and emitted to the air is wasting energy caused by 6-10% water that evaporates. The proposed technology may be used to heat vapour for e.g. wort boiling. The condensate can then be recovered as well.

43. 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.

44. Appropriate technologies and practices for chemicals and waste reduction

UPOPs: 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 on 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 like 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 UPOPs to the environment as a result of chemical reactions: waste incinerators, pulp production, cement kilns, thermal processes in the metallurgical industry. During project preparation companies with such processes will further be verified. Co-benefits between the reduction of UPOPs and air pollutants like PM exist. In addition the GEF project will seek synergies with the climate change objective of the project.

45. Green industry and sound chemicals management: This section will evaluate chemical hazards management at company level and potential hazards and risks related to the companies' products and operations. It covers topics such as risk assessment, fire protection, explosion prevention, the safe use, transport and storage of chemicals, hazardous waste, safety rules as well as emergency response planning. Since chemicals represent dangers to human health and the environemnt through their entire life, the proper implementation of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) that includes labelling of chemicals, safety data sheets and other substance related information will be part of the evaluation.

46. The policy framework SAICM (Strategic Approach to International Chemical Management) will be supported by the proposed GEF project with training and awareness-raising activities aimed at company operators in the industrial zone who are exposed to toxic substances with dissemination of data on the hazards of chemicals and chemical waste. Special emphasis will be put on chemicals of global concern and on green chemistry. The identification of company candidates is done under component 3. The training will be part of component 2.

47. New product design: Under this scheme the design of products and processes that minimize the use and generation of hazardous substances and waste will be evaluated. It concentrates on chemical reduction and sets the basis for innovation by providing cross-sectional solutions to reduce chemical consumption, substitute hazardous chemicals and reduce chemical waste. Topics of global environmental concern that will be evaluated encompass feedstock substitution through renewable & secondary raw materials, cleaning processes, VOC emissions mitigation techniques and substitution of toxic ingredients (e.g. lead, TBTO in paints).

48. Contaminated sites: As reported by local government soil contamination especially by heavy metals like lead or POPs are significant and related to industrial activities in the industrial zone. In order to determine the dimension of the contamination of sites and the economic instruments that can achieve investment in cleaning-up management plans will be elaborated as part of the GEF project in cooperation with the industrial zone management and government representatives. The approach will include training in the testing and remediation methodologies as well as public private partnerships.

49. Chemical leasing: This section focuses on innovative business models with an emphasis on chemical leasing as a way to reduce the environmental impact and costs of companies in the chemical industry. Chemical leasing is service-oriented business model in which the supplier sells the impact of chemicals and where payment is based on impact units. Chemical leasing is aimed at an efficient use of chemicals, minimization of risks, and health protection. During the assessment of companies the practicability of the new business model will be evaluated.

54. Community enhancement

Interaction and integration of the industrial zone into the host community will be evaluated by the GEF project as this is of supra-regional concern. Projects for the local economy and social systems through training and community business development for better living conditions will be developed. This might encompass child care, planning of recreational facilities, improved public transport, waste-to-value chain or identification of solutions for environmental dispute with local communities.

55. Part 2: Investment component
Following investment outcomes are expected from component 3, part 2: (1) Access to alternative finance established and selected clean technology investment projects successfully implemented and financed; (2) Community enhancement projects initiated.

56. This section includes the financing and implementation of clean technology and new practices after they have been identified for the 35 demonstration companies envisaged. Therefore, alternative sources of finance are sought and corresponding investment projects elaborated. The finance model is based on investment assistance, in order to implement the exemplary clean technologies early. Therefore, both national (FINCyt, FIDECOM) and international sources of finance are used, such as the Swiss Green Credit Trust Fund and also GEF funds. In addition, the Ministry of Production, Ministry of Housing and Ministry of Environment are expected to make contributions. Local bank financing should then complement and follow from institutes with experience in investment banking like Banco de Credito Peru which are skilled in the proposed projects. On the other hand industrial zone companies need to actively demonstrate and deploy process optimization measures and clean technology. Companies will therefore be assisted in developing bankable investment projects.

57. Following dissemination outcome is expected from component 3, part 2: (3) Increased public awareness on issues concerning sustainble industrial zone development achieved.

58. The project also promotes the replication of projects in other industrial zones in order to multiply the environmental benefits. Main aspects are therefore to overcome the implementation barriers and to create trust and confidence in new clean technology and practices on the side of users and potential investors. The project will demonstrate that collaboration of companies in industrial zones and the implementation of innovative clean technology will reduce the environmental impact and cost hence increasing competitiveness of the participating companies. In addition the dissemination of the sustainble industrial zone benefits to other industrial zones will attract new investors and qualified personnel. Moreover the extension of the industrial zone's management boards' services portfolio will be emphasized and the new structure of the industrial zone management to other industrial zones disseminated. The dissemination of results of community enhancement projects like products from a waste-to-value chain (e.g. plastic bags, carpets) or child care will encourage other communities to replicate the initiative.

59. For up-scaling the companies participating in the project will demonstrate the results of the industrial process optimization and adoption of clean technologies. For that purpose decision makers of other companies in Callao and other industrial zones will be informed on study tours and in business experience groups. For these activities cooperation with the industry association (Sociedad Nacional de Industrias) will be searched for. In addition presentations will be held at industrial forums and a webplatform established especially for business users to publish and disseminate the findings in all focal areas.

60. Component 4: Project monitoring and evaluation (M&E)
Following outcome of component 4 is expected: (1) Effective project management, monitoring and evaluation implemented.

61. This component addresses the monitoring and project evaluation. Like a cockpit this component will allow for the effective achievement of the defined project outcomes and outputs.

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

62. Since the implementation of the sustainble industrial zone concept in Peru has not previously been done, the industrial sector lacks confidence in such schemes. Enacting the afore-mentioned laws on the development of sustainble industrial zones will, therefore, be delayed, if not rendered impossible. For this reason, GEF financing of the incremental costs incurred in overcoming the expected barriers is applied for.

63. The project will help the country overcome the hurdles, as well as implementing and replicating the national policy, which is in the new legislation on industrial parks. This will result in significant global environmental benefits. Incremental cost include the following elements: (a) transfer of expertise in clean technologies, best environmental practices and methods for industrial process optimisation in industrial zones, (b) access to alternative sources of finance (deployment & demonstration), (c) the dissemination of expertise relating to implemented clean technologies and practices in sustainble industrial zones in numerous other industrial zones through promotion, demonstration and training for business representatives, authorities and investors (dissemination) and (d) the long-term and cross-border transformation of existing industrial zones and the development of new sustainble industrial zones through the application of the regulations devised, improved levels of knowledge of stakeholders and optimised industrial production processes (roll-out).

64. Co-financing from technology funds (FINCyt, FIDECOM) as well as from international sources like the Swiss Green Credit Trust Fund are expected. In addition substantial contributions to clean technology investments will be provided by the project owners (companies) themselves. The GEF contributions will help to mobilize this resources and to leverage the total investment amount. Further co-financing is also expected from local governement in form of infrastructure finance in the industrial zone.

f) Global environmental benefits:

65. The GEF project will build upon the baseline projects by providing measures for GHG mitigation and reduced POPs and other chemicals, including GHG precursors releases to the environment. In the absence of GEF funding the improvement capacity of industrial zones and the legal framework would improve slowly. The resulting amount of avoided GHG, water, water pollutants, POPs and other chemicals depends on the characteristics of the enterprises finally selected for the project in Callao and will be calculated as part of the project implementation. Based on audits conducted in South-East Asia in 15 industrial zone companies of similar size, standard and from identical industry sectors as in Callao (selection citerion: water, energy and material intensive sectors like food&beverages, garment, metal processing, plastics, fine chemicals, pharmaceutical, seafood) following numeric global environmental benefits are expected from the 35 companies that will be involved in the present GEF project:

66. Climate change mitigation:
For the GHG calculation consumption data of coal, FO, LPG and electricity was used and potential energy savings in steam/hot water production, district heating, compressed air, refrigeration and process heat determined (GHG emission factors: coal 1.84t/t, FO 2.67t/m3, LPG 1.60t/m3, electricity 0.5764t/MWh). The calculations were done with the GEF tracking tool for climate change mitigation projects. Following potential savings in GHG (CO2) were identified: boiler efficiency 72,294t/a, new boiler systems 3,300t/a, district heating 11,103t/a, CHP 250t/a, compressed air 2,690t/a, refrigeration 233t/a, process heat (vapour recompression) 668t/a. In total 91,000t/a direct CO2 emissions from 15 companies and 212,333t/a for 35 companies respectively are expected. Provided that the average lifetime of industrial equipment is 7 years 1,486.3kt CO2 lifetime direct GHG emissions can be avoided. Provided that the project will be replicated in 30 other industrial zones or industrial clusters with the same number of companies involved (replication factor of 30) lifetime indirect GHG emissions of 44,589kt can be avoided.

69. Chemicals and waste:
The GEF project will include the improvement of existing industrial heating systems and facilitate their replacement. Specific BAT primary measures for UPOPs avoidance will be considered like fuel reduction, improved combustion conditions, feed rate uniformity and monitoring and control of CO and hydrocarbons in flue gas. The activity will

seek synergies with CC-M focal area. Calculated POPs reduction from fossil fuel power plants (coal, FO, LPG) with data for above mentioned 15 audited companies, reduction rate of 90% and a replication factor of 30 will result in 28.4g/a TEQ for 35 enterprises envisaged. The calculations were done with the UNEP&SC Toolkit for Identification and Quantification of Releases of Dioxins, Furans and other UPOPs.

70. The training on sound chemicals management and optimized manufacturing and incineration processes in the various industry sectors will also reduce significantly the GHG precursors like NMVOC, CO, NOx, SO2 and other transboundary air and water pollutants.

g) Innovation, sustainability and potential for scaling up:

71. The sustainability of investment in industrial clean technologies is assured, since the relevant businesses will make effective acquisitions. The technologies will therefore continue to operate after the project has ended, if no better alternatives can be found by the businesses. However, the energy infrastructure (boilers, etc.) may be provided by external energy contractors. Since, for cost reasons, systems need to work efficiently and effectively, contracting agreements will not terminate at the end of the project. On the contrary, these contractors may also have expertise in other operations, replicate and scale up the project. Furthermore companies will develop long-term relationships to financial enterprises insuring sustainable finance of future investments.

72. In particular, project component 2 relates to the training of government representatives, industrial zone management teams and company representatives. The master planning of sustainble industrial zones according to sustainability criteria is of particular relevance, since expertise can be transferred to numerous other, new industrial zones. This involves a significant transfer of knowledge, which will be continued at the end of the project by trained specialists. The following institutions will be selected as project owners of the trainings: Ministry of Production (sustainble industrial zone planning), Sociedad Nacional de Industrias/CER (resource efficient and cleaner production) and the Ministry of Health (chemicals management). These institutions will insure the sustainability of the training and scaling up after project implementation.

73. Innovative approaches will be sought when planning sustainble industrial zones. In this, the standards of the DGNB certification system will be a great help in avoiding classic planning errors. This system provides a comprehensive and integral approach that takes into consideration all essential environmental protection planning content including socio-cultural aspects. Certification of the standard would further insure sustainability of the sustainble industrial zone after project implementation as re-certification will require long-term compliance.

74. The training on chemicals management will consider a systematic methodology and a step-by-step guidance to set up, evaluate and implement innovative solutions at company level. The methodology includes the identification of innovative projects, the screening, evaluation and prioritization of innovative solutions as well as the implementation of the selected innovative options. The methodology can also be applied after project termination by the aforementioned project owners. This will again insure the sustainability of capacity building and help to up scale the training.

75. In addition the new and innovative business model chemical leasing will lead to a paradigm change in companies if applied and long-term cooperations between suppliers and users of chemicals. International demonstration projects of chemical leasing in various industry sectors show that it is possible to reduce the consumption of chemicals by an average of 20%. Therefore the new business model involves long-lasting contracts that will insure sustained chemicals reduction in the long run.

76. The proposed project involves policy development for promoting clean technologies and the formulation of regulations for the planning and management of sustainble industrial zones including policies on industrial pollution management. These policies and regulations will be applied in the long term nationwide and insure sustainability and up-scaling of the initiative.

References:

Congreso, 2013: Ley No. 30078, Ley que promueve el desrollo de parques industriales tecno-ecologicos
IFC, 2011: Assessment of the Peruvian market for sustainable energy finance
Lowe, E., 2001: Handbook for Development of Sustainble industrial zones
Produce, 2014: Proyecto, Disponen la publicacion del "Proyeto de Decreto Supremo que aprueba el Reglamento de Gestion Ambiental para la Industria Manufacturera y Comercio Interno"

2. Stakeholders. Will project design include the participation of relevant stakeholders from civil society and indigenous people? (yes ☒ /no☐) If yes, identify key stakeholders and briefly describe how they will be engaged in project design/preparation.
* Indigenous people will not be directly addressed during implementation of this project.

77. The GEF Implementing Agency for the Project will be UNIDO and its IRE (Industrial Resource Efficiency) Unit with headquarters in Vienna, supported by UNIDO Regional Office in Colombia.The national executing and lead agency is the Ministry of Production (Produce). It is responsible for co-ordination with ministries and agencies in executing the project activities. Moreover Produce will assist in guiding trainings of stakeholders on sustainble industrial zone strategy and measures, RECP and will supervise the adoption of clean technology by industry.
The Ministry of Environment is a partner in the execution of the project and will assist the project in all issues related to regulations and administration and protection of the environment especially for policies targeting environmental management of industrial zones. Through its Agency for Environmental Assessment and Enforcement (OEFA) it provides measurement and data on the enforcement of the environmental law. The Ministry of Housing is a partner in the execution of the project and will assist in all issues related to planning of industrial parks. The Ministry of Health is a partner in the execution of the project and will assist in all issues concerning occupational health and safety particularly related to the management of chemicals.

78. The Centro de Ecoeficiencia y responsabilidad Social (CER) is a partner in the execution of the project particularly in the field of resource efficient and cleaner production, environmental and chemicals management and technology gap assessments.

79. The local community of Callao and NGO (Ciudad saludable) will actively participate in the development of community based activities and will be in line with GEF policy for public involvement.

80. The selected companies in the industrial zone Callao will actively participate in the project preparation and execution especially in project components 2 and 3.The authority responsible for management of the industrial zone Callao will provide administrative services relevant to the business operations of investors (companies) and acts as nexus between the project management and the industrial zone companies.

81. Organizations to be involved in the technology transfer, training and information dissemination are the Sociedad Nacional de Industrias (SNI), the Centro de Ecoeficiencia y Responsabilidad Social (CER) and sector associations. Universities are involved for performing training, tests and adaptation of innovative clean technology prior to their introduction to companies. Stakeholders to be involved in project finance are technology funds (Fincyt, Fidecom), Swiss Green Credit Trust Fund, Banco de Credito de Peru and other commercial banks upon demand.

82. For project implementation a national Project Steering Committee (PSC) chaired by the Ministry of Production, through the National Programme for Productive Diversification, will be established to ensure the proper and effective coordination and collaboration among various line Ministries, local authorities and stakeholders.
Among other tasks the PSC will overlook the following tasks (to be verified during PPG):
a) The establishement of a project management unit
b) PRODUCE prepares in coordination with UNIDO a proposal about the project management unit (during PPG)
c) The project management unit will be located within PRODUCE and will be managed by PRODUCE in coordination with the project steering committee
d) PRODUCE and UNIDO will involve relevant stakeholders (e.g. Ministry of Environment, contributing stakeholders) as members of the project steering committee (to be verified during PPG)

e) An officer of PRODUCE in coordination with UNIDO leads the project steering committee
f) UNIDO issues, whenever feasible, sub contract agreements institutions (that the project steering committee considers that can technically support the project implementation) to implement predefined project´s activities.

83. A Project Management Unit (PMU), including technical and coordination staff, will be established within PRODUCE to undertake the roles and responsibilities of the execution of the overall national project activities on behalf of the PSC and in coordination with UNIDO. The PMU will be headed by the National Project Director (NPD) appointed by PRODUCE. It is expected that the NPD is a higher ranking staff member of PRODUCE. The PMU will report to the project steering committee and UNIDO.

84. The National Project Coordinator (NPC) will be selected by PRODUCE and UNIDO and contracted directly by UNIDO. The NPC will coordinate the day-to- day project execution and monitoring in close cooperation and coordination with all stakeholders involved. The NPC will be assisted by a National Technical Consultant and National Project Assistant (NPA), whenever necessary.

85. The National Project Coordinator (NPC) will carry out the following (not limited to) tasks:
- Lead and coordinate the day-to-day management of project execution and the national project staff closely with PRODUCE, including administration of the project in conjunction with UNIDO, accounting for the project and the timelines of project implementation;
- Lead 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;
- Prepare all financial, technical and monitoring reports in line with GEF and UNIDO regulations and procedures;
- Ensure the implementation and organization of workshops, meetings, training events and similar;
- Coordinate, monitor, and supervise the activities of the project team and national consultants;
- Liase with UNIDO to obtain the assistance needed during project implementation, including technical directives for project activities or assistance in identifying and engaging experts;
- Maintain close communication with PRODUCE, the PSC, and other national stakeholders and ensure that these are adequately informed of and involved in the project.

86. The National Project Assistant (NPA) will carry out the following (not limited to) tasks:
- Provide assistance to the NPC in the preparation of documents, communication and outreach;
- Support the NPC in the administrative, financial and operational management of the project, including contracting, procurement and payments made on behalf of the project;
- Support the NPC in the organization of workshops, training related to the project;
- Attend activities related to the consultation of stakeholders, meetings of the PSC, among others, facilitating logistics, preparing the minutes of meetings (memory aid) as well as keeping records of day -to-day execution project);
- Maintain a national web site to inform the public on the project activities, including logging of data;
- Maintain project files and all supporting project material for easy access;
- Provide all other required assistance to the project team to fulfill the tasks on timely manner.

87. The National Technical Consultant will carry out the following (not limited to) tasks:
- Act as responsible person for the daily communication with technical project partners and assigned project work (such as organizing workshops/meetings/training, preparation of technical background documents);
- Provide technical expertise, if needed, for drafting of policies related to sustainble industrial zones;
- Support trainings and workshops on sustainble industrial zones with technical advice;
- Assist in the (a) feasibility study for technology application and transfer and cleaner production; assessments, (b) identification of demonstration projects; (c) technical oversight of implementation of project demonstrations;
- Participate in day-to-day activities related to project implementation and provide assistance to the Project Coordinator.

3. Gender Considerations. Are gender considerations taken into account? (yes ☒ /no☐). If yes, briefly describe how gender considerations will be mainstreamed into project preparation, taken into account the differences, needs, roles and priorities of men and women.

88. In line with UNIDO's guide on gender mainstreaming of environmental management projects, the project will be prepared during PPG and implemented in a gender-sensitive and gender-responsive manner. It will at least include following activities: a) Ensuring that the stakeholders in Peru are aware of and have knowledge about the importance of embedding gender implications throughout the project cycle: The project stakeholders will receive a guideline with information regarding the connection between the creation of sustainble industrial zones and gender implications, background information on gender mainstreaming and gender equality, gender definitions and terms, as well as information regarding gender at large, including UNIDO's endeavors to mainstream gender at all levels of its operating: policy, organizational sphere and delivery. b) Gender analysis and collection of sex-disaggregated data:

89. Conducting a gender analysis will enable the project team to systematically examine the differences between men and women in the context of the project. The analysis will be conducted on a macro level, on the level of the sectors, and on stakeholder level. Hence, as part of the analysis, gender-disaggregated data will be collected from the selected sectors. Based on this information gender activities will be tailored in a way that addresses the specific needs of men and women. This is important because the project aims at improving the situation in some sector where women are dominantly employed, like e.g. in the textile or seafood sectors. c) Creation of gender-sensitive actions: Based on the collected information regarding the implications of both men and women in the project, and in line with the project outcomes, the activities related to raising awareness (e.g. gender-focused groups, # number of gender-related events), knowledge dissemination (e.g. # number of gender-sensitive publications) and conducting trainings (e.g. measured as # number of female/male participants) will be tailored in a gender-sensitive manner.

4 Risks. Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design (table format acceptable).
90.

Risks	Rating	Mitigation
Sea level rise due to climate change affects industrial zone Callao located at sea.	L	Adaptation measures for the selected regions are under planning or realized by local authorities. The replication of results of sustainble industrial zone pilot will be promoted in other industrial zones not endangered by sea level rise.
Changes in runoff of river flows (Chillon, Rimac) affects industrial zone Callao located at riverside (floods).	L	Floodings are not expected in this arid area. Capital investments will be concentrated on companies outside a possible flooding zone.
Delays in enforcement of laws and regulations on industrial park planning, management and development of sustainble industrial zones.	L	There is already an existing Peruvian law on the development of sustainble industrial zones (Law No. 30078). The elaboration and adoption of an official planning guideline for the firm establishment of the regulation, will ensure a faster enforcement. The institutional capacity building component of the project will provide training to the government and other stakeholders and will reduce the risk.
Lack of companies with potential for clean technology investments.	L	During PPG companies will be informed and pre-selected to ensure that a representative companies are participating in the project. A pilot project in 2010 in the industrial zone revealed industry sectors with significant environmental impact in the GEF focal areas. The high number of companies located in the zone increases the potential and minimizes the risk.

Risks	Rating	Mitigation
Lack of sufficient financial resources for investments in clean technologies.	L	The project will include (to be verfied during PPG) a variety of alternative financing sources for companies including soft loans and grants. Some funds like the GCTF offers guarantees in case of insufficient collateral and helps to improve creditworthiness.
Limited interest to invest in new technologies that change core processes of the firm.	M	Experts on clean technologies will elaborate detailed technology assessments and cost-benefit analysis together with the company's management to ensure interest and commitment (to be done during project implementation).
Low consideration of gender implications that accompany the project results.	L	The training on cleaner production and chemicals management as well as the technical improvements will result in improved workplace conditions of labor especially women and cost reductions and thereby enabling companies' contributions to social services. The project also focuses on sectors with high percentage of female workers, e.g. textile and seafood production. The project's community enhancement component addresses in particular gender relevant issues like child care, corporate social responsibility and working conditions. The project will involve women at stakeholder level and in awareness raising as well. In line with UNIDO's gender guidance, a gender assessment will be performed during PPG to ensure that gender mainstreaming is carried out during project implementation.
Low integration of workers in sharing benefits of project results.	L	The project entails besides new technologies also training on appropriate practices in cleaner production and chemicals management for workers. The competences gained in the training will result in reduced exposure risk (fire, chemicals handling) and improved efficiency of manufacturing processes (e.g. less outages, energy&raw material). This holistic approach will help improve the work surroundings, the competitiveness of companies and to sustain jobs.

L: Low; M: Medium

5. Coordination. Outline the coordination with other relevant GEF-financed and other initiatives.

91. The GEF project will build on and supplement following national GEF and other projects in the focal areas:

- GEF/UNEP: Continuing Regional Support for the POPs Global Monitoring Plan under the Stockholm Convention in the Latin American and Caribbean Region (2014).
- GEF/UNIDO: Enabling Activities to Review and Update the National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants (POPs) (2013).
- UNDP: The International Partnership on Mitigation and MRV and the UNDP Low Emission Capacity Building (LECB) Programme launched a new round of the Global Good Practice Analysis that will include good practice examples of mitigation-related activities in developing and industrialized countries (2015).
- UNIDO/SAICM: SAICM is stregthening institutional capacities, regulations and techniques for managing chemicals in Peru. Preparation of tools for chemical management by Ministry of health (2009-2011).
- Technical group for chemicals (Grupo tecnico de sustancias quimicas): The group is responsible for coordinating integrated actions on chemicals and implementation of the Stockholm convention, Rotterdam convention, and the Basel convention (2002).
- GEF/UNDP: Climate Change Enabling Activity (Additional Financing for Capaciity Building in Priority Areas) (2004).
- GEF/UNDP: National Capacity Needs Self-Assessment (NCSA) for Global Environmental Management (2004).

• GEF/UNIDO: Environmentally Sound Management and Disposal of PCBs: To establish environmentally sound management practices for PCBs and to increase the phase-out and disposal of PCB-containing equipment and wastes, particularly focusing in the electrical utilities and main users of electricity in Peru (2010-).
• Ministry of environment (MINAM): Eco-efficiency and resource conservation at state schools as a contribution to linking theory and practice in environmental education (2013).

6. Consistency with National Priorities. Is the project consistent with the National strategies and plans or reports and assessements under relevant conventions? (yes ☒ /no☐). If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.
92. POPs:
• 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. The project on sustainble industrial zones corresponds to the formulated needs.

93. Climate change mitigation:
• Second National Communication (NC) to the UNFCCC submitted in 2010: 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.
• 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 sustainble industrial zone initiative builds upon Peru's formal communication to the UNFCCC. Peru has not conducted a GEF National Portfolio Formulation Exercise to date.
• 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.

7. Knowledge Management. Outline the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

95. The dissemination and replication of the project results in other industrial zones will be part of the project and links to UNIDO's regional and global knowledge pool will be made. The implemented practices and clean technology will be actively demonstrated through participating companies. Thus, industrial zone companies are key organizations and will act as opinion leaders towards the wide dissemination of the sustainble industrial zone initiative.

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

A. RECORD OF ENDORSEMENT[9] OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

(Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this SGP OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Mr. Jose Antonio GONZALEZ NORRIS	Director of the International Cooperation and Negotiations Directorate	**MINSITRY OF ENVIRONMENT**	**07/20/2015**

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies[10] and procedures and meets the GEF criteria for project identification and preparation under GEF-6.

Agency Coordinator, Agency name	Signature	Date *(MM/dd/yyyy)*	Project Contact Person	Telephone	Email
Philippe R. Scholtès, Managing Director, Programme Development and Technical Cooperation Division (PTC), UNIDO GEF Focal Point		12/08/2015	Petra Schwager 	0043-1-26026-3749	P.Schwager@unido.org

[9] For regional and/or global projects in which participating countries are identified, OFP endorsement letters from these countries are required even though there may not be a STAR allocation associated with the project.

[10] GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF

C. ADDITIONAL GEF PROJECT AGENCY CERTIFICATION (APPLICABLE ONLY TO NEWLY ACCREDITED GEF PROJECT AGENCIES)

For newly accredited GEF Project Agencies, please download and fill up the required **GEF Project Agency Certification of Ceiling Information Template** to be attached as an annex to the PIF.