



GEF-6 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: GCP/GLO/364/GFF

TYPE OF TRUST FUND: TF

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PART I – PROJECT INFORMATION

Project Title:	Catalysing implementation of a Strategic Action Programme for the Sustainable Management of shared Living Marine Resources in the Humboldt Current System (HCS)		
Country(ies):	Chile, Peru	GEF Project ID: ¹	9592
GEF Agency(ies):	UNDP	GEF Agency Project ID:	5697
Other Executing Partner(s):	IFOP,IMARPE, SUBPESCA, PRODUCE, MMA, MINAM, SERNAPESCA, SERNANP	Submission Date:	25 July 2016
		Resubmission Date:	25 August 2016
GEF Focal Area(s):	International Waters	Project Duration (Months)	60 months
Integrated Approach Pilot	IAP-Cities <input type="checkbox"/> IAP-Commodities <input type="checkbox"/> IAP-Food Security <input type="checkbox"/>	Corporate Program: SGP <input type="checkbox"/>	
Name of parent program:	[if applicable]	Agency Fee (\$)	760,000

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in \$)	
		GEF Project Financing	Co-financing
International Waters Objective 3, Programs 6 & 7	GEF TF	8,000,000	79,500,000
Total Project Cost		8,000,000	79,500,000

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: Facilitating EBFM and ecosystem restoration in the HCS for the sustainable and resilient delivery of goods and services from shared living marine resources, in accordance with the SAP endorsed by Chile and Peru.						
Project Component	Financing Type ³	Project Outcomes	Project Outputs	Trust Fund	(in \$)	
					GEF Project Financing	Co-financing
Component 1 Recovery and maintenance at optimal population biomass levels of the majority of fisheries resources while maintaining ecosystem health and productivity under climate change scenarios.	TA	Prioritized fisheries resources have improved management scenarios in existence to assist with their recovery and systems are in place to ensure maintenance at optimal population levels while maintaining a healthy and productive ecosystem considering climate change and ENSO scenarios.	1.1. Carry out an in depth analysis of the state of fish stocks of prioritized commercial fisheries. 1.2 Analysis of the impact of natural and anthropogenically-driven variation in the HCS ecosystem on principal fish stocks. 1.3 Characterization of the ecosystem's components in which fish resources and fisheries are included. 1.4 New and/or revised fisheries regulations which incorporate EBFM principles adopted for prioritized HCS fisheries. 1.5 Fisheries Monitoring Control and Surveillance (MCS) systems are improved including application of effective	GEF TF	1,859,002	18,473,812

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.

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					GEF Project Financing	Co-financing
			deterrence mechanisms (sanctions, etc.). 1.6 The EBFM approach is in place and its use at all levels is fully understood in terms of improved ecosystem goods and service delivery under a range of climate change scenarios. Emphasis will be given to the coordination of joint anchovy stock management among other key transzonal fisheries.			
Component 2 Improve the environmental quality of the marine and coastal ecosystems via integrated management considering the various sources of pollutants.	TA	Coastal and marine environmental quality improved via application of integrated ecosystem management ⁴	2.1 Establish a programme of coastal marine monitoring, to consider the main sources of contaminants into the HCLME 2.2 Develop National Action Plans to ensure that environmental quality aspects are maintained. 2.3 Waste treatment systems in the coastal zone have been improved (wastewater and non-point-source land based pollution financed by GEF funds; solid waste treatment financed by government funds) . 2.4 Environmental inspection agencies at the local and central levels are strengthened to allow improved environmental quality objectives. 2.5. Coastal and Marine Spatial Planning (CMSP) is implemented in both countries as a management tool in selected areas, in order to improve the integrated management of space.	GEF TF	1,591,000	15,810,561
Component 3 Restore and maintain the habitat and biodiversity of marine and coastal systems at sustainable levels.	TA	Systems are in place to assist with the maintenance and if necessary recovery of biodiversity in the HCS.	3.1 The knowledge of habitats and biodiversity in selected areas has been increased and an integrated biodiversity monitoring and evaluation system has been designed and implemented. 3.2 The capacity to manage coastal and marine habitats within Multiple Use Marine Protected Areas as part of Coastal Marine Spatial Planning	GEF TF	1,510,005	15,005,624

⁴ The ecosystem management approach in marine and coastal areas incorporates associated watersheds (SAP 2016).

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					GEF Project Financing	Co-financing
			initiatives and the associated biodiversity at sustainable levels has been strengthened. 3.3 Strengthened and new management measures for the conservation of habitats and biodiversity in marine and coastal ecosystems are in place and operating.			
Component 4 Diversify and add value by creating productive opportunities inside and outside the fisheries sector with people socially organized and integrated	TA	Fisheries activities are diversified and new productive opportunities created for fisherfolk, organized in integrated civil society organizations, both within and outside the fisheries sector.	4.1 Fisheries products with increased value addition are developed and marketed. 4.2 Commercialization channels of fisheries products improved. 4.3 Working capital mechanisms established and in operation. 4.4 Fisherfolk provided with diversified or alternative livelihood opportunities	GEFTF	1,290,020	12,819,623
Component 5 Contribute to the population's food security and food safety.	TA	The general population is benefiting from improved food security and food safety on the basis of improved ecosystem and fisheries management together with increased post harvest quality control.	5.1 The processing capacity throughout the production chain for marine produce destined for Direct Human Consumption is improved. 5.2 The quality of fisheries products for local consumption is improved by a series of post-harvest safeguards. 5.3 The availability and supply of quality fisheries and mariculture products to the populations of both countries is enhanced. 5.4 Public and industry awareness of food safety and food security aspects relating to marine products has been improved.	GEFTF	1,369,021	13,604,666
Subtotal					7,619,048	75,714,286
Project Management Cost (PMC) ⁵				GEFTF	380,952	3,785,714
Total Project Cost					8,000,000	79,500,000

⁵ 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.

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 (\$)
National Government	SUBPESCA Chile	In Kind	15,000,000
National Government	IFOP Chile	In Kind	14,000,000
National Government	SERNAPESCA Chile	In Kind	2,000,000
National Government	PRODUCE Peru	In Kind	15,000,000
National Government	IMARPE Peru	In Kind	14,000,000
National Government	MINAM Peru	In Kind	2,000,000
National Government	SERNANP Peru	In Kind	1,000,000
National Government	ANA	In Kind	2,000,000
Regional Government	Pilot sites Peru	In Kind	1,500,000
GEF Agency	UNDP	In Kind	500,000
GEF Agency	World Bank	In Kind	500,000
UN	IOC-UNESCO	In Kind	500,000
UN	UNEP Regional Seas	In Kind	500,000
INGO	WWF	In kind	1,250,000
INGO	TNC	In Kind	1,250,000
INGO	CI	In Kind and Cash	1,000,000
INGO	Sustainable Fisheries Partnership	In Kind	1,000,000
Foundations	Walton Family Foundation	In Kind and Cash	2,000,000
Private Sector	Inkaterra, Consorcio, TASA, Wong, CORPESCA, CIAM	In Kind	4,000,000
CSO	ANEPAP, FUIPAP, COPMAR	In Kind	500,000
Total Co-financing			79,500,000

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
UNDP	GEF TF	Chile, Peru	International Waters	(select as applicable)	8,000,000	760,000	8,760,000
Total GEF Resources					8,000,000	760,000	8,760,000

a) Refer to the [Fee Policy for GEF Partner Agencies](#).

E. PROJECT PREPARATION GRANT (PPG)⁶

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: \$200,000					PPG Agency Fee: 19,000		
GEF Agency	Trust Fund	Country/ Regional/Global	Focal Area	Programming of Funds	(in \$)		
					PPG (a)	Agency	Total c = a + b

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

						Fee⁷ (b)	
UNDP	GEF TF	Regional	International Waters	(select as applicable)	200,000	19,000	219,000
Total PPG Amount					200,000	19,000	219,000

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS⁸

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>2 million Hectares</i>
2. 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>5% Percent of fisheries, by volume</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: 2</i>
	Functional environmental information systems are established to support decision-making in at least 10 countries	<i>Number of Countries: 2</i>

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;

The Humboldt Current System (HCS) is a complex series of currents and countercurrents with seasonal and permanent upwelling systems in the southern and northern areas respectively, hence high levels of nutrient availability and resulting primary productivity $142.8 \text{ mg C m}^{-2} \text{ d}^{-1}$. The area currently contributes approximately 11% of the world's fish catch with the anchovy fishery being the biggest single species production globally at an average of 7.2 million mt/year for the last 11 years. An area of naturally occurring low alkalinity and minimum oxygen zone extensions, its productivity variations under climate change and pollution scenarios make it a particularly sensitive area to a range of anthropogenic activities including: the risk of overfishing and habitat destruction. In 2015 the goods and services received from the HCLME were preliminarily calculated to be USD19.459 billion per annum.

Based on the results of the joint Humboldt Current LME Transzonal⁹ Diagnostic Ecosystem Analysis (TDEA¹⁰), priority Transzonal and common shared problems include: 1. Sub-optimal fisheries exploitation, 2. Anthropological alteration of the marine habitat and 3. the shared problem of high levels of incidental fish capture (by-catch) and discards. Threats to biodiversity come from three main areas: overfishing, pollution and coastal development attributing to between 65 and 75% of biodiversity reduction in the area (Chatwin 2007). Fish catch trends in the HCLME area over the last two decades show a steady decline down from a total of 26.5 million mt in 1994 to 5.7 million mt in 2014. In the southern area or the HCS six fisheries are collapsed, eight overexploited and a further eight

⁷ PPG fee percentage follows the percentage of the Agency fee over the GEF Project Financing amount requested.

⁸ 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.

⁹ Transzonal problem: "One that occurs or is caused in the territorial waters of a country and results in an impairment in the provision of goods and services provided by the HCLME in the territorial waters of both countries."

¹⁰ The first phase of the GEF-UNDP Humboldt project developed a Transzonal Diagnostic Ecosystem Analysis (TDEA) following the IW:LEARN TDA methodology.

fully exploited. In addition there is insufficient data to classify the exploitation status of at least 15 commercial benthic fisheries. Furthermore some fisheries have no management plan, biological reference points or quotas. Table 1 shows the status of a selection of important Transzonal fisheries.

Table 1 Key fish, shellfish and algae species in the HCS area of local, regional and global importance.

Species ¹¹	Fishery status	Management status - quota	Comments
Anchovy <i>Engraulis ringens</i>	In decline Full exploitation	Perú: Industrial. Chile Industrial and artisanal.	Global importance for fishmeal and oil. Regional importance trophic food web and biodiversity. Transzonal
Pilchard <i>Sardinops sagax</i>	Collapsed	-	Transzonal Note: the sardine fishery is impacted by ecological regime changes resulting in food availability of suboptimal size for the sardine, and recruitment cohort failures.
Chub Mackerel <i>Scomber japonicus</i>	Stable	Industrial and artisanal	Transzonal
Murex snail <i>Concholepas concholepas</i>	In decline Full exploitation. Management plans	Artisanal in both countries	Transzonal (larval stages)
Limpet <i>Fissurella limbata</i>	Stable	Artisanal	Transzonal (larval stages)
Scallop <i>Argopecten purpuratus</i>	Full exploitation	Artisanal	Transzonal (larval stages)
Sea urchin <i>Loxechinus albus</i>	Full exploitation	Artisanal	Transzonal (larval stages)
Macroalgae Many species	Full exploitation	Artisanal	Transzonal (spores)

Ninety-eight percent of the small pelagic catch, mainly anchovy, goes into fishmeal and oil production used as the basis of balanced diet preparation for livestock feeds worldwide. Peru is currently the largest fishmeal and oil producer and fishmeal exports for the first quarter 2014 were reported at 369,400 tonnes, which was 165% more than the volume reported during the first quarter of 2013. Exports to all of the major destinations increased considerably. This big increase was based on the extremely low export volume in the first quarter of 2013 as the result of low anchovy catch quota in 2012. China had the largest market share, accounting for 66.6% of Peruvian fishmeal exports. In Chile, the export volume fell slightly from 63,800 to 62,000 tonnes. Although China still accounted for 44% of Chilean fishmeal export, their import volume dropped by 28% in the first quarter of 2014 compared with the same time period last year. Japan also reduced its import of fishmeal from Chile (-64%) during the period. In the case of fish oil, Peru almost tripled its exports from 21,700 in the first quarter of 2013 to 60,000 tonnes in the first quarter of 2014. Exports to all the major destinations increased considerably, and Chile regained its position as the top Peruvian fish oil export destination. In comparison, Chilean fish oil exports almost halved during the period (Iffo).

The Peruvian economy grew on average by 6.4% over the period 2003-11 and poverty was halved to 24% over the period 2005-13. However in 2014 GDP growth dropped by almost half to 3.5% leaving a challenge in Peru to ensure the strengthening of the links between growth and equity. A large share of the Peruvian population remains vulnerable to shocks and could fall back into poverty, thereby reversing the progress achieved over the course of the past decade (World Bank).

¹¹ Note: The SAP document (page 18, footnote 10 Spanish version) refers to, “the exclusion of fisheries that are regulated by Regional Fisheries Organisations”. However, there are important commercial artisanal fisheries within the 200 nm area which could be included during the PPG stage.

The Chilean economy has also slowed after the boom observed between 2010 and 2012, GDP growth was reduced to 2,2% during the first semester of 2014 affected by a recession in the mining sector due to the end of the investment cycle and to a decline in copper prices, this added up to a decline in private consumption. In parallel, unemployment in Chile increased from 5,7% in November 2013 to 6,5% in June 2014. As with Peru poverty has been halved over the period 2000 to 2011 from 23% to 9,9%. Ultimately the energy deficiency and the dependence on copper exports remain a source of vulnerability for the Chilean economy (World Bank).

Both Chile and Peru are facing increasing energy needs together with coastal infrastructure development; in addition there is a continued dependence on mining for economic growth, hence pressure on the coastal ecosystem. When coupled with overfishing with declining catch levels and reduced contribution to GDP, it is evident that there is a need to ensure improved fisheries management following the EBFM principles in order to maintain sustain fishing yields and employment in the value addition industries with associated opportunities for women. These environmental and socioeconomic threats to the long-term sustainability of the HCS ecosystem derive from a number of barriers and root causes impacting on the implementation of an integrated ecosystem-based approach to HCS management and governance as summarized in Table 2.

During the 2014 COP20 event in Lima Peru an Environmental Cooperation Agreement was signed on the 10th December by Chile and Peru in the presence of the two Presidents. This binational agreement, the first of its kind and the basis for a future platform for improved environmental dialogue, has three main objectives: 1) To promote capacity strengthening of both GO and NGO entities to stimulate the development of environmental management policies; 2) To facilitate the fulfillment of international environmental agreements agreed to by both countries; and 3) To strengthen a dialog and exchange of environmental experiences.

Table 2 Impacts, barriers and root causes

Transzonal problem 1. Sub-optimal exploitation of fishery resources	
ENVIRONMENTAL IMPACTS	Relevant effects of the impacts identified
Reduction of biomass and / or catches, and changes in the population structure of exploited resources.	Over the past 60 years, the total landings of pelagic resources in the HCLME area (ADE 2013, Peru) have exhibited high variability, through the influence of natural factors as well as fisheries management based on mono-specific maximum sustainable yield (MSY). Illegal fishing practices (discard and by-catch, among others) have also continued.
	In Chile, the anchovy (<i>E. ringens</i>) has been declared fully exploited in the northern part of the country and overfished in the southern central area. The Spanish sardine (<i>S. sagax</i>) which was for several years a target species has collapsed (SUBPESCA, SERNAPESCA, Chile). Having been classified as fully exploited (RM No. 781-97-PE) the anchovy (<i>E. ringens</i>) in Peru has a healthy population status, however there is concern that other aspects that could lead to the reduction of biomass and its sustainability, such as the existence of illegal fishing of the resource.
	The Chilean hake (<i>Merluccius gayi</i> , <i>M. australis</i> and others) is fully exploited or overexploited (SUBPESCA, 2013). In Peru, the Peruvian hake (<i>Merluccius gayi peruanus</i>), whose state of exploitation is "recovering" (Regulation of Fishery ROP Hake Supreme Decree No. 016-2003-PE) has exhibited drastic reductions in biomass from (1993) 700 thousand tons to a level not exceeding 100 tons in recent years. (PRODUCE e IMARPE, Peru)
	The extraction of coastal marine invertebrates in Peru (excluding mussels, prawns and scallops) exhibits a negative trend in landings since 2008, with lower figures for 2012 (PRODUCE e IMARPE, Peru). In Chile, records of invertebrate landings shows a decline in catches (SERNAPESCA, Chile)
	After a period of instability that peaked in 1994 with a total catch of close to 8 million tons, landings in Chile have exhibited a steady decline over the past six years, registering close to 3 million tons in 2012 (SERNAPESCA, 2013). Similarly, landing statistics for Peru show a general downwards trend over the last 20 years for species such as sardines, mackerel, horse mackerel and hake. (PRODUCE e IMARPE)
Alteration of trophic relationships in ecosystems.	The fishing of a target resource affects, in some form, the species that are part of its ecosystem, as they are part of the food cycle, either as consumers and / or prey (Parson, 1996). Therefore, the negative effect of the non-optimal exploitation of fishery resources would be as harmful to the marine and coastal ecosystems as other alterations caused by human populations, such as pollution, declining water quality and global warming itself (Jackson et al., 2001). There is a direct effect on foraging by seabirds by the decrease in biomass as a result of catches. (Bertrandet to 2012). This suggests that an ecosystem-based fisheries regime must therefore (i) take into account the needs of natural predators on the scale of values to define the fishing quota, using for example the 'one third for the birds' (Cury et al. 2011) and (ii) limit the risk of local depletion around breeding colonies by limiting fishing efforts.
	Even where there is no history of the magnitude of the by-catch impact, landings records show some variation in the diversity, quantity and structure of the species that are traditionally the by-catch of target species. (SERNAPESCA, Chile). It is still necessary in Peru to improve records of the catches of species other than the target species (munida <i>Pleuconcodes monodom</i> , for example), since the number of regulated species covers only just over 50 resources (TNC, 2014).
	In Chile the number of species present in landings has increased by 8.8% over the past 10 years, while the quantity and size of the captured specimen shows a marked decrease. Also, replacement has been observed in the list of species captured. Walls. (SERNAPESCA, Chile). Peru lacks this type of record. Industrial landing points are monitored, but not the artisanal landings and landings at commercial ports (Paredes & Latvian 2013). However implementation of these controls is underway in accordance with recent ministerial regulations.
Alteration of biodiversity, environment and ecosystem resilience.	The current mono-specific approach used to manage fisheries in the HCLME area is aimed at protecting the target species, partially addressing the impacts on associated species with which they share the habitat. The determination of maximum by-catch tolerance limits only occurs in major fisheries, primarily the industrial, such as anchovy, horse mackerel, mackerel, tuna and hake. The impact of fishing on associated and dependent species is still unknown, as is the impact on biodiversity and the resilience capacity of the ecosystem.
	The limitations of the mono-specific approach for fisheries management have led to global acceptance of the necessity to adopt an ecosystem approach (FAO 2009). This is necessary in order to deepen understanding of impacts of fishing on the HCLME's biodiversity, since to date there is no quantification of the level of biodiversity loss in the zone. It has been said at various workshops in both Chile and Peru that fishing practices leading to deterioration in the populations of mammals, reptiles and birds still exist.
	In this regard, it is important to highlight that in Chile there have been warnings about the effects of by-catch on some species of seals, petrels and albatross, each of which have been declared to be in a state of protection or in danger of extinction (in Promar Pacific, 2013). It has also been determined in Peru that the accidental or deliberate catch of dolphins is around 200 animals per year (PRODUCE, 2013). Limitations do not allow sealions to be alerted to the presence of fishing equipment (Mangel et al., 2013).

Problem 1. Sub-optimal exploitation of fisheries resources

SOCIOECONOMIC IMPACTS	Socioeconomic effects relevant to the identified impacts
Decrease in net income and employment from fisheries.	In Peru there are over 39,000 workers in the industry fleet and in processing plants (RT Resources and Fisheries Peru 2013), More than 44,000 artisanal fishermen operate 16,075 artisanal vessels (Produce, 2013), all of whose employment and income may be affected by sub-optimal use of the fishery resource.
	For Chile, a total universe of 95,000 employees linked to the extractive fisheries sector and processing plants (Inostroza, 2013) is estimated, of which about 60,000 are artisanal fishermen. Thus, the effects of a decline in landings would have a significant social impact on both the stability of fishing operations and income levels and consequently the quality of life of families linked to fishing.
Decrease in provision of fisheries resources for food security.	Changes in the state of stocks of the major fishery resources can jeopardize the success of policies aimed at increasing consumption of fish products and ensuring product safety for direct human consumption.
	In this context, considering the importance of the fisheries sector for the economies of Chile and Peru, and that a significant fraction of these landings is intended for direct human consumption, inadequate food security policies can have negative impacts on supply and on health human.

TRANSZONAL PROBLEM 1: SUBOPTIMAL EXPLOITATION OF FISHERIES RESOURCES				
IMPACTS ¹		IMMEDIATE CAUSES	UNDERLYING CAUSES	ROOT CAUSES
SOCIOECONOMIC	<ul style="list-style-type: none"> Decrease in net income and employment in fisheries. 	<ol style="list-style-type: none"> Variability of landings and decline in the prices of fishery resources. Replacement of original species by species of lower commercial value. Limited bargaining power of fisherpersons and other actors within the sector. Increased operating costs of exploitation. 	<ol style="list-style-type: none"> Increased activity over the optimal activity or biological reference points. Limited opportunities for training artisanal and small-scale operators to use their catches. Inefficient supply chains. Poor capacity for preservation and management of catches. Existence of high income from illegal activities and low probability of effective sanctions. Insufficient mechanisms and incentives for equitable commerce (direct marketing, auctions, information). Lack of restructuring and innovation policies. 	<ol style="list-style-type: none"> Lack of bi-national coordination for ecosystem-based management. Lack of bi-national coordination for research on ecosystem approach. Insufficient integration of research and knowledge for the proper management and implementation of EBM. Inadequate policies and instruments to promote productive development of smaller-scale fisheries and small-scale productive activities Limited capacity for monitoring, control and follow-up and limited state punitive and deterrent capability. Limited capacity for commercial management by small-scale fishermen.
	<ul style="list-style-type: none"> Decrease in provision of fisheries resources for food security 	<ol style="list-style-type: none"> Reduction of landings. Insufficient use of technology, equipment and infrastructure for the conservation of fish on board and ashore. Increase of fishing effort over the optimal effort or biological reference points Poor fishing practices 	<ol style="list-style-type: none"> Decreased supply of fishery resources to meet the demand for direct human consumption. Limited opportunities for training artisanal and small-scale operators to use their catches. Inefficient custody chains Insufficient mechanisms and incentives for equitable commerce (direct marketing, auctions, information). 	<ol style="list-style-type: none"> Limited information regarding the availability, access, stability and utilization of hydro-biological resources. Low awareness on the conservation and sustainable use of fisheries resources. Insufficient ecosystem-based fisheries management. Inadequate policies and instruments to promote productive development of smaller-scale fisheries and small-scale productive activities. Increased demand for fish products for direct human consumption

Transzonal Problem 2. Anthropogenic disturbance of the marine habitat

ENVIRONMENTAL IMPACTS	Environmental effects relevant to the identified impacts
Deterioration of water quality and marine sediments	The marine coast of Peru receives run-off from 53 rivers of the Pacific slope, most of whose waters have significant concentrations of total and thermo-tolerant coliforms which exceed the water quality standards set by Peruvian legislation, contributing to serious levels of pollution in some coastal areas (Callao and Chimbote). (ADE-Peru, 2013)
	Although in recent years a system for the treatment and disposal of effluents generated by fishing industry plants has been implemented, allowing the reduction of organic discharge from the marine environment, there are still areas where effluent discharges produced by the industrialization of fishing activity have been maintained or increased, such as Chancay, Huacho and Supe (IMARPE, 2008).
	For Chile, most of the country's waters are of an acceptable quality. However there are still some localized areas where water quality is inadequate, mainly due to urban and industrial discharges of untreated liquid waste (Moscoso, 2011). It is important to highlight that the environmental situation in Chile has improved in the past decade as a result of regulations stipulating the treatment of industrial liquid waste (ILWs) and organic origin, before being discharged into the sea.
	The general water quality situation exhibits significant variations across the coastal marine ecosystem. This variation is indirectly reflected in the results delivered by the Ocean Health Index (OHI, 2013) which measures countries' efforts to improve water quality on scale of 1-100. From a world average of 78 points (taken from 221 territories and countries), Chile has an index score of 70 points, while Peru registers a score of 57 (Table 9)
Mortality of marine organisms	In the HCLME area, particularly along the coasts of Peru, mortalities of marine animals can be frequently observed. The causes include, among others, the presence of: diseases (viruses, fungi, parasites, bacteria), marine rubbish and degradation of organic matter. (IMARPE, 2012)
	Domestic and industrial discharges and the untreated runoff which occurs in much of the region and the natural occurrence of the marine environment's own pathogens, such as <i>Vibrio</i> , which are common in coastal areas of HCLME (IMARPE, 2012), all contribute to this impact.
	The current state of eutrophication in certain sectors of the HCLME has allowed the development of Bloom phytoplankton, altering the concentration of oxygen at different levels of the column of seawater, producing toxic gases and Harmful Algal Blooms (HABs) that in turn produce bio-toxins. This factor could be the cause of several episodes of groundings and mortalities of coastal fish and marine invertebrates recorded in coastal areas of the HCLME (Sánchez, 2011, Carbajo 2009).
	Also, the presence of solid waste at sea (marine debris) permanently observed in the region, such as plastics, remains of nets, fishing gear and generally non-biodegradable material are factors that lead to the death of marine organisms (Institute Life, 2013).
Alteration of biodiversity and reduced ecosystem resilience	Increased population, growth in coastal cities with insufficient planning, and increased production activities in the region are generating strong pressure on the marine environment, which has increased the discharge capacity of some of HCLME's coastal marine areas.
	Marine pollution, use of poor fishing and aquaculture practices, as well as the unsustainable development of tourism are leading to the loss of biodiversity and to limitations in the HCLME's natural resilience (UNEP, 2003; EU 2011).
	This loss of biodiversity is reflected in actions taken to achieve the goal of protecting biodiversity considered in the Health of the Oceans Index (OHI 2013). On a scale of 1-100 and with a world average of 85 points, Chile has 86 points and Peru 71. (Table 9)
	In addition, environmental education is insufficient and this contributes to the loss of biodiversity. Education can promote increased awareness and consciousness-raising aimed at protecting the HCLME.

Transzonal Problem 2: ANTHROPIC DISTURBANCES OF THE MARINE HABITAT

Transzonal Problem 2: ANTHROPIC DISTURBANCES OF THE MARINE HABITAT				
IMPACTS ¹²		IMMEDIATE CAUSES	UNDERLYING CAUSES	ROOT CAUSES
ENVIRONMENTAL	<ul style="list-style-type: none"> Deterioration of water quality and marine sediments. 	<ol style="list-style-type: none"> Discharges of liquid waste. Fuel spills. Existence and incorporation of garbage and solid waste. Existence of environmental liabilities. Accidental discharge of tailings. Dragging fertilizers and agrochemicals, etc. 	<ol style="list-style-type: none"> Failure to comply with the existing rules on prevention of marine pollution. Businesses have little commitment to environmental responsibility. Deficiencies in the management of solid waste disposals. 	<ol style="list-style-type: none"> Insufficient binational coordination for research on environmental issues with an ecosystem approach. Insufficient environmental education at all educational levels. Insufficient research, development and scientific and technological innovation for knowledge and determination of the causes and sources deteriorating water quality and marine sediments to establish remediation measures. Insufficient management capacity for the development of the coastal marine area under an ecosystem approach. Insufficient knowledge and valuation of goods and services of the HCLME. Concentration of the population and production activities in the coastal area. Limited capacity for oversight, control, follow-up and deterrence by the State.
	<ul style="list-style-type: none"> Mortality of marine species 	<ol style="list-style-type: none"> Eutrophicated areas due to the increase of nutrients with the presence of algal blooms and oxygen depletion, and harmful algal blooms. Diseases caused by pathogens. Degradation of water quality by different sources. Ghost fishing due to the loss of fishing gear. Damages caused by the entanglement or ingestion of parts of fishing gear discarded at sea. 	<ol style="list-style-type: none"> Improper use of agrochemicals and fertilizers that increase the amount of nutrients in the receiving marine environment. Deficiency in monitoring, control and surveillance of marine debris and / or solid waste. Industry Malpractice. Failure to comply with the existing rules on the prevention of marine pollution. Lack of integrated treatments for emissions and effluents. Deficiencies in the contingency plans for the containment and control of failures in the productive activity. 	<ol style="list-style-type: none"> Insufficient management for the development of the coastal marine area under an ecosystem approach¹³ Limited capacity for oversight, control, follow-up and deterrence by the State. Insufficient scientific research to identify, prevent and mitigate the mortality of marine organisms. Insufficient integrated knowledge on the synergistic and additive interaction of pollutants in the marine habitat. Insufficient environmental education at all educational levels. Insufficient incentives from the State for the adoption of best practices and implementation of preventive actions. Insufficient tools for environmentally managing a

¹² The list of the problems and their impacts can be modified with further knowledge.

¹³ The management with an ecosystem approach of the coastal marine area includes the associated watersheds.

				particular receiving body of water, according to its burden capacity.
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Transzonal Problem 2. Anthropogenic disturbance of the marine habitat

SOCIOECONOMIC IMPACTS	Socioeconomic effects related to the identified impacts
Economic loss, employment and the declining competitiveness of the productive activity	The alteration of the natural characteristics of the marine environment has meant, among other things, decrease in the availability or abundance of biomass for migration by some of fishing resources, triggering a greater effort to access the fishing grounds (FAO, 2005) This situation directly affects the decrease in fishing hauls.
	Due to the alteration of the marine environment, fisheries activity in the HCLME has suffered a decline in productivity due to increases in the operating costs of industrial and artisanal fishing fleets, with fewer effective operating days per month, decreasing revenue, loss of competitiveness of fishing and lost opportunities for artisanal fisheries.
Decreased food security of products of marine origin	The permanent presence in the HCLME, albeit in specific areas, of Harmful Algal Blooms (HABs) or "Red Tide" (Carbajo, 2009) that can produce biotoxins highly damaging to human health should be especially highlighted.
	In the current process of marine habitat alteration that has been observed in the HCLME, increased disease from exposure to chemical or toxic substances has been recognized (Medina-Vogel, 2010). This reduces the food security of fishing products, which together with increasing costs of the activity (monitoring costs) can mean closures of fishing areas, with consequent impact on employment.
	For exporters of fish products such as Chile and Peru, the issues associated with food safety is particularly relevant given that the target markets impose strict rules on the admission of fishery products, where failure to comply will mean rejection with consequent economic losses (ADE-Chile 2013, ADE-Peru 2013).

Transzonal Problem 2: ANTHROPOGENIC DISTURBANCES OF THE MARINE HABITAT				
IMPACTS ¹⁴		IMMEDIATE CAUSES	UNDERLYING CAUSES	ROOT CAUSES
ENVIRONMENTAL	<ol style="list-style-type: none"> 1. Alteration of the biodiversity and reduction of ecosystem resilience. 	<ol style="list-style-type: none"> 1. Dumping of untreated or under-treated domestic, mining, agricultural and industrial wastewaters. 2. Unsustainable tourism 3. Lost or abandoned fishing gear (ghost fishing). 4. Invasive alien species present in ballast water and fauna transported by sea. 5. Escape and release of alien species. 6. Incorporation of marine debris and / or solid waste. 	<ol style="list-style-type: none"> 1. Failure to comply with the existing rules. 2. Lack of implementation of good environmental practices and clean technology. 3. Inadequate Technology and insufficient comprehensive treatment for effluents, wastewater and solid waste. 4. Insufficient knowledge to estimate the burden capacities and energy flows in the ecosystem. 5. Deficiencies in the management of solid waste. 	<ol style="list-style-type: none"> 1. Limited capacity for oversight, control, follow-up and deterrence by the State. 2. Insufficient incentives from the State for the adoption of best practices and the implementation of clean technology. 3. Insufficient environmental standards. 4. Insufficient financial resources and / or budgetary management for: (a) the implementation of a comprehensive system for monitoring and controlling productive activities that impact the marine environment; (b) scientific research of the marine ecosystem; and (c) research for the management of marine protected areas. 5. Insufficient scientific research to study the factors that determine the resilience of the marine ecosystem. 6. Insufficient knowledge and management of the coastal marine area under an ecosystem approach. 7. Insufficient interagency articulation and limited strength of the institutional capacities. 8. Insufficient environmental education to raise environmental awareness and sensitization. 9. Insufficient knowledge and valuation of goods and services of the HCLME.

¹⁴ The list of the problems and their impacts can be modified with further knowledge.

Common Problem 1: HIGH INCIDENCE OF BYCATCH ¹⁵ OR ACCOMPANYING FAUNA AND DISCARDS				
IMPACTS ¹⁶		IMMEDIATE CAUSES	UNDERLYING CAUSES	ROOT CAUSE
ENVIRONMENTAL	Negative affect on biodiversity, decline in abundance of species.	<ol style="list-style-type: none"> 1. Fishing malpractices. 2. Technological limitations to optimize fishing selectivity. 3. Failure to comply with current regulations. 4. Disturbance of the recruitment process. 5. Technological limitations for development of new products. 6. Increase of extraction pressure. 	<ol style="list-style-type: none"> 1. Increasing demand for fish products. 2. Limited capacity for monitoring, control, tracking, and punitive and deterrent capability by the State. • 3. Insufficient incentives to reduce discards and give an economic value to the resources of low commercial value. • 4. Insufficient knowledge and development of new products and fishing technology. 	<ol style="list-style-type: none"> 1. Insufficient financial resources to strengthen the monitoring, tracking, control, and surveillance systems of fisheries. 2. Insufficient capacity for coordination and linkage between powers of the State and civil society. 3. Insufficient implementation of the actions to minimize discards. 4. Insufficient scientific and technological research of the effects of trapping methods on marine species and product development. 5. Incentives to increase consumption of fish products. 6. Insufficient incentives for the technology development aimed at better use of fishery resources underused.
	Disturbance of trophic chain relationships.	<ol style="list-style-type: none"> 1. Fishing malpractices. 2. Using unsuitable fishing gear and methods. 3. Interactions of the fishery with top predators. 4. Insufficient knowledge of trophic relationships. 	<ol style="list-style-type: none"> 1. Increasing demand for fish products (commodities). 2. Insufficient scientific research on the behavior of top predators. 3. Technological limitations to optimize fishing selectivity. 4. Limited oversight, control, follow-up capability and punitive and deterrent capacity by the State. 	<ol style="list-style-type: none"> 1. Insufficient economic resources to strengthen the monitoring, follow-up, control and oversight of the fisheries. 2. Insufficient integration of research and knowledge for the proper management and implementation of EMA. 3. Insufficient human, physical and financial resources for scientific and technological research to implement and EBM. 4. Insufficient financial resources for the development and implementation of technology that reduces bycatch (top predators) or accompanying fauna and discard.¹⁷ 5. Insufficient use of technology and practices to reduce the interference of fishing activities with bycatch (top predators) or accompanying fauna.

¹⁵The minutes of TDA meeting held in Lima (July 20 to 22, 2014) contains precisions regarding the differences in the legal definitions in force in each country for the concepts of discard, accompanying fauna and bycatch. (See paragraph 5.1.)

¹⁶ The list of the problems and their impacts can be modified with further knowledge.

¹⁷ In some cases, the technology is available but remains to be implemented.

Common Problem 1: HIGH BYCATCH ¹⁸ OR ACCOMPANYING FAUNA AND DISCARDS				
IMPACTS ¹⁹		IMMEDIATE CAUSES	UNDERLYING CAUSES	ROOT CAUSE
SOCIO-ECONOMIC	<ul style="list-style-type: none"> Economic and employment loss, market restrictions due to the effect of bycatch or accompanying fauna and discard. 	<ol style="list-style-type: none"> No economic value assigned to bycatch or accompanying fauna and discard. Lack of knowledge on the amount and composition of the discard Insufficient control over bycatch or accompanying fauna and discard. Technological limitations for the development of new products. 	<ol style="list-style-type: none"> Little development of the products and markets for fishing products of low commercial value. Lack of knowledge on the value of using and not using of bycatch or accompanying fauna and discard. Limited oversight, control, follow-up capability and punitive and deterrent by the State. 	<ol style="list-style-type: none"> Insufficient financial resources for scientific research and the assessment of the value of using and not using of bycatch or accompanying fauna and discard. Insufficient environmental education at all educational levels which does not allow raising environmental awareness and sensibility Regulations that do not embrace technological advancements in a timely fashion. Insufficient economic resources to strengthen the monitoring, follow-up control and surveillance of the fishing industry.

¹⁸The minutes of TDA meeting held in Lima (July 20 to 22, 2014) contains precisions regarding the differences in the legal definitions in force in each country for the concepts of discard, accompanying fauna and bycatch. (See paragraph 5.1.)

¹⁹The list of the problems and their impacts can be modified with further knowledge.

Table 3. Aspects of the HCLME SAP reflected in the Project Identification Form

	Item	SAP	PIF	Comments
1	<p>The TEDA identified transboundary and common problems which are now addressed in the SAP design.</p> <p>The PIF Components are derived from the 5 main objectives in the approved SAP.</p>	<p>5 main objectives:</p> <ol style="list-style-type: none"> 1. Recovery and maintenance at optimal population biomass and maximum sustainable yield levels of the majority of fisheries resources while maintaining ecosystem health and productivity under climate change scenarios. 2. Improve environmental quality considering the integrated ecosystem management of coastal areas including associated watersheds. 3. Recover and maintain biodiversity and coastal system trophic webs at sustainable levels 4. Diversification of fisheries activities and the creation of new productive opportunities for fisherfolk organized in integrated civil society organizations. 5. Contribute to the general population's food security and food safety. 	<p>The same 5 objectives have been articulated as the 5 Components in the PIF.</p>	<p>The process was initiated after training from an IW:LEARN consultant provided to the National Multisectoral Committee members who make up the binational technical working group for the TDA-SAP process.</p> <p>The NOAA five-module indicator approach to assessment and management was followed in order to produce an Ecosystem Diagnostic Analysis (EDA) in each country. These were subsequently analysed bi-nationally and used to develop a single Transboundary EDA (TEDA).</p>
2	<p>TEDA causal chain analysis identifies the root causes of the problems.</p>	<p>The SAP takes the Transboundary problems and identifies a series of mitigating actions as identified in the SAP matrices in SAP Annex 5.</p>	<p>Actions proposed in the PIF reflect the actions suggested in the SAP</p>	<p>The main transboundary problems amount to sub-optimal fisheries exploitation and land based anthropogenic pollution.</p>
3	<p>Gender</p>	<p>The SAP recognises the relationship between men and women, their roles, rights and responsibilities, while noting that these vary within the range of fisheries activities as well as the dependence on fisheries according to ethnicity and social structure.</p> <p>When including 'upstream' and 'downstream' activities of in pre- and post-harvest work, the numbers of women involved in the sector approach 50% of the labour force.</p>	<p>PIF Table 3:</p> <p>"Women play a key role in post-harvest activities in the industrial fisheries sector. Waste products (fish heads, guts and skin) can easily be transformed into fertilizers of use in small scale agriculture where organic certification is sought by women's groups".</p>	<p>GEF-6 Gender mainstreaming goal indicators:</p> <p># 3 Share of women and men as direct beneficiaries of project.</p> <p># 4. Number of national / regional /global policies, legislation, plans, and strategies that incorporate gender dimensions (e.g. NBSAP, NAPA, TDA/SAP, etc.)</p>
4	<p>Humboldt Project Terminal Evaluation comments</p>	<p>Terminal Evaluation TE recommendations are included:</p> <p>Maintaining the commitment to environmental issues, biodiversity and HCLME ecosystem services on the agendas of both governments</p> <p>And</p>	<p>The PIF incorporates the TE recommendations including:</p> <ol style="list-style-type: none"> 1) Catalyzing recommendations by submitting a PIF on some of the lines identified in the SAP. 2) Promote a round of project results presentations with entities potentially interested in financing the suggested policies. 	

	Item	SAP	PIF	Comments
		Develop an agenda for SAP implementation for at least some of its priority activities.	3) Maintain the communications between all actors promoted by the project.	

2) The baseline scenario or any associated baseline projects.

The baseline scenario for the HCS is one of declining fish catches with increasing effort and resulting habitat damage from both overfishing and coastal pollution events caused by increased human population growth in the coastal zone and associated infrastructure development. At the same time there is no Coastal Marine Spatial Planning in operation and no binational straddling stock management agreements and information sharing at all levels is poor.

The root causes for the negative changes experienced over the last decade are listed in table 2 above and can be summarized as a series of factors due to increasing population pressure on natural resources combined with a lack of awareness about the value of the LME under climate change scenarios. In addition there is a need for increased investment in innovation, research, quality control and monitoring control and surveillance systems. The decline in the delivery of goods and services stemming from continued habitat and resulting biodiversity loss along with food security problems and employment decline is inevitable unless mitigation measures are taken now. There is a recognized need to put in place the strengthened capacities and dialogue designed and incorporated in this SAP implementation project considering the approved binational Chile-Peru environmental cooperation agreement signed on the 10th December 2014 and ratified in June 2015.

In addition the declining of fish catches and increased coastal infrastructure development other sectoral developments include oil and gas exploration, coastal agriculture, tourism, marine transport, cooling water provision, potable water from desalination, nutrient recycling and more. However these activities are typically led by each specific sector, usually operating with little cross-sectoral coordination or ecosystem based management application. Activities often become antagonistic resulting in a reduced delivery of goods and services due to the lack of a holistic approach to management. This can be further accentuated by political motives caused by national short-term priorities rather than Regional long-term planning, hence the absence of large scale bi-national cooperation of mutual benefit in the marine area.

The Fisheries Laws in Chile and Peru are designed to improve the management of the fisheries via the incorporation of ecosystem based management concepts in conjunction with environmental regulations in both countries. This is represented by means of fisheries agreements like for example the cooperation and information exchange agreement signed in December 2014 between the leaders of industrial fishing societies (Ecuador, Peru and Chile) designed to promote sustainable fisheries in the SE Pacific. Similarly on the 10th December 2014 the governments of Chile and Peru signed an Environment Cooperation Agreement designed to improve bilateral public and private environmental management capacities, dialogue and experience exchange and the fulfillment of international agreements.

Project partners from the TDEA-SAP development phase, both public and private, have assisted with the start towards Ecosystem Based Management. The results are well documented in both countries and baseline information is available in terms of specific site surveys, participatory participation in management plan development for protected areas and the production of goods from recovered ecosystems at pilot levels. The current GEF-UNDP HCLME project along with a sister GEF-World Bank project to assist the Guano Islands and Capes Natural Reserve project have developed baseline data and a monitoring system to monitor change over the next decade in Peru. Similar work in Chile involving GEF projects designed to improve the management of Protected Areas and eradicate invasive exotic species provide similar baselines in the southern area of the HCS. The binational TDEA provides the in-depth analysis of the root causes for the problems identified and the SAP the agreed way forward to address the problems helping the countries start to take the necessary next steps. The GEF increment will 'build upon' these existing initiatives to help take the countries to the next level.

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

For the Humboldt Current LME to move towards overall sustainable use and long-term maintenance of the significant market and non-market goods and services it provides to Chile, Peru and the broader international community, under the ministerially adopted SAP a series of agreed actions to transition towards an ecosystem-based approach and remove key barriers to sustainability is required.

The Project has five components and associated outputs and outcomes.

There are 22 Outputs designed to provide 5 Outcomes under 5 Components thereby delivering the overall Project objective of *‘Facilitating EBFM and ecosystem restoration in the HCS for the sustainable and resilient delivery of goods and services from shared living marine resources, in accordance with the SAP endorsed by Chile and Peru’*.

The Project is designed to remove the barriers to the sustainable delivery of the HCLME’s goods and services by addressing the root causes identified in the TDA summarized in table 1 above. The main Transzonal issues being: 1. Sub-optimal fisheries exploitation and 2. Anthropological alteration of the marine habitat and the common shared problem relating to high levels of incidental fish capture (by-catch) and discards.

Component 1

Recovery and maintenance at optimal population biomass levels of the majority of fisheries resources while maintaining ecosystem health and productivity under climate change scenarios.

Both Transzonal and local fisheries in Chile and Peru have suffered from the combined effects of overfishing, IUU fishing, discards and the absence (or only nascent level) of Ecosystem Based Fisheries Management (EBFM).

The recovery of many fisheries is a long-term effort yet evidence from the current phase of the GEF-UNDP Humboldt Current LME project has shown that within two years benthic species biodiversity (including species of high commercial value like murex snails, limpets, seaurchins and octopus) can be recovered in areas where macroalgal habitats are restored. A combination of ecosystem cataloguing and scaling up of the habitat restoration work under EBFM scenarios while observing the ongoing impacts of climate change will allow the recovery and improved management of key fisheries and maintained coastal ecosystems. Monitoring Control and Surveillance (MCS) improvements with realistic and effective sanctions will help maintain ecosystem integrity.

Component 1 has six main outputs:

- 1.1 Carry out an in depth analysis of the state of fish stocks of prioritized commercial fisheries.
- 1.2 Analysis of the impact of natural and anthropogenically-driven variation in the HCS ecosystem on principal fish stocks.
- 1.3 Characterization of the ecosystem’s components in which fish resources and fisheries are included.
- 1.4 New and/or revised fisheries regulations which incorporate EBFM principles adopted for prioritized HCS fisheries
- 1.5 Fisheries Monitoring Control and Surveillance (MCS) systems are improved including application of effective deterrence mechanisms (sanctions, etc.).
- 1.6 The EBFM approach is in place and its use at all levels is fully understood in terms of improved ecosystem goods and service delivery under a range of climate change scenarios. **Emphasis will be given to the coordination of joint anchovy stock management among other key transzonal fisheries.**

The initial expected outcome of Component 1 is that proritized fisheries resources have improved management scenarios in existence to assist with their recovery and systems are in place to ensure maintenance at optimal population levels while maintaining a healthy and productive ecosystem considering climate change and ENSO scenarios.

Component 2

Improve the environmental quality of the marine and coastal ecosystems via integrated management considering the various sources of pollutants.

Component 2 will complement the first component by ensuring that pollution control safeguards are in place and by so doing assist with the recovery of habitats damaged by a combination of overfishing and pollution (land and marine based). The TDA has identified pollution as a key driver for habitat loss, hence this component is designed to remove key barriers to reducing coastal pollution loads and to protecting and restoring important habitats. The land-sea interface focus will be central to the EBM work and crucial to the binational information sharing. Similarly the habitat and environmental improvements will allow successful biodiversity recuperation to be promoted under the third component.

Component 2 has five main outputs:

2.1 Establish a programme of coastal marine monitoring, to consider the main sources of contaminants into the HCLME

2.2 National Action Plans are in place and operating to ensure that the maintenance of targeted environmental quality aspects is functioning and will maintain expected environmental quality ranges as committed to in the SAP.

2.3 Waste treatment systems in the coastal zone have been improved. (Wastewater and non-point-source land based pollution financed by GEF funds; solid waste treatment financed by government funds)

2.4 Environmental inspection agencies at the local and central levels are strengthened to allow improved environmental quality objectives.

2.5. Coastal and Marine Spatial Planning (CMSP) is implemented in both countries as a management tool in selected areas, in order to improve the integrated management of ocean and coastal space.

The expected outcome of Component 2 is that coastal and marine environmental quality improved via application of integrated ecosystem management.

Component 3

Restore and maintain the habitat and biodiversity of marine and coastal systems at sustainable levels.

An ambitious but nevertheless realistic target as it will be possible based on the up-scaling of a series of pilots that build on and expand the work carried out during HCLME phase 1 within the context of Multiple Use Marine Protected Areas in both countries (examples from the Juan Fernandez Archipelago in Chile and the Guano Islands and Capes Natural Reserve in Peru). The trophic web work will require the improved knowledge of trophic interactions and information exchange with the resource users so that they are more aware of the negative consequences of illegal extractive activities like for example beach seine fishing which is highly unselective, catching a high diversity of fish many of which are discarded as being non-target species or unmarketable juveniles. This Component is of global importance in that it will help protect the biodiversity which high levels of endemic species represented in the HCS area. One of the main barriers relating to the governance of shared living marine resources includes insufficient integration of research and knowledge for the proper management and implementation of EBM combined with a lack of strategic planning for the sustainable development of the coastal marine area under an ecosystem approach.

Component 3 has three main outputs:

3.1 The knowledge of habitats and biodiversity in selected areas has been increased and an integrated biodiversity monitoring and evaluation system has been designed and implemented.

3.2 The capacity to manage coastal and marine habitats within Multiple Use Marine Protected Areas as part of Coastal Marine Spatial Planning initiatives and the associated biodiversity at sustainable levels has been strengthened.

3.3 Strengthened and new management measures for the conservation of habitats and biodiversity in marine and coastal ecosystems are in place and operating.

The expected outcome of Component 3 is that systems are in place to assist with the maintenance and if necessary recovery of biodiversity in the HCS.

Component 4

Diversify and add value to HCS fisheries and other sectoral uses by creating productive opportunities inside and outside the fisheries sector with people socially organized and integrated

This component builds on improved fisheries management, enhanced environmental quality and biodiversity, hence it is designed to diversify fisheries while at the same time reducing fishing pressure by means of establishing alternative livelihoods. Barriers to the diversification process include information gaps regarding many fisheries without management plans and limited information regarding artisanal fisheries including the absence of quotas in some geographical areas. Similarly there are few direct market opportunities for artisanal fishers. The mainstreaming of gender initiatives will be achieved via value addition opportunities from the diversification process. Component 4 has four main outputs:

4.1 Fisheries products with increased value addition are developed and marketed.

4.2 Commercialization channels of fisheries products improved.

4.3 Working capital mechanisms established and in operation.

4.4 Fisherfolk provided with diversified or alternative livelihood opportunities

The expected outcome of Component 4 is that fisheries activities are diversified and new productive opportunities created for fisherfolk, organized in integrated civil society organizations, both within and outside the fisheries sector.

Component 5

Contribute to the population's food security and food safety.

Having improved the environmental conditions, fisheries management and pollution control it is expected that there will be an increased availability of diversified food-safe marine products. This component is therefore designed to ensure that the processing capacity for the Direct Human Consumption (DHC) of aquatic products and associated post-harvest quality control mechanisms are in place. DHC levels could be dramatically increased by means of the innovative use of small pelagic fishery products in the form of protein concentrates for use as taste enhancers on carbohydrate staples like rice, potato, maize and cassava both in the region and worldwide especially in impoverished countries like those in sub-Saharan Africa. Similarly the product with the current highest DHC use, giant squid, could be increased by diversifying the range of by-products, thereby providing more employment options for women. At present there are safeguards for marine produce that is exported as importing countries test for a range of contaminants (PCBs, heavy metals, pesticides etc.) to ensure food safety. However products for national consumption are typically not tested, with the exception of harmful algal bloom (HAB) biotoxin occurrences. In addition the use of small pelagic fish species as a fishmeal and oil source could be partially replaced by the production of protein concentrates and fish oils of a purity allowing DHC, thereby contributing to food security in isolated and impoverished areas in both countries.

Component 5 has four main outputs:

5.1 The processing capacity throughout the production chain for marine produce destined for Direct Human Consumption is improved.

5.2 The quality of fisheries products for local consumption is improved by a series of post-harvest safeguards.

5.3 The variety, availability and supply of quality fisheries and mariculture products to the populations of both countries is enhanced.

5.4 Public and industry awareness of food safety and food security aspects relating to marine products has been improved.

The expected outcome of Component 5 is that the general population is benefiting from improved food security and food safety on the basis of improved ecosystem and fisheries management together with increased post harvest quality control.

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

The incremental benefits from the proposed USD56 million Strategic Action Programme (SAP) implementation project, with USD8 million requested from the GEFTF, will be realized via a dedicated effort to remove barriers and mitigate the root causes that result in a range of coastal and marine overfishing, habitat loss/degradation and contamination as described above. Many of the fish stocks in the HCS are Transzonal in terms of migratory species, straddling stocks or species with planktonic larval stages or spores travelling large distances in the complex series of currents and counter currents in the HCS (Table 1 above).

The catalysed implementation of the SAP for the Sustainable Management of shared Living Marine Resources in the Humboldt Current System (HCS) will ensure that the two countries are better able to manage and coordinate the range of marine environment activities carried out by both public and private sectors towards achieving integrated, ecosystem-based management of the HCS and its resources leading to environmental sustainability, improved food security and enhanced livelihood opportunities for both countries.

The Environmental Cooperation Agreement signed by Chile and Peru in December 2014 may provide a platform for collaborative activities like scientific-technical links.

There is a risk that a business as usual scenario, without the incremental benefits of the SAP implementation, would see a significant reduction in the annual delivery of the USD15 billion worth of goods and services derived from the HCS. The combination of project promoted ecosystem based fishery management, reduced pollution, habitat recovery, value addition and improved aspects of food safety all linked with the implementation of Coastal Marine Spatial Planning will ensure that goods and service delivery will be maintained and possibly enhanced. Whereas the no-project scenario with increasing pressure on the ecosystem could push this LME into a less productive phase with knock-on effects on production, employment and human health.

Binational cofunding of USD48 million during the five-year project is an insignificant amount per annum related to the preliminarily estimated USD 15 billion worth of goods and services received from the HCS, and therefore a relatively small amount for their protection and continued delivery. The GEF catalytic contribution is a very cost effective investment regarding the sustainable delivery of the HCLME goods and services.

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

The proposed project and approved SAP fully support the Rio+20 'The future we want' and proposed Goal 14 of the Sustainable Development Goals and Targets which is to *'Conserve and sustainably use the oceans, seas and marine resources for sustainable development'* and includes:

14.1 by 2025, prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution: [this project Component 2](#);

14.2 by 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration, to achieve healthy and productive oceans: [this project Component 3](#);

14.3 minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels: [this project Component 1](#);

14.4 by 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices and implement science-based management plans, to restore fish stocks in the shortest time feasible at least to levels that can produce maximum sustainable yield as determined by their biological characteristics: [this project Component 1](#)

14.5 by 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on best available scientific information: [this project Component 3](#);

14.6 by 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing, and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the WTO fisheries subsidies negotiation: [this project Component 1](#);

14.7a increase scientific knowledge, develop research capacities and transfer marine technology taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular SIDS and LDCs;

14.7b provide access of small-scale artisanal fishers to marine resources and markets; [this project Component 4](#)

14.7c ensure the full implementation of international law, as reflected in UNCLOS for states parties to it, including, where applicable, existing regional and international regimes for the conservation and sustainable use of oceans and their resources by their parties.

In addition the project supports nearly all of the 2015 – 2030 Sustainable Development Goals (SDGs) with special reference to Goals 5, 6 and 14, see table three for details regarding the HCLME SAP implementation and contribution to the achievement of the SDGs with special reference to gender equality aspects. The project will also contribute to the achievement of the five CBD Aichi biodiversity strategic goals and 20 targets by 2020.

SUSTAINABLE DEVELOPMENT GOALS and GEF



Aichi Biodiversity Targets Icons



With reference to SDG Goal 5, Achieve gender equality and empower all women and girls, the following four targets will be contributed to:

Target # 5: Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life. **Involvement of women in the Coastal Marine Spatial Planning (CMSP) educational process and Protected Area management and in the fisheries products with increased value addition, specifically in the artisanal sector.**

Target # 7: Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws. **Promote continued involvement of women in comanagement groups associated with National Parks and exclusive user rights for resource management.**

Target # 8: Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women: **promote women's role in the productive process related with increased value of the fishing, specifically in the artisanal sector**

Target # 9: Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels. **Promote women's involvement in management groups associated with fisheries and protected areas.**

Table 4 The Strategic Action Programme (SAP) implementation and promotion of the SDGs

SDGs	SAP activities	Specific gender focus
Goal 1: End poverty in all its forms everywhere	Diversification and increased job opportunities. Added value. Less risk under adverse sea conditions.	Promote value addition work with increased work opportunities for women in post-harvest activities, ensuring fair pay and social benefits.
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Nutritious, quality seafood products available for isolated populations: dried macroalgae and salted anchovies.	Education programmes targeted at women regarding the nutritional values of locally produced marine products.
Goal 3: Ensure healthy lives and promote well-being for all at all ages	Seafood at a low trophic levels less heavy metals. Protein + essential-oil rich, important for child nutrition. Promote Direct Human Consumption (DHC) of available low cost seafood.	An extension programme involving local government and private sector to encourage the involvement of women in the promotion of anchovy DHC.
Goal 4: Ensure inclusive and quality education for all and promote lifelong learning	Work via communications group & Ministry of Education re curricula related to ecosystem-based approaches.	The Amig@s del Mar group in Peru (and similar in Chile) will continue to actively promote the EBM approach via schools and colleges and will ensure a good gender balance.
Goal 5: Achieve gender equality and empower all women and girls	Post-harvest and habitat recovery work provides employment for women.	Women's involvement in the processing of anchovy and other abundant low cost marine products for direct human consumption.
Goal 6: Ensure access to water and sanitation for all	Integrated Coastal Zone Management and Marine Spatial Planning → pollution reduction and enhanced wastewater treatment	Encourage the participation of women's groups in the ICZM and CMSP interventions. At the same time promote the active role of women in National Park management committees and EBM training courses.
Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all	Coastal infrastructure planning enhanced under the CMSP work, this will help mitigate potential problems with the proposed wave energy capturing devices due to be installed within the next decade.	Wave energy projects are being contemplated in the region with opportunities for female engineering graduates: http://www.offshorewind.biz/2015/05/15/peru-authorizes-atmoceans-wave-energy-project/ http://www.pe.undp.org/content/peru/es/home/presscenter/articles/2015/12/08/mujeres-peruanas-instalan-paneles-solares-e-iluminan-sus-comunidades.html Technical school links to encourage women to take an active role in alternative energy provision.
Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all	Added value work generates employment options. Processing plant conditions comply with ILO standards.	The Institute for Democracy and Electoral Assistance (IDEA) is encouraging women's participation in the public sector, civil society and businesses in both Chile and Peru. http://www.idea.int/americas/women-leaders-in-peru-and-chile-in-focus-at-conference-co-organized-by-international-idea.cfm
Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation	Private sector involvement: anchovy processing waste to fertilizer for grazing land improvement in the high Andes. Successful trials in Peru in 2015.	Women play a key role in post-harvest activities in the industrial fisheries sector. Waste products (fish heads, guts and skin) can easily be transformed into fertilizers of use in small scale agriculture where organic certification is sought by women's groups.
Goal 10: Reduce inequality within and among countries	Forming associations promotes legal jobs and reduces inequality through associative work.	Under MPAs and TURFs ensure that women are represented in management groups.
Goal 11: Make cities inclusive, safe, resilient and sustainable	Work with coastal communities to promote the co-management of resources in multiple use protected areas.	Close to 70% of the population in Chile and Peru live in cities on or close to the coast. Women and girls are involved in recycling of waste. Women to be trained in safe waste recycling. Involve women in developing resilient cities together with the design and implementation of activities to mitigate climate change driven disasters such as floods and landslides in the coastal zone. http://www.perusinriessgodedesastres.com/material-de-difusi%C3%B3n-simulacro-ante-tsunamis/taller-ciudad-resiliente/ and similar in Chile.
Goal 12: Ensure sustainable consumption and production patterns	Project and partners are promoting the eco-certification of fisheries including the world's largest single-species fishery the anchovy.	Ensure that women's groups and women in regional government are aware of the advantages of eco-certification.
Goal 13: Take urgent action to combat climate change and its impacts	Project planting of macro algae and marine habitat recovery: O ₂ production & CO ₂ sequestration hence less ocean acidification..	The protection and recovery of macroalgal beds is an activity involving many women with algal hatchery and habitat restoration work.

SDGs	SAP activities	Specific gender focus
Goal 14: Conserve and sustainably use the oceans, seas and marine resources	Reduce: Marine Pollution, Overfishing & Illegal fishing; and Ocean Acidification Increase: Resilience; Marine Protected Areas; Economic benefits via value addition; Fisheries eco-certification; and Scientific information & sharing.	Support scientific work carried out by women at both Fisheries Institutes (IFOP Chile and IMARPE Peru). Support visibility of women's scientific contribution related ecosystems and fisheries through national and international scholarships for women scientists. https://portal.concytec.gob.pe/index.php/noticias/659-lanzan-concurso-para-visibilizar-el-aporte-de-mujer-a-la-ciencia-y-tecnologia and similar in Chile.
Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss	By means of ICZM and CMSP promotion ensure that activities in the land sea interface are well planned and pollution reduced via the application of 'Source to Sea' integrated water and coastal management approaches.	Women's groups continue to be involved in the CMSP process at both Central and Local government levels.
Goal 16: Promote just, peaceful and inclusive societies	Competition for natural resources → conflict. The HCLME holistic approach helps with improved planning & conflict reduction.	Ensure that women continue to be proportionally represented on National Park management committees.
Goal 17: Revitalize the global partnership for sustainable development	Promote public-private partnerships (PPPs) and links between entities carrying out similar under Coastal Marine Planning scenarios.	Ensure that women leaders at all levels are involved in the promotion of PPPs.

Furthermore the restoration of coastal habitats will contribute to the protection of biodiversity on a global scale due to the high number of globally significant species in the HCLME area (Table 1) and the Transzonal fisheries of global significance in terms of the fishmeal and oil exportation as a key supplier for the global aquaculture industry.

The contribution of small pelagic fisheries to fishmeal and oil production of top quality provides an important input to aquaculture worldwide, both freshwater and marine. Protein sparing via the use of plant proteins is reducing the need for fishmeal, nevertheless until cost effective protein and essential fatty acids production from microalgae or bacteria is available there will still be a need for high value products from the anchovy fisheries destined for both direct and indirect human consumption. At the same time binational management of the straddling stock will help to ensure that the declining population trends are reversed.

6) Innovation, sustainability and potential for scaling up.

This will be the first binational SAP implemented in the SE Pacific hence the combination of pilot activities from the GEF TDA-SAP design project with innovative scaling up of habitat restoration work will bring a useful example of fisheries co-management not previously seen in Peru. Experience sharing from the successful TURF operations encouraged by the Chilean Government will assist this process. In Peru the project will work with Compañía Americana de Conservas SAC (part of the Spanish group Consorcio) and the Association for the Promotion of Direct Human Consumption of Anchovy (ACHD). This partnership focuses on capacity building of fisherfolk to catch and land anchovy of the right size and condition for its processing for export, which positively impacts the earnings from the fishery. Consorcio is also working towards Marine Stewardship Council (MSC) certification of the anchovy fishery which will allow continued access to key markets in the USA, Europe and Japan. The processing plants provide stable work for hundreds of women and the established two stage value addition process helps with improve nutrition of poor Peruvian families in both rural and urban environments. Furthermore fish waste (heads, skin and guts) are being turned into fertilizer as an alternative to guano or inorganic fertilizer and field trials have shown promising results.

The very fact that the project will recover damaged habitats and put in place improved participatory management and MCS systems will ensure sustainable resource use.

As already witnessed at the end of the HCLME SAP development project, the benefits from innovative improvements to habitats like macroalgal beds by using cost-effective hatchery design technology coupled with post-harvest product value-addition brings attractive resource use options which can be sustainably scaled up over considerable lengths of the region's 6,950km coastline. The latter improves livelihoods and reduces pressure on a range of fisheries under the threat of over-exploitation. For example in Peru algae collectors have improved their monthly incomes by 40% which has taken them out of the poverty bracket. Well maintained algal beds also provide the role of nursery areas for a wide

range of marine coastal species, act as a 'shock-absorber' against climate change induced increased wave action thus mitigating coastal erosion problems, and lastly act as carbon sinks helping to mitigate climate change.

Sustainability will come from the results delivered by the SAP implementation, some of which will be delivered under the binational Environmental Cooperation Agreement between the Environment Ministries signed by both presidents during the COP20 climate change event in Lima and which came into force in 2015. In addition the promotion of links between the fisheries institutes, industrial and artisanal fishing groups and multisectoral clusters promoting Coastal Marine Spatial Planning will ensure long-term sustainability.

Habitat recovery work piloted successfully during the first phase and to be carried out with fisherfolk associations under the SAP implementation, will be scaled up in areas degraded due to coastal infrastructure development. Work under the SAP implementation related to Coastal Marine Spatial Planning will be expanded to national levels based on the early results during the first year of the SAP implementation which in turn are based on work initiated in 2015 in collaboration with NOAA.

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.

Civil society groups, in the form of industrial and artisanal fisherfolk associations, tourism operators, voluntary national park guards, university associations, fish processing and hatchery operating companies, local and international NGOs, have participated actively in the TDA preparation and SAP development and will also be closely involved during the project preparation and implementation stage. Fisher associations and volunteer park guards include a range of indigenous groups as there is noticeable migration from the high Andean areas to the coastal zone during periods of hardship.

The causal chain analysis prepared for the Humboldt Current LME foundational project TEDA involved civil society participation as did local level Ecosystem Diagnostic Analyses prepared for each country. In addition the process of developing MPA management plans includes principal stakeholders in both Chile and Peru. The stakeholder analysis and experience and best practices in stakeholder involvement from the SAP foundational project will be carried over into this project and a full stakeholder involvement plan prepared during PPG.

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.

Between fisheries and tourism operations in the HCS coastal zone there is a good gender balance due to many employment opportunities for women in post-harvest and food marketing operations, nevertheless gender mainstreaming is important as there is still a disparity when it comes to take home pay with women only receiving USD0.75 per USD1.00 earned by men in coastal marine based employment. There are many opportunities for women working in value addition activities and as the promotion of this is central to components four and five. Gender parity in the project design process is a realistic target in both public and private sectors by means of many value addition enterprises associated with habitat restoration work involving macroalgal beds and improved biodiversity therein. Please see table 4 above with more specific details. GEF-6 Gender mainstreaming goal indicators: # 3 Share of women and men as direct beneficiaries of project. and # 4. Number of national / regional /global policies, legislation, plans, and strategies that incorporate gender dimensions (e.g. NBSAP, NAPA, TDA/SAP, etc.) are included in this SAP implementation Project.

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).

Risk	Rating	Mitigation Strategy
Binational information exchanges under the environmental cooperation agreement signed 10.12. 2014 are not forthcoming.	L-M	The Project is designed to demonstrate the benefits of coordinated EBM activities between the two countries to protect the delivery of goods and services. Information exchange related to improved data collection has been demonstrated during the Economic Valuation of the HCLME goods and services.
Limited stakeholder interest in, and even resistance to, the process of change and lack of awareness regarding ecosystem based approaches.	L-M	All components, especially the third, are designed to raise awareness of the EBM approach and financial benefits to be gained from the improved management and marketing systems.
Lack of a fully integrated Ecosystem Based Management (EBM) approach under ICZM scenarios between governments and their respective agencies, civil society and the private sector.	L-M	Ecosystem Based Management, as set out by the 12 Convention on Biological Diversity (CBD) / IUCN principles, is interpreted in different ways by different entities. However the involvement of a wide range of stakeholders , all party to the EBM and FAO EBFM objectives as promoted at all levels, will encourage the required integrated approach to resource management.
Climate change scenarios accelerate at a pace that restrict habitat restoration and in addition exotic species invasions accelerate.	M	Global warming and alterations to the natural climate cycles in the region, El Niño La Niña, are being monitored closely. Work to restore natural habitats sensitive to temperature change will be carefully planned to mitigate any possible failures in relation to algal bed repopulation work. Close working links will be included to other GEF projects and their results have been made and will be continued.
Lack of Government, private sector and potential donor funding required to ensure financial sustainability during SAP implementation.	L-M	Commitments made by the two countries under the Environmental Cooperation Agreement and by partner agencies are based on mutually acceptable terms designed to ensure that returns from investment are realistic via improved productivity and the associated value addition work.

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

The SAP implementation project will liaise closely with similar regional interventions like the recently prepared Coastal Fisheries Initiative (Ecuador – Peru with experience sharing from Chile) with significant synergy with this HCLME SAP implementation proposal. Coordination and knowledge sharing is also planned with the Caribbean SAP implementation project started in 2015 and a range of other LME projects worldwide. Similarly there will be close links with GEF IW:LEARN, GEF-Globalast (post Glo-Ballast monitoring work based on the port baseline surveys and IOC ballast water protocol implementation), GEF SNAP (coordination of public and private natural protected areas in Chile), GEF invasive species eradication (Juan Fernandez Archipelago in Chile), scientific exchanges with the three other main Eastern Boundary Upwelling Systems (EBUS) in California, Benguela and Canary Currents. In Peru the ongoing GEF Guano Island and Capes project will be instrumental in the coordination of the habitat restoration work at the 33 Islands and Capes sites.

6. Consistency with National Priorities. Is the project consistent with the National strategies and plans or reports and assessments 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.

The project is fully consistent with both Chile and Peru's National Biodiversity Strategies:

The Chilean National Biodiversity Strategy's (NBSAP) goal is that Chile's biodiversity be protected, known and used sustainably by all sectors of society, conserving essential ecological processes of the biosphere and fostering an improved quality of life for present and future generations. The NBSAP is based on the country's commitment to the preservation, conservation, recovery and sustainable development of our biological diversity, and is based on the following fundaments:

Participation: Different social sectors should participate in the definition and implementation of biodiversity conservation Strategies. The State seeks to ensure and promote participation and public consultation with the aim of understanding citizens' interests and needs, in order to build consensus around common objectives and actions.

Justice and Equity: The benefits arising from the sustainable use of biodiversity and the costs of conserving it should be fairly and equitably distributed among social, ethnic, gender, and generational groups.

Respect: All life forms and the different ways of knowing and using biodiversity sustainably that now exist and have been passed from generation to generation should be respected.

Commitment: A commitment should exist to preserve, recover, conserve and use biodiversity sustainably.

Responsibility: Society as a whole, and in particular all those involved in the present Strategy, should act responsibly for its effective implementation.

Peru's NBSAP vision is that by 2021, Peru will be the first country in the world to have the best benefits for its population from its conserved and sustainably used biodiversity, as well as having restored all its biodiversity components in order to meet the basic needs and well-being for present and future generations. The overall objective of the NBSAP is the conservation of biodiversity, sustainable use of its components, fair and equitable sharing of the benefits arising from their use, adequate access to those resources, appropriate transfer of pertinent technologies, taking into account the rights to those resources and technologies, as well as appropriate financing.

There are 8 specific strategy lines, which have specific objectives and actions defined for each one. These are:

- i. The conservation of biodiversity in Peru;
- ii. Integrating sustainable use of biodiversity into the management of natural resources;
- iii. Establishing special measures for the conservation and restoration of biodiversity faced with external processes;
- iv. Promoting participation and engagement from the Peruvian society in the conservation of biodiversity;
- v. Improving knowledge of biodiversity;
- vi. Perfecting the instruments needed for management of biodiversity;
- vii. Enhancing Peru's image at the international level; and
- viii. Implementing immediate actions.

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.

The foundational phase project web site, www.humboldt.iwlearn.org, will continue to serve as the primary publicly available knowledge and information platform during this proposed SAP implementation project.

The Project will promote knowledge sharing through GEF mechanisms such as IW:LEARN and world global LME events promoted by GEF, UNDP and IOC / UNESCO. At least 1% of the GEF project budget allocation will be dedicated to IW portfolio learning. In addition other emerging mechanisms such as the *Amigos del Mar* group which includes communicators from key Ministries, INGOs and the private sector in Peru.

The project will communicate closely with and learn from other LME interventions that have completed or are in the process of SAP implementation: BoBLME, CLME, GoMLME, and the Benguela Current Commission. Similarly the CPPS regional network and those belonging to International NGO partners like and TNC will be used to share knowledge worldwide.


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

A. RECORD OF ENDORSEMENT²⁰ OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
MR. JOSE ANTONIO GONZALEZ NORRIS	INTERNATIONAL NEGOTIATION AND COOPERATION OFFICE DIRECTOR	MINISTRY OF ENVIRONMENT	07/20/2016
MR. MIGUEL STUTZIN SCHOTTLANDER	GEF OPERATIONAL FOCAL POINT – INTERNATIONALS AFFAIRS OFFICE	MINISTRY OF ENVIRONMENT	08/24/2016

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies²¹ 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
Adriana Dinu Executive Coordinator UNDP-GEF		25 August 2016	Jose Vicente Troya, RTA, Waters & Oceans	+507 302 4636	Jose.troya@undp.org

²⁰ 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.

²¹ GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF

GEF-UNDP-HUMBOLDT PROJECT PIMS 4147

***“TOWARDS ECOSYSTEM BASED MANAGEMENT OF THE HUMBOLDT
CURRENT LARGE MARINE ECOSYSTEM (HCLME)”***

STRATEGIC ACTION PROGRAMME (SAP)

June 2016

This Program and its annexes do not affect, repeal or infringe the sovereign rights either regarding the legal status of both countries, territories, cities, areas and authorities, or regarding the delimitation of their borders or boundaries.

ACKNOWLEDGEMENTS

The Project Management Committee acknowledges the invaluable contribution of the Technical Working Groups (TWG) members from each country, who tirelessly participated in the binational workshops and a number of national meetings that led to the achievement of the Strategic Action Program (SAP) with the appropriate technical rigor and according to the specific perspectives and characteristics of Chile and Peru. We gratefully acknowledge the co-financing and technical support provided by the Global Environment Facility (GEF) and all the assistance provided by the United Nations Office for Project Services (UNOPS) and the United Nations Development Programme (UNDP) during the Project execution and follow-up.

PAGES OF SIGNATURES SAP DOCUMENT AGREED BY THE GOVERNMENTS OF

CHILE AND PERU



Hacia un manejo con enfoque ecosistémico del Gran Ecosistema Marino de la Corriente Humboldt

PÁGINAS DE FIRMAS DOCUMENTO PAE ACORDADO POR LOS GOBIERNOS DE

CHILE Y PERÚ

Instituto de Fomento Pesquero (IFOP) Chile
Leonardo Núñez Montaner
Director Ejecutivo



Instituto del Mar del Perú (IMARPE) Perú
Carla Aguilar Samanamud
Directora Ejecutiva Científica



Subsecretaría de Pesca y Acuicultura (SUBPESCA) Chile
Raúl Súnico Galdames



Subsecretario de Pesca y Acuicultura

Ministerio de la Producción Perú
Juan Carlos Requejo Aleman
Viceministro de Pesca y Acuicultura



Ministerio del Medio Ambiente Chile
Marcelo Mena Carrasco
Subsecretario del Medio Ambiente



Ministerio del Ambiente Perú
Gabriel Quijandría Acosta
Viceministro de Desarrollo Estratégico de los Recursos Naturales





Hacia un manejo con enfoque ecosistémico del Gran Ecosistema Marino de la Corriente Humboldt

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Ministerio de Relaciones Exteriores de Chile
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Ministerio de Relaciones Exteriores del Perú
Eric Anderson Machado
Embajador, Encargado del Despacho Viceministerial
de Relaciones Exteriores de Perú

Fecha: _____

Institute of Fishing Promotion (IFOP) Chile
Leonardo Núñez Montaner

(Round seal and signature)

Executive Director

Institute of the Sea (IMARPE) Peru
Carla Aguilar Samanamud
Scientific Executive Director

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Ministry of Environment Chile
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Ministry of Foreign Affairs of Peru
Eric Anderson Machado
Ambassador, Responsible for the Office
of the Deputy Minister of Foreign Affairs of Peru

(Round seal and signature)

Date: 10.08.2016

LIST OF ACRONYMS

BDA	Biodiversity Area
CCA	Causal Chain Analysis
RCA	Root cause Analysis
EDA	Ecosystem Diagnostic Analysis
TEDA	Transzonal Ecosystem Diagnostic Analysis
TDA	Transzonal Diagnostic Analysis
MU-CMPA	Multiple Use Coastal and Marine Protected Areas
MPA	Marine Protected Area
NPA	Natural Protected Area
ATCR	Root cause thematic clusters
G&S	Goods and services
CBD	Convention on Biological Diversity
DHC	Direct Human Consumption
CIAM	Applied Research Center of the Sea (Chile)
IATTC	Inter-American Tropical Tuna Commission
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
COMUMA	Multisectoral Commission for Marine Environmental Management (Peru)
CONAPACH	National Federation of Artisanal Fishermen (Chile)
CONFEPACH	National Confederation of Artisanal Fishermen Federations of Chile
CONICYT	National Commission for Scientific and Technological Research (Chile)
UNCLOS	United Nations Convention on the Law of the Sea
COP	Conference of the Parties
COPAS	Center for Oceanographic Research in the Eastern South Pacific (Chile)
CPPS	Permanent Commission for the South Pacific
DGP	Directorate-General for Ports (Peru)
DICAPI	Directorate-General of Captaincies and Coast Guard of Peru
DIMA	Directorate for Environment and Maritime Affairs (Chile)
DIRECTEMAR	Directorate-General of the Maritime Territory and Merchant Marine (Chile)
DPA	Artisanal Fishing landing stage
ECMPO	Marine Coastal Spaces for Indigenous Peoples
NBS	National Biodiversity Strategy
ENSO	El Niño-Southern Oscillation
HAB	Harmful Algal Bloom
FAO	Food and Agriculture Organization of the United Nations
FDI	Development and Innovation Fund (Chile)
FIP	Fisheries Research Fund (Chile)
FIUPAP	Federation for the Integration and Unification of Artisanal Fishermen of Peru
FONDAP	Fund for Research Centers in Priority Areas (Chile)

FONDECYT	National Fund for Scientific and Technological Development (Chile)
FONDEF	Fund for the Promotion of Scientific and Technological Development (Chile)
GEF	Global Environment Facility
HCLME	Humboldt Current Large Marine Ecosystem
LG	Local Government
TWG	Technical Working Group
IFOP	Institute of Fishing Promotion (Chile)
IMARPE	Institute of the Sea (Peru)
IW:LEARN	International Waters Learning Exchange and Resource Network
IWC	International Whaling Commission
LBMA	General Environmental Law (Chile)
LGP	General Law on Fisheries (Peru)
LGPA	General Law on Fisheries and Aquaculture (Chile)
LPDA	Law for the Promotion and Development of Aquaculture (Peru)
MARPOL	International Convention for the Prevention of Pollution from Ships
EBM	Ecosystem-based Management
MIN RR.EE.	Ministry of Foreign Affairs (Peru)
MINREL	Ministry of Foreign Affairs (Chile)
MINAM	Ministry of Environment (Peru)
MMA	Ministry of Environment (Chile)
OECD	Organization for Economic Cooperation and Development
OEFA	Agency for Environmental Assessment and Enforcement (Peru)
OHI	Ocean Health Index
IMO	International Maritime Organization
RFMO	Regional Fisheries Management Organization
SPRFMO	South Pacific Regional Fisheries Management Organization
RFO	Regional Fisheries Organization
SAP	Strategic Action Program
CP	Common Problem
GDP	Gross Domestic Product
PP	Primary production
PRODUCE	Ministry of Production (Peru)
PROGEA	Environmental Management Program of the University of Chile
TP	Transzonal problem
PUCV	Pontifical Catholic University of Valparaíso
RAMSAR	Convention on Wetlands of International Importance especially as Waterfowl Habitat
RNSIIPG	Guano Islands, Islets and Capes National Reserve System (Peru)
HR	Human Resources
TR	Thematic Report
HCS	The Humboldt Current System
SEA	Environmental Evaluation Service
SEGPRES	Ministry of the General Secretariat of the Presidency (Chile)

SEIA	Environmental Impact Assessment System
SERNANP	National Service of Natural Protected Areas (Peru)
SERNAPESCA	National Fisheries and Aquaculture Service (Chile)
SERNATUR	National Tourism Service (Chile)
M&E Sytem	Monitoring and Evaluation System
SNP	National Fisheries Society (Peru)
SOFOFA	Society for Industrial Promotion (Chile)
SONAPESCA	National Fisheries Society (Chile)
SUBPESCA	Undersecretariat of Fisheries and Aquaculture (Chile)
TACC	Causal Chain Analysis Workshop
TADET	Transzonal Ecosystem Diagnostic Analysis Workshop
TNC	The Nature Conservancy
RCU	Regional Coordination Unit
IUCN	International Union for Conservation of Nature
UNDP	United Nations Development Programme
UNFV-FOPCA	Federico Villareal National University – School of Oceanography, Fisheries, Food Science and Aquaculture (Peru)
UNOPS	United Nations Office for Project Services
WWF	World Wildlife Fund
EEZ	Exclusive Economic Zone



Towards Ecosystem Based Management of the Humboldt Current Large Marine Ecosystem

EXECUTIVE SUMMARY

The Humboldt Current Large Marine Ecosystem (HCLME) stands out as one of the world's most productive marine ecosystems. It is characterized by the permanent upwelling of subsurface, relatively cold, nutrient-rich waters, which is a key factor for high marine productivity. An array of habitats coexists within this ecosystem, which sustains important fisheries worldwide. Pelagic, demersal, benthic, estuarine, coastal and deep-water habitats, such as seamounts and submarine canyons, stand among the most important systems, all of which can be vulnerable to human interaction as they host fragile endemic species that are difficult to recover when they are affected. Another feature of the HCLME is related to changes that can impact the provision of goods and services caused by environmental variability in different timescales ranging from interannual occurrences like El Niño/Southern Oscillation, to interdecadal changes such as global warming.

Anthropic activities related to an increase in the production processes and services such as artisanal and industrial fishing, urban development, increasing shipping activities, infrastructure projects, agriculture, mining, increasing tourism activities, among others, in addition to the natural aspects of environmental variability, represent the main sources of habitat and marine biodiversity alteration, and in general, an alteration in the provision of goods and services of the HCLME.

With a view to promoting an Ecosystem-based management (EBM) of the HCLME, the Governments of Peru and Chile in 2010 agreed to co-finance in conjunction with the Global Environment Facility (GEF) the Humboldt Project PIMS 4147 "Towards Ecosystem-Based Management of the Humboldt Current Large Marine Ecosystem". The management and implementation of this project were carried out with the support of the United Nations Development Program (UNDP) and the United Nations Office for Project Services (UNOPS) through a binational Regional Coordination Unit (RCU).

The focal points were the Institute of Fishing Promotion (IFOP) in Chile and the Institute of the Sea (IMARPE) in Peru.

The Project goal is to advance towards a sustainably used and resilient HCLME that can maintain biological integrity and diversity and ecosystem services for current and future generations despite



Towards Ecosystem Based Management of the Humboldt Current Large Marine Ecosystem

changing climate and social pressures. The Project objective is: “To advance towards Ecosystem-based management (EBM) in the HCLME through a coordinated framework that enhances governance and the sustainable use of living marine resources and ecosystem services.” In order to attain the established objectives, the Project organized a set of activities and workshops involving experts from different public and private institutions in the fields of fisheries and environmental sciences. The experts formed a Technical Working Group (TWG) for each country and their work resulted in four main outputs: an Ecosystem Diagnostic Analysis for each country (EDA Chile and EDA Peru), the Transzonal Ecosystem Diagnostic Analysis (TEDA) and the Strategic Action Program (SAP) presented hereafter. The applied methodology followed the guidelines set by the IW:LEARN TDA-SAP Process by UNDP (TDA-SAP training course) and the Project document, considering each country’s characteristics and outlook.

The Strategic Action Program (SAP) is a political document aimed at guiding action. It is part of the process that attempts to define and agree on the implementation of responses to the transboundary and common problems identified in the TEDA for the HCLME. The SAP purpose is to advance towards a sustainable use of the HCLME goods and services by managing and preserving natural resources within a coordinated action framework among the two countries to guarantee the fulfillment and permanent satisfaction of human needs for current and future generations.

The SAP document includes a Vision, General Objectives, Specific Objectives and Actions with their corresponding indicators to measure their progress, identify responsible institutions and estimate costs. Furthermore, this program is framed within the sustainable development principles and the ecosystem approach proposed by FAO, as well as within the legal system of both countries including the legally binding and the voluntary international instruments that each country has endorsed or adopted.

The TEDA, as essential part of the SAP led to the identification of the following transzonal problems²²:

- Inadequate exploitation of fishing resources

²² Transzonal problem: a problem that occurs or happens in territorial waters in one country and which causes a negative impact in the provision of goods and services provided by the HCLME in the territorial waters of both countries.



Towards Ecosystem Based Management of the Humboldt Current Large Marine Ecosystem

- Anthropogenic alteration of the marine ecosystem

And a common problem²³:

- High bycatch rates or accompanying fauna and discards²⁴

The major impacts of the identified problems relate, to a greater or lesser extent, to the reduction in abundance or availability of the exploited resources, as well as their associated and dependent species, changes in trophic relations, biodiversity alteration, habitat and water quality alteration and degradation, and economic and employment losses, mainly for coastal communities. These impacts affect food security beyond the effects caused by the natural environmental variability of the HCLME.

The identified transzonal problems and the common problem were assessed through the Causal Chain Analysis (CCA) to establish the origin of immediate, underlying and root causes. This analytical approach is a key component of the TEDA formulation process, as it is the base to plan the interventions included in the current SAP to address problems from their root causes.

The identified root causes of the common and transzonal problems were classed according to the following criteria: 1) Knowledge, 2) Social causes, 3) Economic causes, 4) Governance and 5) Institutional causes. Based on these groups, the main leverage or action points were defined to articulate the TDA-SAP Process, identifying possible interventions in key aspects and working with the relevant institutions in order to reduce, eliminate or mitigate the environmental and socioeconomic impacts caused by the identified problems.

Within the framework of coordinated action between both countries, the SAP pursues the following long term vision: “A healthy, productive and resilient Humboldt Current Large Marine Ecosystem

²³ Common problem: is a problem that is produced in a similar way in two countries (ADET, 2015).

²⁴ **In Peru**, bycatch are all catches that are not target species. **In Chile** the Law 18.892 of 1989 and its amendments, General Law on Fisheries and Aquaculture provides that: Article 2, 14) bis. Discard is the action of returning to the sea hydrobiological species that have been caught. 21) Accompanying fauna comprises hydrobiological species that temporarily or permanently occupy a common maritime space with the target species and, due to the technological effect of fishing gear or arts, are caught when the fishing vessels direct their fishing effort to exploit the target species. 21 bis) Bycatch refers to the species that are not part of the accompanying fauna and comprises marine reptiles, seabirds and marine mammals.



Towards Ecosystem Based Management of the Humboldt Current Large Marine Ecosystem

(HCLME), through Ecosystem-based management to guarantee conservation and sustainable use of its goods and services for the benefit of their peoples”.

This vision considers Ecosystem-Based Management as the most suitable management strategy, focusing on the ecosystems sustainability, considering social, political and economic aspects, and recognizing that human beings and their cultural diversity are part of the ecosystem. At the same time, the vision adopts the adaptative management as a flexible system that during the SAP implementation will allow actors to gradually modify, update, improve and optimize mechanisms or procedures involved in the proposed actions.

With this view, five general objectives are set in the SAP:

1. To recover and maintain optimal population levels of the main fishing resources, taking into account environmental variability and maintaining the ecosystem health and productivity.
2. To improve environmental quality of the coastal and marine ecosystems through integrated management, considering different pollution sources.
3. To recover and maintain the habitat and biodiversity of coastal and marine systems at a sustainable level.
4. To diversify and add value creating productive opportunities within and outside the fishing sector, with socially organized and integrated peoples
5. To contribute to the population food security

The SAP geographical scope belongs to the Humboldt Current System between the latitudes 49° and 40° S. Nevertheless, the spatial area of intervention to address the problems identified in the TEDA will be specified during the SAP implementation.

The SAP implementation provides an opportunity to:

- Implement priority actions established in the SAP to address the transzonal problems and the common problem identified in the TEDA aiming to preserve and maintain the HCLME goods and services.



Towards Ecosystem Based Management of the Humboldt Current Large Marine Ecosystem

- Advance towards EBM through a coordinated framework between the two countries to enhance environmental conservation, governance and the sustainable use of HCLME marine resources and services.
- Improve understanding of the HCLME high natural variability and the related socioeconomic processes, and incorporate this knowledge in the management and governance mechanisms.
- Build human capacity to implement EBM and to achieve, as a result, the successful implementation of the SAP and its actions.



Towards Ecosystem Based Management of the Humboldt Current Large Marine Ecosystem

Annex 5. SAP matrix: General Objectives, Specific Objectives and Actions

The 'Agencies' column lists the competent agencies for the implementation of identified actions; however, their inclusion in this matrix does not mean that they are committed or they are responsible for the implementation of the actions. During the project design phase, these entities, among others that have not yet been identified, will be consulted on their involvement in the SAP implementation.

GENERAL OBJECTIVE 1: TO RECOVER AND MAINTAIN OPTIMAL POPULATION LEVELS OF THE MAIN FISHERY RESOURCES, CONSIDERING THE ENVIRONMENTAL VARIABILITY AND MAINTAINING THE ECOSYSTEM HEALTH AND PRODUCTIVITY

Specific objective	Actions	Cost(US\$)	Results/Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Diagnosis of the state of the main fishing resources	Identify the main fishery resources	Low	Main fishery resources identified	Short term	Chile: SUBPESCA Peru: PRODUCE, IMARPE	Chile: NO ; Peru: NO (both require delegation of representative powers for binational work)	Process: Binational Commission operating, Working Groups operating, fishery resources identified	High	National and binational	Lack of political decision and funding
	Establish biological reference points such as optimal levels and extent of exploitation, among others	Medium	Biological reference points established for each resource	Short term	Chile SUBPESCA Peru: PRODUCE, IMARPE	Chile: NO ; Peru: NO (both require delegation of representative powers for binational work)	Process: Binational Commission operating, Working Groups operating, biological reference points defined	High	National and binational	Insufficient information and funding
	Assess the state of resources and their fisheries	Medium	Report on the state of the resources/fishery	Medium term	Chile: SUBPESCA Peru: PRODUCE, IMARPE	Chile: NO ; Peru: NO (both require delegation of representative powers for binational work)	Process: Binational Commission operating, Working Groups operating, state of the resource defined	High	National and binational	Medium: funding
	Determine the impact of the fishery on the ecosystem	High	Impact of the fishery on the ecosystem is determined, based on indicators (biodiversity, trophic level changes, bycatch and discard rates, risk levels, marine debris, carbon footprint, etc.)	Long term	Chile: SUBPESCA Peru: PRODUCE, IMARPE	Chile: NO ; Peru: NO (both require delegation of representative powers for binational work)	Process: Binational Commission operating, Working Groups operating, Consolidated indicators	High	National and binational	Medium: funding

GENERAL OBJECTIVE 1 (Continues...)

Specific	Actions	Cost	Results/Outputs	Time required for	Agencies	Need for legal,	Indicators of	Relative priority:	National or	Risks/uncertainties
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objectives		(US\$)		implementation		institutional or policy reforms	success	high, medium, low	binational	
Assess the impacts of environmental variability on the ecosystem and the main fishery resources	Improve data collection capacity and forecast of the state of the fisheries by using advanced models	High	Enhanced capacity to forecast the environmental variations with direct impact on the fisheries	Medium / long term	Chile: SHOA, IFOP, CONA Peru:IMARPE, ENFEN group)	Chile: NO ; Peru: NO	More precise predictive models. Greater amounts of data available	High	National and binational	Funding Lack of local information
	Determine the impacts of environmental variability on the main fishery resources	High	Effects of environmental variability incorporated in the estimation of population parameters and changes of spatial and temporal distribution of resources	Medium / long term	Chile IFOP, SUBPESCA Peru:IMARPE	Chile: NO ; Peru: NO	Less uncertainty in resource assessment	High	National and binational	Funding
	Formulate adaptation measures to face the impacts of environmental variability	Medium	Adaptation measures and environmental variability incorporated in the management plans	Medium / long term	Chile: SUBPESCA Peru: PRODUCE, IMARPE	Chile: NO ; Peru: NO	Adaptation measures established	High	National and binational	Funding Lack of political decision
Characterize the ecosystem in which fishery resources and they fisheries exist	Determine biological, ecological and oceanographic characteristics of the ecosystem	High	Defined ecological relations based on the main fishery resources	Medium / long term	Chile: SUBPESCA Peru: PRODUCE, IMARPE	Chile: NO ; Peru: NO	Process: Binational Commission operating, Working Groups operating, Characterization determined	High	National and binational	Funding
	Conduct an economic valuation of the ecosystem based on standardized information for both countries	Medium	Ecosystem goods and services valued	Short term	Chile: SUBPESCA Peru: PRODUCE, IMARPE	Chile: NO ; Peru: NO	Economic valuation of the ecosystem updated and incorporated in the HCLME management	High	National and binational	Political will and reluctant agents

GENERAL OBJECTIVE 1 (Continues....)

Specific objectives	Actions	Cost (US\$)	Results/Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Characterize the ecosystem in which fishery resources and their fisheries exist	Characterize the fisheries users from the socioeconomic standpoint	High	Socioeconomic state of the fisheries	Short term	Chile SUBPESCA, IFOP Peru:PRODUCE	Chile: NO ; Peru: NO	Characteristics incorporated in the management	High	National and binational	Funding Political will
Ecosystem-based fisheries planning in the main fisheries (except for those fisheries under the mandate of a regional agreement on fishing or a regional fisheries organization (RFO))	Formulate and implement conservation and fisheries planning measures coordinated between both countries on identified fishery resources	High	Conservation and fisheries planning measures (consultation in Peru) coordinated and implemented between the two countries	Long term	Chile : SUBPESCA, MINREL,IFOP Peru: PRODUCE, MIN RR.EE., IMARPE	Chile: YES ; Peru: YES, (Additionally, both countries require delegation of representative powers for binational work)	Set of measures are coordinated (to define a Fisheries Planning Regulation ROP in Peru and a Management Plan in Chile)	High	National and binational	Political will and reluctant agents

GENERAL OBJECTIVE 1 (Continues....)

Specific objectives	Actions	Cost (US\$)	Results/Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Optimize control, supervision and sanctions systems	Improve infrastructure and technology	High	Enhanced technological and infrastructure coverage	Medium - Long term	Chile: SERNAPESCA, DIRECTEMAR Peru: PRODUCE, DICAPl, Regional Governments, PNP	Chile: NO ; Peru: NO	Higher coverage and supervision capacity	High	National	Funding Political will
	Adapt and coordinate control and supervision procedures	Low	Coordinated and adapted control and supervision procedures are established	Medium - Long term	Chile: SERNAPESCA, DIRECTEMAR, MINREL Peru: PRODUCE, DICAPl, MIN RR.EE	Chile: YES ; Peru: YES, (Additionally, both countries require delegation of representative powers for binational work)	Protocols approved	Medium	National y Binational	Funding Political will
	Grant enhanced powers to supervision agents and build capacity	Medium	Larger number of trained and empowered agents	Medium - Long term	Chile SUBSPESCA, SERNAPESCA, DIRECTEMAR Peru: PRODUCE, DICAPl, PCM	Chile: YES ; Peru: YES	Legal instrument for to enhancing supervision powers. Training program operative	High	National	Funding Political will
	Strengthen sanctions system (administrative and legal sanctions)	Medium	Sanctions system with strengthened deterrence and punitive capacity	Medium - Long term	Chile : SUBPESCA, SERNAPESCA) Peru: PRODUCE, Regional Governments, Judiciary, Public Ministry	Chile: YES ; Peru: NO	Punitive sanction instruments redefined. Training program for sanction agents implemented	High	National	Funding Political will

GENERAL OBJECTIVE 1 (Continues....)

Specific objectives	Actions	Cost (US\$)	Results/Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Training, awareness and dissemination of Ecosystem-based Management	Disseminate the EBM concept in the education systems of each country	Low	EBM concept integrated in the education systems	Short term	Chile: SUBPESCA, SERNAPESCA, IFOP, Universities, MMA Peru: PRODUCE, MINAM, Universities, Ministry of Education	Chile: NO; Peru: NO	Set of outreach actions that introduce EBM concepts in the education system	Medium	National	Funding
	Reinforce spaces for fisheries agents participation in the decision-making process	Medium	Multisectoral groups(Chile: Concils/ Peru: Technical tables)	Short term	Chile: SUBPESCA Peru: PRODUCE	Chile: NO; Peru: NO	Larger number of operative multisectoral groups	Medium	National	Funding
	Socialize aspects related to EBM among citizens	Medium	Implementation of large outreach programs (primary school, high school and citizenship in general)	Medium term	Chile: SUBPESCA Peru: PRODUCE, Ministry of Education	Chile: NO; Peru: NO	Better informed citizens at all levels	Medium	National	Funding

Definition of Management Plan in Chile (General Law on Fisheries and Aquaculture 18892, article 2, number 33): compilation of rules and set of measures set to manage a fishery, based on updated information available on the biological, economic, social and fishing aspects of the fishery. In Peru, the Fisheries Planning Regulation (ROP) is part of article 10 of the General Law on Fisheries. Fisheries Planning are the set of rules and measures to manage a fishery based on updated information on the biological, economic, social and fishing components of the fishery. Article 5 states that the Fisheries Planning is passed through regulations aimed at establishing regulatory principles, rules and measures concerning the hydrobiological resources needing to be managed as separate units.

Cost:
Low: less than \$ 500.000. Medium: between \$500.000 y one million. High: more than one million

GENERAL OBJECTIVE 2: IMPROVE ENVIRONMENTAL QUALITY OF THE MARINE AND COASTAL ECOSYSTEM BY MEANS OF INTEGRATED MANAGEMENT, CONSIDERING DIFFERENT POLLUTION SOURCES

Specific objectives	Actions	Cost (US\$)	Results/Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Establish a coastal and marine monitoring program that considers the main pollution sources	Define the baseline of the coastal and marine sector, identifying the main pollution sources, their causes and responsible agents	High	Baseline of the coastal and marine sector with main pollution sources, their causes and responsible agents identified	Short term	Government agencies supported by universities research centers	No	Baseline document validated	High	National Binational (definition of parameters)	Funding
	Define environmental parameters and their levels		Environmental parameters and their levels				Parameters defined			Absence of a baseline
	Design and implement environmental indicators		Environmental indicators validated				Environmental indicators implemented			Absence of a baseline and parameters
	Create a control panel to conduct a rigorous follow-up of the implemented indicators		Control panel aligned with the validated indicators				Control panel implemented			Absence of indicators
	Define how often and where to apply the monitoring actions		Monitoring Plan				Monitoring Plan Implemented			Absence of a baseline Funding available

GENERAL OBJECTIVE 2 (Continues...)

Specific objectives	Actions	Cost (US\$)	Results/Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Define action programs in order to maintain expected environmental quality levels	Based on results from the monitoring, establish action programs in order to address the problem	200.000	An action program per region and per country	Short term	Chile: MMA Peru: MINAM+DICAPI	NO	Action Program validated	High	National (Chile + Peru)	Absence of baseline and timely information Insufficient budget
Improve treatment and waste disposal (liquid and solid waste)	Improve capacities for domestic waste treatment in sectors considered the main pollution sources	To be defined according number of people	Reduced levels of pollution from domestic sources	Medium term	Chile: Superintendency de the Environment (SMA) Peru: local governments, OEFA	NO	(measure of current parameter /measure of parameter from previous period) < 1. Number of investment projects approved	High	National (Chile + Peru)	Funding
	Set incentives for companies in terms of industrial waste treatment	% of investment	Implemented incentives for companies that reduce their levels of industrial waste	Long term	Ministries of the Environment	YES	(measure of current parameter /measure of parameter from previous period) < 1. Number of projects implemented pursuant to the incentives	Medium	National (Chile + Peru)	Incentives not being approved by law-making bodies
	Perform periodic revisions of relevant regulation and conduct necessary adjustments	200.000	Regulation is periodically adjusted	Medium term	MMA, MINAM	NO	Number of rules or regulations related to the number of updated rules	Medium	National (Chile + Peru)	Favorable political will

GENERAL OBJECTIVE 2 (Continues....)

Specific objectives	Actions	Cost (US\$)	Results/Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Strengthen bodies of environmental oversight	Measure oversight capacities of competent agencies	400.000	Diagnosis of oversight capacity	Short term	Chile: SMA Peru: MINAM/OEFA	YES	Diagnostic report drafted	High	National (Chile + Peru)	Funding / Political will
	Enhance institutional capacities and improve coordination among oversight bodies at national and binational level		Enhanced oversight institutions with adequate roles and powers	Medium term	Chile: SMA Peru: MINAM, OEFA	YES	Adequate roles and powers of oversight institutions	High	National	Intersectoral coordination/ political will
Strengthen integrated management of coastal and marine spaces	Reinforce multisectoral commissions of coastal and marine integrated management		Multisectoral commissions of coastal and marine integrated management formalized, reinforced and playing adequate roles	Short term	Chile: CRUBC and CNUBC Peru: MINAM, COMUMA	YES	Multisectoral commissions reinforced, formalized and following rules aligned with requirements	High	National (Chile + Peru)	Political will / Lack of capacities in regional governments (Peru)
	Implement Coastal and Marine Spatial Planning tools in a specific area	400.000	Tools implemented	Short term	Chile: CRUBC and CNUBC Peru: MINAM, COMUMA	Regulation (Peru)	Tools implemented pursuant to suitable rules	High	National (Chile + Peru)	Funding /political will

GENERAL OBJECTIVE 3: RECOVER AND MAINTAIN THE HABITAT AND BIODIVERSITY OF MARINE AND COASTAL SYSTEMS AT A SUSTAINABLE LEVEL

Specific objectives	Actions/Activities	Cost (US\$)	Results	Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Expand knowledge of the habitat and biodiversity in priority/specific areas	1-Identify and prioritize Important areas for habitat and biodiversity conservation (sustainable use and protection)	Low	Areas are identified, prioritized and georeferenced	Set of criteria for identification and prioritization Map of identified and prioritized areas	Short term	Public	NO	At least two areas identified and prioritized	High	National/ binational coordination in protocols, parameters and criteria	Administrative, bureaucratic, technical and economic constraints and lack of will
	2-Define the habitat and biodiversity baseline (physical, chemical and biological baseline for biodiversity and substrate) in areas of importance for the conservation of habitats and their biodiversity	High	Baseline is established for priority sites	Baseline study for habitat and biodiversity, database and report	Short term	Public	NO	Baseline for at least one priority site	High	National	Availability and access to financial resources, infrastructure and climatic risks
	3-Define levels of environmental quality and set criteria and/or indicators for their monitoring and evaluation	Low	Environmental quality levels, criteria and indicators for monitoring and evaluation established		Short term	Chile:MMA. Peru: MINAM	Revision and adjustment of quality standards	A proposal of quality standards revised and adjusted	High	National	Economic resources, conflict of interest
	4-Develop an articulated and comprehensive monitoring and evaluation system for defined areas	Medium	Monitoring and evaluation pilot system implemented in defined areas	Report including design, monitoring protocols and evaluation indicators for the defined areas	Short term	Public	NO	At least one monitoring and evaluation campaign in the defined areas and the corresponding report drafted.	High	National	Economic resources

GENERAL OBJECTIVE 3 (Continues...)

Specific objectives	Actions/ Activities	Cost (US\$)	Results	Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium,low	National or binational	Risks/uncertainties
Strengthen/ Propose management measures to recover habitats and biodiversity in coastal and marine ecosystems	5-Implement management/ restocking/ restoration plans	Medium	Ongoing management/ restoration/ restocking plans	Management/ Restocking/ Restoration plans approved and corresponding follow- up report drafted	Medium	Public	YES (regulation development)	At least two management/ restocking/ restoration plans per country	Medium	National	Delayed legal paperwork, reluctant stakeholders, lack of coordination among public sector institutions
	6-Promote protocols and agreements on good fishing practices	Low	Improved fishing practices	Practices and protocols proposals	Short	Public	NO	At least two formalized agreements per country A number of stakeholders sign the agreements	Medium	National	Reluctant, indifferent stakeholders
	7-Reinforce and implement strategies to protect seabirds, sea mammals and sea turtles and/or key species (corals)	Low	Improved protection of seabirds sea mammals and sea turtles and/or key species	National action plans to protect species or groups of species	Medium	Public	NO	Existing action plans to protect species or groups of species	Medium	National with binational articulation in the case of migratory species	Resources, lack of articulation, lack of political will
	8-Improve selectivity of fishing systems and gear	Medium	Improved selectivity of fishing systems and gear	Updated reference tables: minimum size, size at first maturity. Improvement of standards related to tolerance for sizes below the minimum- size limits	Short	Public		Bycatch reduction/ increase in average landing size allowed	High	National	Lack of market incentives, lack of allocated funding or promotion to change fishing methods and gear, reluctant users

GENERAL OBJECTIVE 3 (Continues.....)

Specific objectives	Actions/Actividades	Cost (US\$)	Results	Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Enhance/propose management actions for habitat and biodiversity conservation in marine and coastal ecosystems	9- Promote protocols and good environmental practices agreements (considering productive sector, results of baseline activities, criteria and indicators)	Low	Environmental quality improvements		Short	Public	YES		Medium	National	Resources, will, intersectoral articulation
	10-Update strategy and action plan for the strategic plan on national biodiversity with an emphasis on the marine environment. Promote its dissemination among different stakeholders	Low	Strategy and action plans updated and outreach plan created		Short	Public	NO	Strategy, action plan and outreach plan already aligned	Medium	National/ binational coordination on protocols, parameters and criteria	Lack of economic resources, lack of political will
	11- Establish different conservation instruments (Marine Protected Areas, biological corridor, adaptative areas, marine spatial planning, etc.)	High	Conservation instruments implemented	Master plan, management plan and other instruments implemented	Medium	Public	A Supreme Decree is required and other legal tools of less rank	Protected areas expanded with and emphasis on ecoregions. Conservation tools created	High	National	Insufficient economic resources to manage the areas, stakeholder conflicts
	12- Reinforce awareness programs for authorities and general public on the importance of habitat and biodiversity conservation	High	Society aware of the importance of habitat and biodiversity conservation	Reinforced outreach and environmental education programs for authorities and general public	Medium	Public/ private	YES	Workshops and outreach programs conducted	High	National	Resources, political will

Costs	Institutionality/ coordination mechanisms	Between the two countries	Costs
Low	< 100 000	< 200 000	Low
Medium	100 000 Y 200 000	200 000 and 500 000	Medium
High	> 200 000	> 500 000	High

GENERAL OBJECTIVE 4: TO DIVERSIFY AND ADD VALUE, CREATING PRODUCTIVE OPPORTUNITIES WITHIN AND OUTSIDE THE FISHING SECTOR, WITH SOCIALLY ORGANIZED AND INTEGRATED CITIZENS

Specific objectives	Actions	Cost (US\$)	Results/Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium,low	National or binational	Risks/uncertainties
Develop higher value added fishery outputs	Market research for value added fishery outputs (traditional and non-traditional outputs)	500.000	Market research	Short term	PROMPERU-ADEX	No	Market research available	High	National	Funding
	Register fish processing plants with infrastructure to develop value added fishery outputs for human consumption	400.000	Registry report	Short term	SUBPESCA - PRODUCE	No	Identification of operative fish processing plants with infrastructure to produce value added outputs	High	National	Funding
	Develop processing lines for value added fishery outputs		Increase use of installed capacity in processing plants of value added outputs for human consumption	Short term	Chile: private sector Peru: PRODUCE-ITP, private sector	No	Increase in production of value added outputs for human consumption	High	National	Funding
	Develop outputs based on non-traditional species		A catalog of non-traditional outputs including production technical specifications	Medium term	Chile: SUBPESCA Peru: PRODUCE-ITP, private sector	Yes(Supreme decrees)	Processing plants including lines of non-traditional outputs	Medium	National	Funding

GENERAL OBJECTIVE 4 (Continues...)

Specific objectives	Actions	Cost (US\$)	Results/Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium,low	National or binational	Risks/uncertainties
Improve marketing channel for fishery outputs	Develop a user-friendly information system for prices of fish and fishery outputs (day to day)	300.000	Information system developed and validated	Short term	Chile: SUSPESCA Peru: PRODUCE	No	Information system developed and validated	High	National	Funding
	Organize outreach campaigns to increase internal and external consumption of fishery outputs	200.000	Outreach campaign	Short term	Chile: SUSPESCA Peru: PRODUCE	No	% of the production used for human consumption	High	National	Political will
	Reinforce fishermen associations providing them with management and marketing tools	200.000	Fishermen associations trained	Short term	Chile: SUSPESCA Peru: PRODUCE	No	Increased number of associations developing commercial activity	High	National	Associations reluctance Large number of middlemen
Improve mechanisms to obtain working capital	Design financial instruments for soft loans		Financial tools created	Short term	FONDEPES	No	Increasing number of loans granted	High	National	Political will

GENERAL OBJECTIVE 4 (Continues..)

Specific objectives	Actions	Cost (US\$)	Results/Outputs	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Diversification and/or conversion	Identify opportunities for productive diversification	200.000	Registry of productive alternatives	Short term	Chile: SUSPESCA Peru: PRODUCE	No	Registry of potential activities for diversification	High	National	Cultural issues
	Promote the development of productive organizations attached to fishermen organizations	200.000	Productive organizations created	Short term	Chile: SUSPESCA Peru: PRODUCE	No	Increased number of organizations diversifying productive activities	Medium	National	Cultural issues
	Provide training aimed at developing new productive opportunities (outside the fishing sector)	200.000	Public subsidy for training activities on productive opportunities different from fishing	Medium term	Chile: SUSPESCA Peru: PRODUCE	No	Number of trained fishermen coming out of the system	Medium	National	Cultural issues Political will Funding
	Identify small-scale aquaculture productive alternatives		Technical and socioeconomic feasibility study for the implementation of small-scale aquaculture. Registry of productive alternatives	Medium term	Chile: SUSPESCA Peru: PRODUCE	No	Number of species that can be cultured per region	High	Binational/ National	Lack of interest in the market Funding Culture technology

GENERAL OBJECTIVE 5: CONTRIBUTE TO THE POPULATION FOOD SECURITY

Specific objectives	Actions/Activities	Cost (US\$)	Results	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Improve preservation capacity all over the production chain of resources for direct human consumption	Establish preservation systems within the production chain (artisanal vessels, small-scale vessels, landing stages, transport and trade)	High	System operating	Long	Peru: FONDEPES, PRODUCE and private entities Chile: SUSPESCA	NO	Larger number of elements in the production chain include a preservation systems	High	National	Investment Reluctant fishermen Changing market needs
Contribute to achieving safety of fishery products	Review and update safety standards (allowable limits for direct human consumption) related to marine resources	Low	Safety standards updated	Short	Peru: SANIPES, DIGESA. Chile: SUBPESCA, SERNAPESCA	YES	Number of reviewed/modified regulations	High	National	Political will
	Promote sanitary certificates for vessels and landing sites/fishing coves	High	Cove with sanitary certificate	Medium	Peru: SANIPES, FONDEPES, regional governments Chile: SUBPESCA, SERNAPESCA	NO	Increased number of vessels and DPAs (Peru) and certified coves (Chile)	Medium	National/ Binational coordination	Funding (working capital and maintenance)
	Promote and implement output traceability systems		Traceability established	Short	Chile: SUBPESCA Peru: PRODUCE	NO	Volume of traded outputs	Medium	National/ Binational coordination	Funding (working capital and maintenance)
	Implement a coordinated monitoring and early warning system for harmful algae blooms	Medium	Warning system	Medium	Intersectoral committee	SI	Monitoring system established with agreed standards	Medium	National/ Binational coordination	Resources Political will

GENERAL OBJECTIVE 5 (Continues.....)

Specific objectives	Actions/Activities	Cost (US\$)	Results	Time required for implementation	Agencies	Need for legal, institutional or policy reforms	Indicators of success	Relative priority: high, medium, low	National or binational	Risks/uncertainties
Improve the use and availability of fishery and mariculture by-products	Assess declines in the production chain	Low	Diagnosis of declines in the production chain	Short	Peru: PRODUCE, Cite-Pesca Chile: private sector, SUBPESCA	NO	Diagnosis in place	High	National/ Binational coordination	
	Incentives to redirect the use of fishery outputs and innovate technology for human consumption	Low	Economic feasibility study to formalize agreements with companies	Short	Sectoral authority, private sector	NO		High	National/ Binational coordination	Industry reluctance to make changes
	Incorporate bycatch or accompanying fauna in the market	Low	Increased supply of outputs for direct human consumption	Medium	Peru: PRODUCE Chile: SUBPESCA, Pro-Chile	NO	Reduction in discard levels	High	National	Consumption patterns
Increase awareness related to food security	Awareness-raising, education, food and nutrition security	Medium	Sectors of the population informed	Medium	Sectoral authority, private sector	NO	Number of awareness-raising activities conducted	High	National	Political will