Annex 15. Environmental and Social Management Plan, Grievance Mechanism and Monitoring, Evaluation and Oversight Program

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1. Introduction

The Environmental and Social Policy of the Adaptation Fund requires that all projects after being screened against the 15 principles and the risks and impacts per activity are identified mitigation measures be presented with their responsible person.

This document presents the Environmental and Social Management Plan (ESMP) prepared in support of the project titled: “Reducing climate vulnerability and flood risks in coastal urban and semi urban areas in cities in Latin America” prepared together with the Governments of Ecuador and Chile and the technical assistance of Development Bank of Latin America (CAF).

The document is composed of the following sections: 1. Environmental and social management plan and 2. Grievance Mechanism and 3. Monitoring and evaluation arrangements.

1. Environmental and social management plan (ESMP)

This plan consists of three stages that will be implemented during project execution:

1. Environmental and social mitigation program, where specific measures are established to prevent adverse environmental and social impacts.
2. Environmental and Social Risk Identification Mechanism for Unidentified sub-projects (USP)
3. Monitoring, assessment and oversight program, which details the process of monitoring and evaluating implementation arrangements in compliance with ESP including grievance mechanism.

The development of these three programs is presented in the following sections.

1.1. Environmental and social mitigation program

Throughout the entire project, a comprehensive Environmental and Social Management Plan has been developed that includes specific measures to prevent and mitigate adverse environmental and social risks and impact identified from all project activities. In the following section, planned mitigation measures are presented according to respective risks identified above, with specified information on a body responsible for carrying out and verifying these mitigation measures.

The Project Manager will be responsible for reporting the Project Board every six months, the progress made on implementing these measures. Additionally, during quarterly meetings organized to monitor the progress on the implementation of annual operation plan, the Project Manager will report any possible environmental or social risk that has arisen and was not previously identified during the preparation of the annual operation plan. The Project Manager will be responsible for update of the ESMP every time unforeseen impacts and risks are identified. This will allow timely and appropriate actions taken to prevent any possible environmental or social impact.

The IE will designate an officer responsible for overviewing the compliance of the proposed provision in the annual operation plans. In the case of infrastructure works in Antofagasta and Esmeraldas, the IE and the EE through the Project Manager will closely coordinate to ensure the compliance of the outlined conditions.

As part of the ESMP, it is required that all designed activities pass through the environmental and social risk screening process before implementation. Depending on the findings, a mitigation measure template should be presented and shared.

Table 1. Mitigation measures for management of environmental and social impacts and risks.

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
1. Update the stormwater management plan for Antofagasta	E&SP 2. There is a risk that not all the community is aware of the stormwater management plan update for Antofagasta.	If the community is not properly communicated and involved in the process of updating the plan, their local knowledge in their surrounding area such as "Campamentos" or in the ravine routes will not be taken into account.	The Local Social Specialist for Chile will prepare a "*Communication and Participatory Strategy*" that will contain all the activities and how the local community should be involved. This should be approved by the Project Board and shared with the technical team and Media Specialist for their familiarity and use.	Local Social Specialist for Chile will prepare document and implement it by workshops. Project Board shall approve document Project Coordinator, technical team and Media Specialist are aware of the document
2. Prepare the green-infrastructure plan for Esmeraldas.	E&SP 2. There is a risk that not all the community is aware of the green-infrastructure plan for Esmeraldas.	If the community does not participate in the process of preparing the green-infrastructure plan for Esmeraldas, the community will not be informed of risks of residing on hill and will repeat and conceive it as a possible settlement place.	The Local Social Specialist for Ecuador will prepare a "Communication and Participatory Strategy" that will contain all the Activities and how the local community should participate during their development. This should be approved by the Project Board socialized with the technical team and Media Specialist for their knowledge and use.	Local Social Specialist for Ecuador will prepare document and implement it by workshops. Project Board shall approve document Project Coordinator, technical team and Media Specialist are aware of the document
	E&SP 10. There is a risk that the project for slope stabilization in Cerro Gatazo may introduce non-endemic species.	Introducing non-endemic species could damage the natural biodiversity, even though it is an area already intervened.	A study will be undertaken prior to the selection of which species will be used on the implications of introducing different species. Based on the findings of study, the choice of native species will be appealed.	The EE will assure the development of the study to determine the species to be used. Project Board shall approve document
3. Update the municipal land use planning regulations in Esmeraldas.	E&SP 10. There is a risk that the green-infrastructure plan for Esmeraldas in Cerro Gatazo promotes the use of non-endemic species.	Introducing non-endemic species could damage the natural biodiversity, even though it is an area already intervened.	A study will be undertaken prior to the selection of which species will be used on the implications of introducing different species. Based on the findings of study, the choice of native species will be appealed.	The EE will assure the development of the study to determine the species to be used. Project Board shall approve document
4. Update the designs, including climate change considerations in Antofagasta.	E&SP 2. The designs including climate change considerations could introduces a complex process due to the high uncertainty about climate in the future.	Communities will be at risk if the infrastructure were not properly calculated and designed. The not socialization of the final designs of the gray infrastructure will not allow the construction of it considering	The process of including climate change considerations will used comprehensive methodology to fulfill the main objective, of mitigate the population living at risk. The Local Social Specialist for Antofagasta will prepare a "Communication and Participatory Strategy" that will contain all the Activities and	Local Social Specialist for Antofagasta will prepare document and implement it by workshops. Project Board shall approve document

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
	There is a risk that not all the community is aware of the gray and green infrastructure update for Cerro Gatazo in Esmeraldas.	that this infrastructure to benefit the community and the process of construction somehow will affect the local community.	how the local community should participate during their development. This should be approved by the Project Board socialized with technical team and Media Specialist for their knowledge and use. The final designs shall be socialized with the beneficiaries by the designers and the Local Social Specialist.	Project Coordinator, technical team and Media Specialist are aware of the document
5. Antofagasta: Construction of a series of 14 decantation ponds and 36 concrete retaining walls located in Quebrada Bonilla (31 in Bonilla North and 5 in Bonilla South).	E&SP 1. There is a risk that this activity does not obtain Environmental Impact Declaration DIA in Chile.	That the construction works don't get the DIA will impede the construction works.	Interventions in Chile have to comply with technical standards, environmental permits and construction code regulations. Related with the Chile the project will follow the rules to obtain the Environmental Impact Declaration (DIA) in accordance with the Environmental Law (Law 19,300[1]) amended by Law 20,417 of 2010[2], and Supreme Decree 40/2012 [3]of 2012 (regulation for the environmental impact assessment system). Article 10 of Law 19,300.	The EE before the contracting process will assure with the Project Unit that all permits has been obtain. The constructor shall obtain the DIA with the MMA. This risk shall be monitored before and during the implementation of the activities by the IE.
	E&SP 12. The generation of wastes and pollutants during the control infrastructure.	The generation of wastes and pollutants during the construction works will pollute the surrounding area of Antofagasta.	A construction plan shall be presented to the Project Board. A specific monitoring procedure for the construction works shall be presented to the Project Board. The operational contractor shall implement a monitoring plan to control: • Water consumption. • Fuel consumption. • Type of fuel consumption • Raw material consumption. • Energy consumption. • Solid waste generation.	The operational contractor team is responsible of the construction plan and monitoring procedure. The EE will ensure the construction plan and the monitoring procedure are presented before the contracting process. The Project Board is responsible for approval.

[1] http://bcn.cl/1uywi

[2] http://bcn.cl/1vze7

[3] http://bcn.cl/1uvqa

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
			• Wastewater / generation (quality of wastewater). • Construction waste / debris generation. Approve the Construction Plan	
	ES&P 6. There is a risk of collapse during the period of construction in case of heavy rains or earthquakes.	Persons and workers in the surroundings areas could be injured or affected.	The operational contractor team in Chile shall be responsible for the control of the entire works and implement specific mitigation measures to cope with casualties during construction. • Consider the identified hazards including those that may originate from outside the workplace that are capable of adversely affecting the health and safety of persons under the control of the organization within the workplace. • Applied control related to risk assessment • Follow an accident investigation form. • Recognize extra hours of work, in compliance with the labour regulation of each country. • Be aware of the equipment that the workers use during the infrastructure works. • Take into consideration the medical care emergency kit at the infrastructure works. • Keep in mind the medical check provided at the beginning of the works. • Construction workers must also be provided with identification tags. • Comply with the national legislation – Labour Codes of Ecuador and Chile • Ensure that employment procedures/ policy of the operational contractor is communicated to local stakeholders. • The intention of giving preferential employment to locals is clearly communicated, to discourage an influx of job-seekers from other areas.	The EE before the contracting process will assure with the Project Unit that all requirements in terms of security and safety are satisfied as a safeguard. This risk shall be monitored before and during the implementation of the activities.
	E&P 11. Risk of incrementing GHG emissions	The contribution of GHG emissions directly affects the adaptation of Antofagasta, Taltal and Chile.	Carbon Footprint shall be presented Monitoring system of the GHG emissions shall be presented Approval of Carbon Footprint and the Monitoring system of the GHG	The operational contractor team is responsible of the Carbon Footprint Monitoring system. The EE will ensure the Carbon Footprint Monitoring system is presented before the contracting process.

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
				The Project Board is responsible for approval.
	E&SP 13. Activity is done in a way that produces potentially significant negative impacts on public health.	Community – public health affected in noise or air pollutants.	A Health Impact Assessment shall be presented to the Project Board. Approval of the HIA. The operational contractor team in Chile and Ecuador shall be formed responsible for the control of all project related to Public Health and will: • Develop an Occupational Health and Safety Management Protocol. • Consider the routine and non-routine activities of the organization to be sure all of them are coordinated. • Beware how all persons accessing the work place including contractors and visitors (clothing, signals, helmets, etc.). • Bear in mind the human behavior, capabilities and other human factors that could increment the potential failure of structural elements of the Project. • Take into consideration how the operational contractor control threats created near the workplace during work -related activities. • Keep in mind how the infrastructure, equipment and materials at the workplace affects construction works. • Consider how the organization identifies changes or proposed changes to its activities or materials it uses. • Consider how modifications to the OH&S protocol / system, whether they be temporary or not, impact on the operations, processes and activities of the organization. • Consider how the project identified legal requirements for health and safety of persons beyond the immediate workplace, including those who are exposed to the workplace activities. • Consider the effects of the design of work areas, processes, installations, machinery/equipment,	The operational contractor team is responsible of the Health Impact Assessment. The EE will ensure the Health Impact Assessment is presented before the contracting process. The Project Board is responsible for approval.

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Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
			operating procedures and work project, including their adaptation to human capabilities.	
6. Esmeraldas: Construction of (i) profile conformation of slopes, (ii) construction of collection and drainage channels, (iii) construction of retaining walls where necessary, (iv) anchor works were necessary, and (v) vegetation of slopes.	E&SP 1. There is a risk that this activity does not obtain the Environmental Registry.	That the construction works in Esmeraldas don't get the Environmental Registry will impede the construction works.	Interventions in Ecuador have to comply with technical standards, environmental permits and construction code regulations. Related with the Ecuador the project will follow the rules to obtain the SUIA Environmental Registry in accordance with the Environmental Management Law (Law 37 of 1999, coded in 2004) and all the process will be manage through an environmental impact evaluation system (Ministerial Agreement 061 of 2015) and complementary regulations.	The EE before the contracting process will assure with the Project Unit that all permits has been obtain. The Operational contractor shall obtain the environmental registry with the MAAE. This risk shall be monitored before and during the implementation of the activities by the IE.
	E&SP 2. There is a risk that this activity might impede an access to basic services such as clean air, energy and housing, safe may be affected.	Claims, complaints of non-conformity and possible interruption of the works could occur.	The Local Social Specialist for Ecuador will communicate about the Grievance mechanism available. The procedure and forms will be accessible to all actors directly involved in the actions. (See more details on grievance mechanism section) Also the Operational contractor shall: • Re-Identify the vulnerable groups in the area of influence before the implementation of the project and organize a consultation meeting with the direct beneficiaries and affected groups. • If there is any possibility of interruption of the basic services caused such as water shortage or energy disruptions, the operational contractor team shall make communication to the community affected. • The operational contractor team shall be responsible for the coordination action related with traffic and temporary closure of traffic. In accordance with communities, routes and schedules of access to the Gatazo operational area can be planned. • Fences or barriers and pedestrian pathways are required to be installed. • Receive inquires, suggestions from beneficiaries and communities involved during the consultancy process and if needed the proceed with the grievance mechanism.	The EE before the contracting process and during the implementation with the Project Unit of the Gatazo works will assure the achievement of all planned mitigation measures. This risk shall be monitored before the implementation of the activities.

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
	E&SP 3. There is a risk that this activity may impose adverse impacts on marginalized and vulnerable groups including children, women and girls, the elderly, displaced people, refugees or people living with disabilities taking into account possible mobility restriction.	Claims, non-conformity and possible interruption of works may occur.	The Local Social Specialist for Ecuador will communicate about the Grievance mechanism available. The procedure and forms will be accessible to all actors directly involved in the actions. (See more details on grievance mechanism section) Also, the Operational contractor shall: • Re-Identify the vulnerable groups in the area of influence before the implementation of the project and organize a consultation meeting with the direct beneficiaries and affected groups. • The operational contractor team shall be responsible for the coordination action related with traffic and temporary closure of traffic. In accordance with communities, routes and schedules of access to the Gatazo operational area can be planned. • Fences or barriers and pedestrian pathways are required to be installed. • Receive inquires, suggestions from beneficiaries and communities involved during the consultancy process and if needed by the grievance mechanism.	The EE before the contracting process and during the implementation with the Project Unit of the Gatazo works will assure the achievement of all planned mitigation measures. This risk shall be monitored before the implementation of the activities.
	E&SP 8. Potentially involves temporary physical displacement in Cerro Gatazo - Esmeraldas.	Claims, nonconformity and possible interruption of the works could occur.	The Local Social Specialist for Ecuador will prepare a "Communication and Participatory Strategy" that will contain all the Activities and how the local community should participate during their development. Implementation of the activities related with the Landslide mitigation infrastructure in Cerro Gatazo - Ecuador, the Operational contractor shall: • Re-Identify the vulnerable groups in the area of influence before the implementation of the project and organize a consultation meeting with the direct beneficiaries and affected groups. • If there is any possibility of the need of possible temporary resettlements this shall be presented as a Plan to the Project Board. • Receive complaints, inquires, suggestions from beneficiaries and communities involved during	The EE before the contracting process and during the implementation with the Project Unit of the Gatazo works will assure the achievement of all planned mitigation measures. The GADE team shall be responsible for the coordination action related to the temporary resettlements. The operational contractor team is responsible of presenting the possible temporary resettlements. The EE will ensure that the Temporary Resettlement Plan is

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Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
			the consultancy process and if needed by the grievance mechanism. • The GADE team shall be responsible for the coordination action related to the temporary resettlements. • The GADE team shall be responsible for the temporary localization during the project.	presented before the contracting process. The Project Board is responsible for approval.
	E&SP 12. The generation of wastes and pollutants during the control infrastructure.	Health diseases affecting the population of the surroundings and workers. The generation of wastes and pollutants during the construction works will pollute the urban area of Esmeraldas. As environmental impact of gabion retaining walls is basically the slight increment the of greenhouse emissions taking into account the transport of materials.	The mitigation measures are part of the Health Impact Assessment (HIA) A specific monitoring procedure for the construction works shall be presented to the Project Board. Approve the Construction Plan	The operational contractor team is responsible of the construction plan and monitoring procedure. The EE will ensure the construction plan and the monitoring procedure are presented before the contracting process. The Project Board is responsible for approval.
	E&SP 6. There is a risk of collapse during constructions works in case of heavy rains or earthquakes.	Persons and workers in the surroundings areas could be injured or affected	The operational contractor team in Ecuador shall be responsible for the control of the entire works and implement specific mitigation measures to cope with casualties during construction. • Consider the identified hazards including those that may originate from outside the workplace that are capable of adversely affecting the health and safety of persons under the control of the organization within the workplace. • Applied control related to risk assessment • Follow an accident investigation form. • Recognize extra hours of work, in compliance with the labour regulation of each country. • Be aware of the equipment that the workers use during the infrastructure works. • Take into consideration the medical care emergency kit at the infrastructure works. • Keep in mind the medical check provided at the beginning of the works. • Construction workers must also be provided with identification tags. • Comply with the national legislation – Labour Codes of Ecuador and Chile	The EE before the contracting process will assure with the Project Unit that all requirements in terms of human rights are satisfied as a safeguard. This risk shall be monitored before and during the implementation of the activities.

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
			• Ensure that employment procedures/ policy of the operational contractor is communicated to local stakeholders. • The intention of giving preferential employment to locals is clearly communicated, to discourage an influx of jobseekers from other areas.	
	E&P 11. Risk of incrementing GHG emissions	The contribution of GHG emissions directly affects the adaptation of Esmeraldas and Ecuador.	Carbon Footprint shall be presented Monitoring system of the GHG emissions shall be presented Approval of Carbon Footprint and the Monitoring system of the GHG	The operational contractor team is responsible of the Carbon Footprint Monitoring system. The EE will ensure the Carbon Footprint Monitoring system is presented before the contracting process. The Project Board is responsible for approval.
	E&SP 13. Risk that the implemented activity is done in a way that produces potentially significant negative impacts on public health.	Community – public health affected in noise or air pollutants.	A Health Impact Assessment shall be presented to the Project Board. Approval of the HIA. The operational contractor team in Chile and Ecuador shall be formed responsible for the control of all project related to Public Health and will: • Develop an Occupational Health and Safety Management Protocol. • Consider the routine and non-routine activities of the organization to be sure all of them are coordinated. • Beware how all persons accessing the workplace including contractors and visitors (clothing, signals, helmets, etc.). • Bear in mind the human behavior, capabilities and other human factors that could increment the potential failure of structural elements of the Project. • Take into consideration how the operational contractor control threats created near the workplace during work -related activities.	The operational contractor team is responsible of the Health Impact Assessment. The EE will ensure the Health Impact Assessment is presented before the contracting process. The Project Board is responsible for approval.

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
			• Keep in mind how the infrastructure, equipment and materials at the workplace affects construction works. • Consider how the organization identifies changes or proposed changes to its activities or materials it uses. • Consider how modifications to the OH&S protocol / system, whether they be temporary or not, impact on the operations, processes and activities of the organization. • Consider how the project identified legal requirements for health and safety of persons beyond the immediate workplace, including those who are exposed to the workplace activities. • Consider the effects of the design of work areas, processes, installations, machinery/equipment, operating procedures and work project, including their adaptation to human capabilities.	
7. Revegetation of 40 ha in Cerro Gatazo in Esmeraldas.	E&SP 10. There is a risk that the project for slope stabilization in Cerro Gatazo may introduce non-endemic species.	Introducing non-endemic species could damage the natural biodiversity, even though it is an area already intervened. The environmental impact of using vetiver as a non-endemic species in cerro Gatazo are none taking into account that it has been already used. As presented in the document "at the beginning of the 2000s, the risk factors were studies and recommendations made (MAE, 2002), and a one-year vegetation trial using vetiver (Chrysopogon zizanioides) was executed in four sites of Cerro Gatazo (PNUD, 2005). It was found that vetiver was useful to stabilize the hillsides, but the local population showed low involvement in addressing the hazard".	The operational contractor has to develop the revegetation in accordance with the Green Infrastructure Plan approved by the Project Board previously. The species that are going to be used should be in the Green Infrastructure Plan.	The EE will ensure the implementation of the Plan is correctively done.

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
		Also as presented in the document; "the area for the development of the full proposal it was observed that Cerro Gatazo is already an intervened area which has a biodiversity based on pastures". The species to be used in specific sites will be decided during project execution.		
8. Declaration of protected forests by the GADE in collaboration with MAAE, with the intention of preventing them of being inhabited in the future in Esmeraldas.	E&SP 2. Population against the Declaration.	Do not exist conditions to approve the declaration and preserve the area.	Trainings and participatory strategy put in place by the local specialist for social issues during the whole implementation. Media Specialist works in behavioral insights messages to explain the importance of this action for the population own safety. The Local Social Specialist for Esmeraldas will prepare a "Communication and Participatory Strategy" that will contain all the Activities and how the local community should participate during their development. This should be approved by the Project Board socialized with technical team and Media Specialist for their familiarity and use.	Local Social Specialist for Esmeraldas Project Board shall approve document Project Coordinator, technical team and Media Specialist
9. Identification of the precise location for the radar in Esmeraldas	E&SP 2. Community not clearly inform about the purpose of the radar. Best location found are inaccessible by car or truck. Lack of technical staff to operate the radar and do a proper maintenance.	Impossibility to install the radar in the best location reached. Radar without maintenance could not operate properly or not lasting the expected lifetime. Community members could harm or steal the instrument.	The study to identify the location must analyze different places based on a criteria matrix, such as: accessibility, security, no disturb landscape or other telecom instruments among others. The project will ensure that the government has technician in the area and train them to used and maintain the radar. The community need to be informed clearly, a campaign would be implemented by the Media Specialist to reach different target of population.	Local Social Specialist for Esmeraldas Project Board shall approve document Project Coordinator, technical team and Media Specialist
10. Identification of the precise location for the storm detection system´s	Best location found are inaccessible by car or truck.	Impossibility to install the radar in the best location reached.	The study to identify the location must analyze different places based on a criteria matrix, such as: accessibility, security, no disturb landscape or other telecom instruments among others.	Local Social Specialist for Chile Project Board shall approve document

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
sensors in Antofagasta	Lack of technical staff to operate the radar and do a proper maintenance. Community not clearly inform about the purpose of the radar.	Radar without maintenance could not operate properly or not lasting the expected lifetime. Community members could harm or steal the monitor instrument.	The project coordinator will ensure that the government has technician in the area and train them to used and maintain the radar. This condition is mandatory to guarantee the sustainability of the action. The community need to be informed clearly, a campaign would be implemented by the Media Specialist to reach different target of population.	Project Coordinator, technical team and Media Specialist
11. Installation of a meteorological doppler radar in Esmeraldas 14. Installation of automatic meteorological stations in the watersheds of Esmeraldas (i.e., Esmeraldas river) 19. Installation of sirens (megaphones) in Luis Vargas Torres Island in Esmeraldas.	E&SP 12. The process of installation of the different elements for the early warning system may produce waste and the release of pollutants during the transportation. Best location found are inaccessible by car or truck. Lack of technical staff to operate the radar and do a proper maintenance. E&SP 2. There is a risk that not all the community is aware of the proposed location for the Doppler, automatic meteorological stations and sirens presented by the study Community not clearly inform about the purpose of the radar	Impossibility to install the radar and meteorological stations in the best location reached. Radar and meteorological stations without maintenance could not operate properly or not lasting the expected lifetime. Community members could harm or steal the monitoring instruments.	The study to identify the location must analyze different places based on a criteria matrix, such as: accessibility, security, no disturb landscape or other telecom instruments among others. The project coordinator will ensure that the government has technician in the area and train them to used and maintain the radar. This condition is mandatory to guarantee the sustainability of the action. The community need to be informed clearly, a campaign would be implemented by the Media Specialist to reach different target of population. An Installation Plan shall be presented to the Project Board. Weather radars are often jointly located with air traffic control radars in remote areas at airports. They operate at higher frequencies but generally have lower average and peak powers. As in the case of air traffic control radars, under normal conditions, they pose no danger to the general public or environment. A specific Monitoring Procedure for the installation works shall be presented to the Project Board. Approve the Installation Plan	The operational contractor team is responsible of the Installation Plan and Monitoring Procedure. The EE will ensure the Installation Plan and the Monitoring Procedure are presented before the contracting process. The Project Board is responsible for approval.
12. Installation of a storm detection system in Antofagasta	E&SP 12. The process of installation of the different elements for the early	Impossibility to install the meteorological stations and the	The study to identify the location must analyze different places based on a criteria matrix, such as:	The operational contractor team is responsible of the Installation Plan and Monitoring Procedure.

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
13. Installation of automatic meteorological stations in the watersheds of Antofagasta, Taltal (i.e., Teaone river) 15. Installation of sirens (megaphones) in Antofagasta and Taltal.	warning system may produce waste and the release of pollutants during the transportation. Best location found are inaccessible by car or truck. Lack of technical staff to operate the meteorological stations and the storm detection system and do a proper maintenance. E&SP 2. There is a risk that not all the community is aware of the proposed location for the storm detection system´s sensors in Antofagasta presented by the study. Community not clearly inform about the purpose of the early warning system.	storm detection system in the best location reached. Meteorological stations and the storm detection system without maintenance could not operate properly or not lasting the expected lifetime. Community members could harm or steal the monitoring instruments.	accessibility, security, no disturb landscape or other telecom instruments among others. The project coordinator will ensure that the government has technician in the area and train them to used and maintain the radar. This condition is mandatory to guarantee the sustainability of the action. The community need to be informed clearly, a campaign would be implemented by the Media Specialist to reach different target of population. An Installation Plan shall be presented to the Project Board. A specific Monitoring Procedure for the installation works shall be presented to the Project Board. Approve the Installation Plan	The EE will ensure the Installation Plan and the Monitoring Procedure are presented before the contracting process. The Project Board is responsible for approval.
16. Update the mudflow evacuation maps for Antofagasta and Taltal.	E&SP 2. Lack of involvement of the community and local authorities in the actualization of the mudflow evacuation maps.	If the community does not participate or comment the evacuation maps and procedures for Antofagasta and Taltal, they will not help with their local knowledge and own situation. Also, it is important that they are aware of all the ideas and must agree with the plan. If not, human lives could be in danger.	A comprehensive information strategy in place to involve the whole community in the evacuation maps. The process will be conducted by the Local Social Specialist based on the "Communication and Participatory Strategy"	Local Social Specialist for Chile will prepare document and implement it by workshops. Project Board shall approve document Local Risk Secretariat of Antofagasta and Taltal and Media Specialist are aware of the document.
17. Annual evacuation drills in Antofagasta and Taltal	E&SP 2. Lack of involvement of the community and local	Unable to help their community in an emergency situation.	Real involvement of the community in the different phases of the process, based on the Communication and Participatory Strategy.	Media Regional Specialist Local Social Specialists .

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
20. Pilot evacuation drill implemented by GADE, in close coordination with SGR, the police and relevant entities (e.g., police, fire brigades) – Esmeraldas.	authorities in the annual evacuation drills			Local Authorities prepare the municipality for the Evacuation drills.
18. Trainning of local community leaders from juntas de vecinos and campamento committees on each gorge in Antofagsta and Taltal. 21. Training of local leaders to facilitate evacuation of vulnerable groups and take community action to guard the sirens and private property in Esmeraldas.	E&SP 2. Lack of involvement of the local community leaders in the trainings.	Unable to help their community in an emergency situation.	A comprehensive information strategy in place to involve the whole community in the evacuation maps. The process will be conducted by the Local Social Specialist based on the "Communication and Participatory Strategy"	Media Regional Specialist Local Social Specialists Project Board shall approve the courses design and timetable of implementation.
22. Update the mudflow evacuation maps for Antofagasta and Taltal	E&SP 2. Lack of involvement of the community and local authorities in the actualization of the mudflow evacuation maps.	Insufficient information available to update the evacuation maps. Human lives could be in danger.	Real involvement of the community in the update the mudflow evacuation maps for Antofagasta and Taltal, based on the Communication and Participatory Strategy.	Local Social Specialist for Chile. Project Board shall approve document Local Risk Secretariat of Antofagasta and Taltal and Media Specialist are aware of the document.
23. Print in large format (e.g., banners or large posters) the maps and the signals of evacuation routes and shelters.	E&SP 2. Lack of understanding of the evacuation maps by the population of the communities.	Lack of sustainability of the action and population still in danger.	Real involvement of the community in the different phases of the process, based on the Communication and Participatory Strategy.	Local Social Specialist for Chile. Project Board shall approve document Local Risk Secretariat of Antofagasta and Taltal and Media

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
				Specialist are aware of the document.
24. Place in high-transit areas the maps and the signals of evacuation routes and shelters in Taltal, Antofagasta and Esmeraldas.	E&SP 2. There is a risk that not all the community is aware of the proposed location for the maps in Esmeraldas, Taltal and Antofagasta. Vandalism and mischief to the maps and signals placed could cause quickly loosening	If the community is not able to participate in localization of the banners, they may be unused increasing the possibility of accidentally.	The Local Social Specialists shall be aware that the socialization and presentation of the maps is relevant for their use. The "Communication and Participatory Strategy" shall include workshop to define the localization of the maps.	Local Social Specialists
25. Digital maps for both countries.	E&SP 2. Lack of understanding of the evacuation maps by the population of the communities.	Lack of sustainability of the action and population still in danger.	Real involvement of the community in the different phases of the process, based on the Communication and Participatory Strategy.	Local Social Specialist for Chile. Project Board shall approve document Local Risk Secretariat of Antofagasta and Taltal and Media Specialist are aware of the document.
26. Place in strategic websites and social media the maps and disaster risk documentation for access of both countries.	E&SP 2. There is a risk that not all the community is aware of the proposed regional electronic platform.	The use of the electronic platform may be limited if the community or community - social leaders does not empower themselves to use it.	The Regional Media Specialist in the "Communication and Participatory Strategy" shall include the development of the regional electronic platform. This should be approved by the Project Board socialized with all the Local Social Specialists, communities, technical staff of Antofagasta and Taltal – Chile and Esmeraldas – Ecuador.	Media Regional Specialist Local Social Specialists
27. Develop and implement regional online course lead by the Protection Academy of Chile (APC). The course will have a blended approach, combining self-paced activities with online group sessions to interact with trainers and other participants. This course is specific	E&SP 2. Lack of involvement and real interest in the courses by the technical staff of the project.	Technical Staff with lack of knowledge would cause misunderstanding of the disaster risk reduction and adaptation subject and create some difficulties on the implementation phase.	The Project Board and the Project Manager of the project will require them to participate in the Courses. The courses will be mandatory for all technical staff in both countries. The courses should be approved by the Project Board socialized with all the technical staff of Antofagasta and Taltal – Chile and Esmeraldas – Ecuador.	Project Board will require formally to all technical staff, to follow the training courses. Project Manager, will confirm that all the technical staff working in the project, attended the courses. Media Regional Specialist and Local Social Specialists will develop the courses in close coordination with the Protection

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
for technical staff in both countries.				Academy of Chile (APC) and the SGR.
28. Develop a training of trainers for both countries	E&SP 2. Lack of real involvement of local trainers. Trainers not aware of the importance to implement adaptation measures in a participatory manner and with the real involvement of the population of the communities.	Trainers without real capacities to manage disaster risk reduction and adaptation issues in their daily working.	Motivate the trainers to actively participate in the training prepared for them about green infrastructure and disaster risk reduction strategies.	Media Regional Specialist Local Social Specialists
29. Implement three courses to be open in years 3, 4 and 5. The courses will be open to personnel from the local governments of Antofagasta, Taltal and Esmeraldas, and other cities of the region. This course is specific for technical staff in both countries.	E&SP 2. Lack of real involvement of the local governments and personnel, due to the overloaded work and other issues. Personnel from the local government not aware of the importance to implement adaptation measures in a participatory manner and with the real involvement of the population of the communities.	Technical staff from the local government without real capacities to manage disaster risk reduction and adaptation issues in their daily working.	Understand the final beneficiaries of this courses, this one means the personnel from the local governments. Before implementing the courses, a survey will be conducted to understand their knowledge, expertise and behaves. The courses will be prepared based on a comprehensive analysis of this database. Also, the timetable of the classes will be analysis thoroughly to fine the best and productive usage time.	Media Regional Specialist Local Social Specialists Project Board shall approve the courses design and timetable of implementation.
30. Develop information to be placed in the regional electronic platform for both countries	E&SP 7. There is a risk that the information developed is usable or of interest of local leaders, technical staff, etc.	Not use of the information developed.	The Regional Media Specialist in the "Communication and Participatory Strategy" shall include the development of the regional electronic platform. This should be approved by the Project Board socialized with all the Local Social Specialists, communities, technical staff of Antofagasta and Taltal – Chile and Esmeraldas – Ecuador.	Media Regional Specialist Local Social Specialists
31. Technical staff from the Municipality of Esmeraldas (GADE) and other local entities will be trained on the use of	E&SP 2. Lack of real involvement of the local government and personnel, due to the overloaded work and other issues.	Technical staff of Esmeraldas local government without proper knowledge about green infrastructure or eco-engineering measures to cope	Motivate the technical staff to actively participate in the training prepared for them about green infrastructure and eco-engineering. Prepare a comprehensive Course Plan with the best technician on eco-engineering, with	Media Regional Specialist Local Social Specialists

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
green infrastructure for DRR, and a situation analysis will be prepared.	Personnel from the local government not aware of the importance to implement green infrastructure for DRR.	with adaptation measures in the future.	experience in tropical areas and with native vegetable species.	
32. Socialization of the green infrastructure plan with local stakeholders in Esmeraldas - Ecuador.	E&SP 2. Local stakeholders without interest to know about green infrastructure.	Local stakeholders not deeply into green infrastructure or eco engineering would cause lack of sustainability of the actions.	The whole process about the green infrastructure plan need the involvement of key local stakeholders during the implementation. The Local Social Specialist for Esmeraldas shall be aware that the socialization and presentation of the plans and be part of the "Communication and Participatory Strategy".	Local Social Specialist for Esmeraldas will prepare document and implement it by workshops. Project Board shall approve document
33. Develop the Narrator's initiative for Ecuador (Esmeraldas)	E&SP 5. There is a risk that either women or men has unequal opportunities to participate taking into account their working schedules or lifestyles.	Only one gender could assist to the course. The gender perspective could be lost, is women cannot assist, children assistance also could be put in risk.	The Local Social Specialist for Esmeraldas shall be aware that the socialization and presentation of the plans should the in schedules that women can attend and be part of the "Communication and Participatory Strategy".	Local Social Specialist for Esmeraldas will prepare document and implement it by workshops. Project Board shall approve document
	E&SP 7. There is a risk that Indigenous Peoples have unequal opportunities to participate taking into account their working schedules, lifestyles, or languages.	Not participation of the indigenous community in the Narrator's initiative. The heterogeneity perspective could be lost, is the indigenous community cannot assist.	The Local Social Specialist for Esmeraldas shall be aware that the socialization and presentation of the plans should the in schedules that Chachis can attend and be part of the "Communication and Participatory Strategy".	Local Social Specialist for Esmeraldas will prepare document and implement it by workshops. Project Board shall approve document
34. Develop the Narrator's initiative for Chile (Antofagasta – Taltal)	E&SP 5. There is a risk that either women or men has unequal opportunities to participate taking into account their working schedules or lifestyles.	Only one gender could assist to the course. The gender perspective could be lost, is women cannot assist, children assistance also could be put in risk.	The Local Social Specialist for Chile shall be aware that the socialization and presentation of the plans should the in schedules that women can attend and be part of the "Communication and Participatory Strategy".	Local Social Specialist for Chile will prepare document and implement it by workshops. Project Board shall approve document
35. Established and nurture the communities of practice	E&SP 2. There is a risk that not all the community is aware of the community in practice in Esmeraldas, Taltal and Antofagasta.	Not participation of the social community in the communities of practice. The heterogeneity could be lost.	The Regional Media Specialist in the "Communication and Participatory Strategy" shall include the development of the regional electronic platform. This should be approved by the Project Board socialized with all the Local Social Specialists, communities, technical staff of Antofagasta and Taltal – Chile and Esmeraldas – Ecuador.	Media Regional Specialist Local Social Specialists

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
	E&SP 5. There is a risk that either women or men has unequal opportunities to participate taking into account their working schedules or lifestyles.	Only one gender could assist to the communities of practice. The gender perspective could be lost, if women cannot participate.	The Local Social Specialist for Chile and Ecuador shall be aware that the socialization and presentation of the plans should the in schedules that women can attend and be part of the "Communication and Participatory Strategy".	Local Social Specialist for Esmeraldas will prepare document and implement it by workshops. Project Board shall approve document
	E&SP 7. There is a risk that Indigenous Peoples have unequal opportunities to participate taking into account their working schedules, lifestyles, or languages.	Not participation of the indigenous community in the communities of practice. The heterogeneity could be lost perspective could be lost, is the indigenous community cannot assist.	The Local Social Specialist for Ecuador shall be aware that the socialization and presentation of the plans should the in schedules that Chachis can attend and be part of the "Communication and Participatory Strategy".	Local Social Specialist for Esmeraldas will prepare document and implement it by workshops. Project Board shall approve document
36. Develop a regional electronic platform for access of both countries.	E&SP 2. There is a risk that not all the community is aware of the proposed regional electronic platform.	The use of the electronic platform may be limited if the community or community - social leaders does not empower themselves to use it.	The Regional Media Specialist in the "Communication and Participatory Strategy" shall include the development of the regional electronic platform. This should be approved by the Project Board socialized with all the Local Social Specialists, communities, technical staff of Antofagasta and Taltal – Chile and Esmeraldas – Ecuador.	Media Regional Specialist Local Social Specialists
37. Document and disseminate the lessons and best practice of the project for both countries.	E&SP 2. There is a risk that not all the community is aware of the lessons and best practice of the project for both countries.	Not awareness of the community in general of the lessons and best practices of the project.	The Regional Media Specialist in the "Communication and Participatory Strategy" shall include the development of the regional electronic platform. This should be approved by the Project Board socialized with all the Local Social Specialists, communities, technical staff of Antofagasta and Taltal – Chile and Esmeraldas – Ecuador.	Media Regional Specialist Local Social Specialists
	E&SP 7. There is a risk that Indigenous Peoples are not aware of the lessons and best practice of the project for both countries if their language was not taken into account.	Not awareness of the indigenous community of the lessons and best practices of the project.	The Local Social Specialist for Ecuador shall be aware that the socialization and presentation of the plans should the in schedules that Chachis can attend and be part of the "Communication and Participatory Strategy".	Media Regional Specialist Local Social Specialists
38. Storm Detection System	E&SP 2. There is a risk that project beneficiaries are not aware of the benefits of the activity	The community is not aware of the results of the Storm Detection System, so they remain in the same condition of	Mitigation measure 1. Outreach of the storm detection service at the territorial tables in accordance with the provisions of the	Project coordinator in Chile, social specialist.

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
		vulnerability prior to the project.	Communication and Community Relationship Strategy of Antofagasta and Taltal	
	E&SP 5. Men or women do not have the same opportunities to participate in the different events and activities planned because their work schedules or lifestyles are not considered	Only one gender could assist to the events and activities planned. The gender perspective could be lost, if women cannot participate.	Mitigation measure 1. Outreach of the storm detection service at territorial committees and women's bureau, in accordance with the provisions of the Communication and Community Relationship Strategy of Antofagasta and Taltal	Project coordinator in Chile, social specialist.
39. Identification of location to Install automatic meteorological stations in the watersheds of Antofagasta, Taltal	E&SP 2. Risk 1. There is a risk that project beneficiaries are not aware of the benefits of the installation of meteorological stations in Antofagasta and Taltal	The community is not aware of the benefits of the installation of meteorological stations, so they remain in the same condition of vulnerability prior to the project.	Outreach to communities about the location, use and benefits of the meteorological stations for Antofagasta and Taltal, in territorial roundtables and women's roundtables. (Community relationship and education strategy).	Project coordinator in Chile, social specialist in Chile
	E&SP5. Men or women do not have the same opportunities to participate in the different events and activities planned because their work schedules or lifestyles are not considered	Only one gender could assist to the events and activities planned. The gender perspective could be lost, if women cannot participate.	Outreach to communities about the location, use and benefits of the meteorological stations for Antofagasta and Taltal, in territorial roundtables and women's roundtables. (Community Relations and Education Strategy).	Project coordinator in Chile, social specialist in Chile.
40. Identification of location to Install automatic meteorological stations in the watersheds of Antofagasta, Taltal	E&SP2. There is a risk that project beneficiaries are not aware of the benefits of the installation and repowering of hydrometeorological stations in Esmeraldas	The beneficiaries are not aware of the benefits of the installation and repowering of hydrometeorological stations in Esmeraldas, so they remain in the same condition of vulnerability prior to the project.	Dissemination of the proposed hydro-meteorological monitoring network for Esmeraldas, in a participatory workshop with key stakeholders, including a proposal for a network management model. Outreach to communities about the location, use and benefits of the hydrometeorological stations for Esmeraldas	Project coordinator in Ecuador, social specialist in Ecuador
	E&SP5. Men or women do not have the same opportunities to participate in the socialization of the hydrometeorological network and the location of	Only one gender could assist to the events and activities planned. The gender perspective could be lost, if women cannot participate.	Dissemination of the proposed hydro-meteorological monitoring network for Esmeraldas, in a participatory workshop with key stakeholders, including an equal number of men and women, considering work schedules and lifestyles.	Project coordinator in Ecuador, social specialist in Ecuador

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
	the stations to be installed or repowered, because their work schedules or lifestyles are not considered.		Communication and Public Education Strategy for the city of Esmeraldas considers the participation of vulnerable groups with a gender focus.	
	E&ESP7. Indigenous peoples have unequal opportunities to participate in events of socialization of the hydrometeorological network and the stations to be installed and repowered, because their work schedules, lifestyles or languages are not considered.	Not participation of the indigenous community in the events of socialization of hydrometeorological network and the stations to be installed and repowered. The heterogeneity perspective could be lost, is the indigenous community cannot assist.	Socialization with communities, including representatives of indigenous peoples, about the location, use and benefits of the hydro meteorological stations to be installed, considering their work schedules, lifestyles, and languages.	Project coordinator in Ecuador, social specialist in Ecuador
41. Bonilla Ravine Alluvial Control Construction Work	E&SP5. It has been identified that in the areas surrounding the works there is a greater female population and, due to their social conditions, they may be affected by the construction of the work. According to the citizen participation report (PAC), women mostly spend time at home looking after their families, so they will be exposed, on a daily basis, to the traffic flow caused by the works, as well as earth and machinery movement, among others.	Women living in the areas surrounding the infrastructure works will be exposed, on a daily basis, to the traffic flow caused by the works, as well as earth and machinery movement, among others. This could lead to public discontent and opposition to infrastructure works.	Diffusion of the construction program, presentation of the construction plan and the Importance of the alluvial control works to save lives in the case of a climate event. There will be women's roundtables training them on disaster risk reduction and the Importance of the alluvial control works.	Coordinator of the Chile Project, Chile Social Specialist, Consultant Engineer on Climate Change from the contracted Construction Company.
	E&SP6. There is a risk that the operators on the works suffer some type of accident in the course of construction, or by an eventual accident, i.e., rain and/or earthquake, which may occur during the construction period.	Persons and workers in the surroundings areas could be injured or affected	The contracted construction company shall be responsible for the preparation and proper application of an occupational risk management plan throughout the construction process. This will be requested in the bidding process of the work.	The Project team will verify the existence of the contracted company's occupational risk management plan. DOH and the contracted construction company will verify full compliance with the

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
				occupational risk management plan.
	E&SP12. The generation of waste and pollutants during the construction of the alluvial control infrastructure	The generation of wastes and pollutants during the construction works will pollute the surrounding area of Antofagasta.	The contractor must comply with what is specified in the environmental Relevance Report in accordance with the Updated Applicable Environmental Standards described in said report, which indicates the respective procedures on contamination and the compliance thereof. Mitigation Measure 2. The contractor shall submit the construction plan and the specific monitoring procedures for construction works, which include: • Water consumption. • Fuel consumption. • Type of fuel consumption • Raw material consumption. • Power consumption. • Solid waste generation • Wastewater / generation (wastewater quality). • Construction waste / debris generation.	Contractor Team, DOH Inspector to supervise.
42. Structural reinforcement of the pedestrian bridge connecting Roberto Luis Cervantes Island with the continental zone of the City of Esmeraldas	E&SP2. The inhabitants of the zone will be temporarily limited to move along freely over the bridge while the reinforcement works are in place (the estimate is three months)	The beneficiaries are not aware of the benefits of the structural reinforcement of the pedestrian bridge connecting Roberto Luis Cervantes Island with the continent, so they remain in the same condition of vulnerability prior to the project.	Socialization through workshops and communication and public education strategy implementation. The population will be adequately informed, and the alternate route to access the continent will be marked. Other measures could be implemented to mitigate the impact, especially for vulnerable population, such as transport availability.	Social technical
	E&SP5. Men and women in the community do not have the same opportunities to participate in the socialization workshops, as their work schedules or lifestyles are not considered.	Only one gender could assist to the events and activities planned. The gender perspective could be lost if women cannot participate.	Diffusion of the reinforcement proposal of the pedestrian bridge, through participatory workshops with the beneficiary community, including an equal number of men and women and considering work schedules, lifestyles and differentiated needs. During the execution of the works, the established measures for minimizing the impact of the bridge accessibility restrictions will be monitored to	Project Coordinator in Ecuador, Social specialist in Ecuador, Contracted construction firm

Activity Identified risks in accordance to AF's E&SP and Impact				
Activity	**Identified risks in accordance with AF's E&SP**	**Potential E&S Impacts if risks materialize**	**Mitigation Measure**	**Responsible for Verification**
			reduce any specific impact among women and vulnerable groups.	
	E&SP6. Men and women hired for the work are exposed to work-related accidents during the bridge reinforcement construction process.	Persons and workers in the surroundings areas could be injured or affected	The contracted construction firm will be responsible for the elaboration and correct application of the Occupational Risk Management Plan throughout the construction process. The contracted auditor will ensure the application and compliance of the Occupational Risk Management Plan throughout the construction process.	Contracted construction firm
	E&SP8. Temporary affectations have been identified to free mobility of the people during the reinforcement works, which could temporarily affect the livelihoods of the inhabitants of the zone.	Claims, nonconformity, and possible interruption of the works could occur.	Socialization and temporary signaling of the alternative routes and transfer times. To minimize this impact, a previous communication process will be carried out with the inhabitants of Roberto Luis Cervantes Island and transport will be offered in specific cases, whenever vulnerable groups are involved.	Project coordinator in Ecuador, Social Specialist in Ecuador
43. Reforestation in urban and peri-urban settings of the city of Esmeraldas	ES&P10. Reforestation with species not endemic to the area that could alter the natural ecosystem of Esmeraldas.	Species not endemic could alter the natural ecosystem of the reforested areas in Esmeraldas	Carry out thorough monitoring to guarantee that the species selected in the reforestation plan are those that are actually used for reforestation in the different selected areas. The project coordinator will ensure the application and compliance of the reforestation plan presented by the PUCESE.	Project coordinator in Ecuador

1.2. Environmental and Social Risk Identification Mechanism for Unidentified sub-projects (USP)

As it was previously mentioned in the Proposal, during the formulation of the project, it was not possible to fully define seven (7) activities.

1. Construction of a series of 14 decantation ponds and 36 concrete retaining walls located in Quebrada Bonilla (31 in Bonilla North and 5 in Bonilla South) - Antofagasta
2. Construction of (i) profile conformation of slopes, (ii) construction of collection and drainage channels, (iii) construction of retaining walls where necessary, (iv) anchor works were necessary, and (v) vegetation of slopes, in Esmeraldas
3. Revegetation of 40 ha.
4. Installation of a meteorological doppler radar in Esmeraldas
5. Installation of a storm detection system in Antofagasta
6. Installation of automatic meteorological stations in the watersheds of Antofagasta, Taltal (i.e., Teaone river)
7. Installation of automatic meteorological stations in the watersheds of Esmeraldas (i.e., Esmeraldas river).

There is a possibility that adverse environmental and social risks that were not foreseen during the project design are identified during the implementation. In order to anticipate future issues, during the preparation of the annual operation plans, the Project Unit will identify potential environmental and social risks associated to each of the activities planned for the year and will program mitigation measures accordingly, as well as the budget required for their implementation. This analysis will be made applying the same methodology used in this project to identify impacts and risks of other activities and considering the environmental and social principles applicable to the present project

The process for risk and impact identification, mitigation measures and implementation are exactly as the one undertaken for the project during design phase. Activity and designs shall be screened in line with the Adaptation Fund's ESP and Gender Policy. All risks identified will recognize different mitigation measures and responsible for compliance. Compliance Monitoring and Verification is required for all activities.

To be able to establish a time frame for the Environmental and Social Risk Identification Mechanism for Unidentified sub-projects (USP) this timing matrix presented the milestones of the moment where the USP have to be implemented and which study should be developed before the approval of UPS implementation.

Table 2. Time frame for USP implementation

Milestones			Percentage of execution					
Expected	Outputs Activity		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			22/1/2021	22/1/2022	22/1/2023	22/1/2024	22/1/2025	22/1/2026
Project Component: 1. Priority Actions to increase resilience								
2.1. Mudflow control infrastructure in Antofagasta	1. Construction of a series of 14 decantation ponds and 36 concrete retaining walls located in Quebrada Bonilla (31 in Bonilla North and 5 in Bonilla South) - Antofagasta. To be able to do the implementation of this USP, it is necessary that the designs update are fulfilled until the second year between 22/01/2020 and 22/01/2022. During this period the Environmental and Social Risk Identification Mechanism for Unidentified sub-projects (USP) should be put into action.	22/1/2023	0%	5%	95%	0%	0%	0%
2.2. Landslide mitigation works in Esmeraldas	2. Construction of (i) profile conformation of slopes, (ii) construction of collection and drainage channels, (iii) construction of retaining walls where necessary, (iv) anchor works were necessary, and (v) vegetation of slopes, in Esmeraldas. To be able to do the implementation of this USP, it is necessary that the designs update are fulfilled until the second year between 22/01/2020 and 22/01/2022. During this period the Environmental and Social Risk Identification Mechanism for Unidentified sub-projects (USP) should be put into action.	22/1/2023	0%	0%	2%	95%	3%	0%
	3. Revegetation of 40 ha in Esmeraldas. To be able to do the implementation of this USP, it is necessary that the green-infrastructure plan for Esmeraldas is fulfilled until the second year between 22/01/2020 and 22/01/2022. During this period the Environmental and Social Risk Identification Mechanism for Unidentified sub-projects (USP) should be put into action.	22/1/2024	0%	2%	1%	97%	0%	0%

Milestones			Percentage of execution					
Expected	Outputs Activity		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			22/1/2021	22/1/2022	22/1/2023	22/1/2024	22/1/2025	22/1/2026
3.1. Weather radar in Esmeraldas and a storm detection system in Antofagasta	4. Installation of a meteorological doppler radar in Esmeraldas. To be able to do the implementation of this USP, it is necessary that the identification of the precise location for the radar in Esmeraldas is accomplished until the second year between 22/01/2020 and 22/01/2022. During this period the Environmental and Social Risk Identification Mechanism for Unidentified sub-projects (USP) should be put into action.	22/1/2022	6%	90%	2%	1%	1%	0%
	5. Contracting of the storm detection service To be able to do the implementation of this USP, it is necessary a technical and financial analysis in order to determinate that the contracting of the storm detection service is a better alternative for the project, and it is achieved during de first year between 22/01/2020 and 22/01/2021. During this period the Environmental and Social Risk Identifications Mechanism for Unidentified sub-project (USP) should be put into action.	15/8/2020	6%	90%	2%	1%	1%	0%
3.2. Increased number of meteorological stations in Antofagasta, Taltal and Esmeraldas	6. Installation of automatic meteorological stations in the watersheds of Antofagasta, Taltal (i.e., Teaone river). To be able to do the implementation of this USP, it is necessary that the identification of the precise location for the automatic meteorological stations in the watersheds of Antofagasta and Taltal is achieved during the second year between 22/1/2020 and 22/01/2022 During this period the Environmental and Social Risk Identification Mechanism for Unidentified sub-projects (USP) should be put into action.	22/1/2022	3%	3%	88%	3%	3%	0%

Milestones			Percentage of execution					
Expected	Outputs Activity		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			22/1/2021	22/1/2022	22/1/2023	22/1/2024	22/1/2025	22/1/2026
	7. Installation of automatic meteorological stations in the watersheds of Esmeraldas (i.e., Esmeraldas river). To be able to do the implementation of this USP, it is necessary that the identification of the precise location for the automatic meteorological stations in the watersheds of the Esmeraldas river is done during the second second year between 22/1/2020 and 22/01/2022. During this period the Environmental and Social Risk Identification Mechanism for Unidentified sub-projects (USP) should be put into action.	22/1/2022	3%	3%	88%	3%	3%	0%

Considering this previous matrix, the Risk identification – Mitigation Measures – Activity Implementation process can be used.

Table 3. Template: Executive Resume for Activity

The Process developed is presented in *Figure 1. Risk identification – Mitigation Measures – Activity Implementation*:

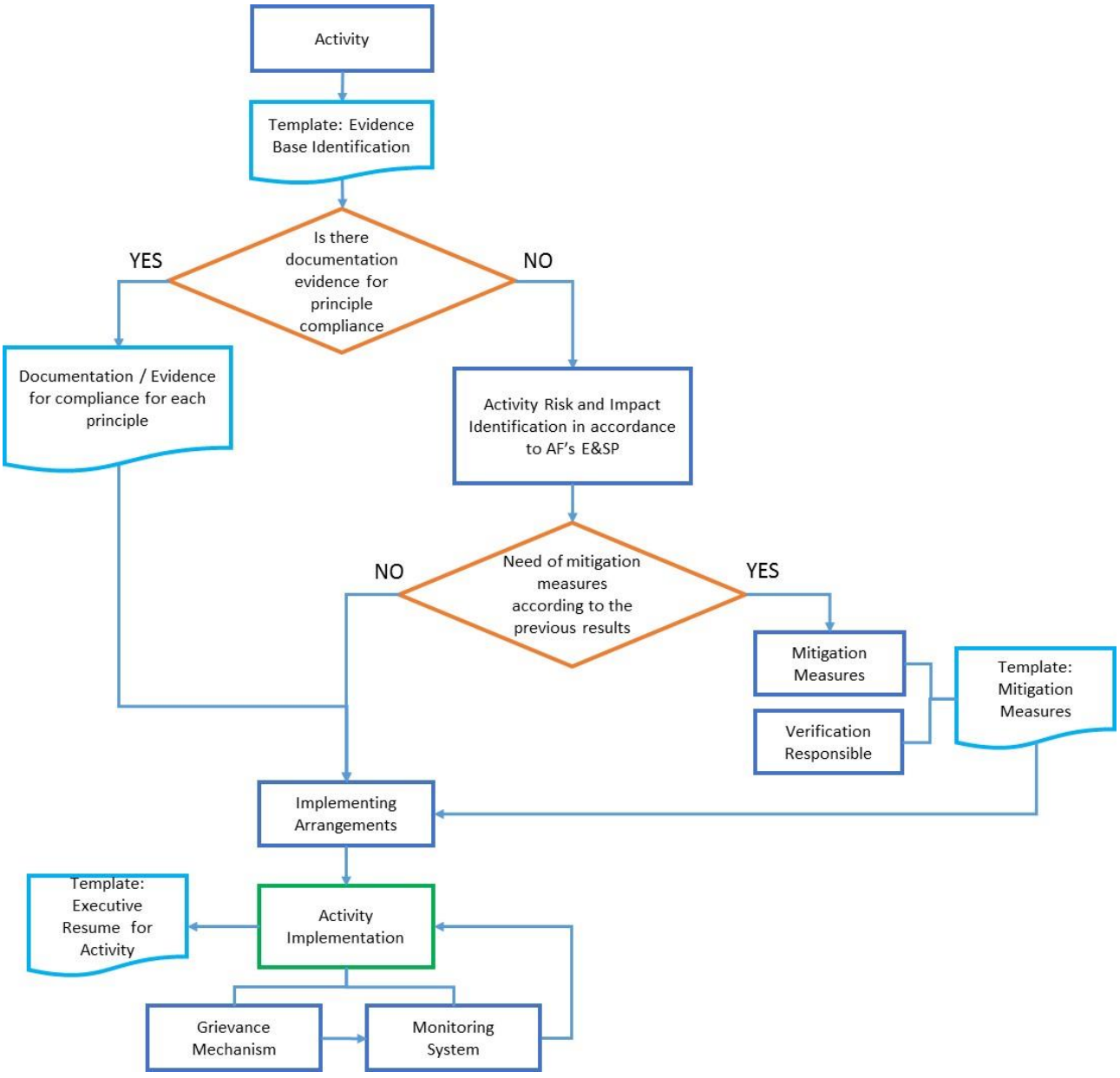


Figure 1. Risk identification – Mitigation Measures – Activity Implementation

Templates

The templates presented below are to be used for the risk identification of all adaptation unidentified sub-projects designed under the Component 1. Once the risk identification and mitigation measures templates are

completed and verified by the Project Unit (Section II. A.), each operational contractor will communicate the results with beneficiary group and communities involved.

Table 3. Template: Executive Resume for Activity

Template: Executive Resume for Activity				
NAME OF THE ACTIVITY:				
Area on intervention:	**Responsible of fulfilling the template - Local Technical Coordinator Check:**	**Management Coordinator Check:**	**Project Unit Check:**	**Date:**
Technical General Description of the Activity :				
Fulfillment of the Risk Identification				
Consultation with the community				
Documentation – Evidence Base of Risk Identification				
General / Relevant Mitigation Measures				

Table 4. Template: Evidence Base Identification

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
1.Compliance with the law	1.1. Has the activity prior permission to implementation?		
	1.2. Does the activity comply with the national and local technical standards, validate Annex 18?		
2. Access and Equity	2.1. Has the activity identified any marginalized or vulnerable groups among potential activity beneficiaries?		
	2.2. Has the activity identified the existing risk to access to the essential services and rights indicated in the principle?		
	2.3. Has the activity developed stakeholder and local authorities' consultations?		
	2.4. Has the activity presented a mechanism to ensure participation of communities, marginalized, vulnerable groups, stakeholder and local authorities'?		
3. Marginalized and Vulnerable Groups	3.1. In the influence area of the activity has there been identified the presence of marginalized or vulnerable groups?		
	3.2. Has the activity described the characteristics of any marginalized or vulnerable groups, identifying their particular vulnerabilities that would or could make them disproportionately vulnerable to negative environmental or social impacts?		
	3.3. Has the activity put in place under the Communication and Participatory Strategy taking into account vulnerable groups perspective?		
4. Human Rights	4.1. Not necessary		
5. Gender Equity and Women's Empowerment	5.1. May the activity exclude or hamper a gender group based on legal, regulatory or customary grounds?		
	5.2. Has the activity identified particular vulnerabilities of men and women that would or could make them disproportionately vulnerable to negative environmental or social impacts?		
	5.3. Has the activity put in place under the Communication and Participatory Strategy taking into account gender perspective?		
6. Core Labour Rights	6.1. Has the activity identified how the ILO core labour standards are incorporated in the implementation of the activity?		

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
	6.2. Has the activity implements the common labour arrangements in the sector(s) in which the project will operate?		
7. Indigenous Peoples	7.1. Has the activity identified if indigenous peoples are present in the area of influence?		
	7.2. Has the activity provided a summary of complaints that have been made with respect to the rights of indigenous peoples?		
8. Involuntary Resettlement	8.1. Has the activity identified if physical or economic displacement is required or will occur as a consequence of its implementation?		
	8.2. Has the activity identified stakeholders whose livelihoods may be affected, directly or indirectly, and if this may lead to resettlement?		
	8.3. Has the activity identified stakeholders whose assets or access to assets may be affected, directly or indirectly, and if this may lead to resettlement and its consequences including indemnification, compensation, etc.		
9. Protection of Natural Habitats	Not Necessary		
10. Conservation of Biological Diversity.	10.1. Will the activity implement non-endemic species?		
11. Climate Change	11.1. Has the activity presented its Carbon Footprint?		
	11.2. Has the activity presented the Monitoring system of the GHG emissions		
12. Pollution Prevention and Resource Efficiency	12.1. Has the activity presented the Construction plan and specific monitoring procedure for the construction works including; Water consumption, Fuel consumption, Type of fuel consumption, Raw material consumption, Energy consumption, Solid waste generation, Wastewater / generation (quality of wastewater), Construction waste / debris generation.		
13. Public Health	13.1. Has the activity presented the HIA - Health Impact Assessment?		
14. Physical and Cultural Heritage	Not Necessary.		
15. Lands and Soil Conservation	Not Necessary.		

Table 5. Template: Mitigation Measures

Template: Mitigation Measures			
Activity:			Date:
Area on intervention:	**Responsible of fulfilling the template - Local Technical Coordinator Check:**	**Management Coordinator Check:**	**Project Unit Check:**
Environmental or social Principle	**Environmental or social risk**	**Mitigation measure**	**Verification Responsible**
Principle 1. Compliance with the Law	Risk 1. Risk 2.	Mitigation measure 1. Mitigation measure 2. Mitigation measure 3.	
Principle 2. Access and Equity	Risk 1. Risk 2.	Mitigation measure 1. Mitigation measure 2. Mitigation measure 3.	
Principle 3. Marginalized and Vulnerable Groups	Risk 1. Risk 2.	Mitigation measure 1. Mitigation measure 2. Mitigation measure 3.	
Principle 5. Gender Equality and Women's Empowerment	Risk 1. Risk 2.	Mitigation measure 1. Mitigation measure 2. Mitigation measure 3.	
Principle 6. Core Labour Rights	Risk 1. Risk 2.	Mitigation measure 1. Mitigation measure 2. Mitigation measure 3.	
Principle 7. Indigenous Peoples	Risk 1. Risk 2.	Mitigation measure 1. Mitigation measure 2. Mitigation measure 3.	
Principle 8. Involuntary Resettlement.	Risk 1. Risk 2.	Mitigation measure 1. Mitigation measure 2. Mitigation measure 3.	
Principle 10. Conservation of Biological Diversity	Risk 1. Risk 2.	Mitigation measure 1. Mitigation measure 2. Mitigation measure 3.	
Principle 11. Climate Change	Risk 1. Risk 2.	Mitigation measure 1. Mitigation measure 2. Mitigation measure 3.	
Principle 12. Pollution Prevention and Resource Efficiency	Risk 1. Risk 2.	Mitigation measure 1. Mitigation measure 2. Mitigation measure 3.	
Principle 13. Public Health	Risk 1. Risk 2.	Mitigation measure 1. Mitigation measure 2. Mitigation measure 3.	

Risk identification – Mitigation measures – activity implementation

Storm Detection System

As noted in the project design, the installation of a storm detection system for Antofagasta corresponds to one of the seven unidentified Subprojects, because an analysis was required to determine the exact location of the facility. However, once a technical and financial analysis has been carried out, with the support of the Chilean Meteorological Directorate, it was determined that the purchase of equipment for the storm detection system is not feasible, mainly because the budget allocated to this acquisition is much lower than the current market price.

In view of this situation, as an alternative, the contracting of the storm detection service has been proposed, with the certainty that the results that will be obtained will be the same as those raised in the PRODOC.

To ensure that this new activity complies with the environmental and social principles of the Adaptation Fund, the process of identifying risks, mitigation measures and implementation activities has been carried out, in accordance with the provisions of the Environmental and Social Management Plan (ESMP).

Table 6. Evidence Base Identification

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
1. Compliance with the law	1.1. Has the activity prior permission to implementation?	Yes	The competent technical body is the Meteorological Directorate of Chile, whereby the process and coordination for its implementation have been developed.
	1.2. Does the activity comply with the national and local technical standards, validate Annex 18?	Yes	As set out in Annex 18, the activity complies with the laws, regulations, standards, procedures and permits required. In addition, this activity has been carried out in conjunction with the Chilean Meteorological Directorate, which is the competent technical body in Chile, thus guaranteeing the proper compliance with any existing regulations in this regard.
2. Access and Equity	2.1. Has the activity identified any marginalized or vulnerable groups among potential activity beneficiaries?	Yes	It corresponds to the vulnerable groups identified in the Stakeholder Analysis and in several workshops that have been held in Antofagasta and Taltal. Information is detailed in Annex 8 Similarly, the information is detailed in the Project Document in the Vulnerable Groups and Gender Situation section
	2.2. Has the activity identified the existing risk to access to the essential services and rights indicated in the principle?	Yes	The service that is about to be contracted poses no risk in relation to access to basic services and fundamental rights.

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
	2.3. Has the activity developed stakeholder and local authorities' consultations?	Yes	The activity has been carried out in conjunction with the Chilean Meteorological Directorate, national governing body in this field. In addition, all project activities are shared and validated by the National Technical Committee, where local authorities are included.
	2.4. Has the activity presented a mechanism to ensure participation of communities, marginalized, vulnerable groups, stakeholder and local authorities'?	Yes	The project is provided with a communication and community relationship strategy in Antofagasta and Taltal, which includes the participation of all stakeholders.
3. Marginalized and Vulnerable Groups	3.1. In the influence area of the activity has there been identified the presence of marginalized or vulnerable groups?	Yes	In Annex 8, the Analysis of Key Stakeholders of Antofagasta and Taltal addresses and identifies existing vulnerable groups. In Antofagasta and Taltal, marginalized populations have been identified living in camps. The information is detailed in the Project Document in the Vulnerable Groups and Gender Situation section
	3.2. Has the activity described the characteristics of any marginalized or vulnerable groups, identifying their particular vulnerabilities that would or could make them disproportionately vulnerable to negative environmental or social impacts?	Yes	The project has identified the characteristics of marginalized or vulnerable groups (children, women, the elderly, the disabled, indigenous peoples and camps - poverty)
	3.3. Has the activity put in place under the Communication and Participatory Strategy taking into account vulnerable groups perspective?	Yes	The project is implementing the local communication and participation strategy, which emphasizes previously identified vulnerable groups
4. Human Rights	4.1. Not necessary		
5. Gender Equity and Women's Empowerment	5.1. May the activity exclude or hamper a gender group based on legal, regulatory or customary grounds?	No	In Chile, a gender group cannot be excluded or hindered for legal, regulatory, or customary reasons.
	5.2. Has the activity identified particular vulnerabilities of men and women that would or could make them disproportionately vulnerable to negative environmental or social impacts?	Yes No	The project has identified that there is the same risk for men or women, bearing in mind that both may be harmed in the event of a disaster

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
	5.3. Has the activity put in place under the Communication and Participatory Strategy taking into account gender perspective?	Yes	The communication and participation strategy has been implemented, considering gender perspective, so that women have a prominent role, thus gathering their vision within other activities of the project (evacuation plans, education strategy, narrative initiative, etc.) in order to ensure that the needs of both women and men are addressed.
6. Core Labour Rights	6.1. Has the activity identified how the ILO core labour standards are incorporated in the implementation of the activity?	Yes	Both the implementing and executing entities of the draft project comply with ILO labor standards and national laws. Any UNDP procurement process follows sustainable financial rules and regulations that include basic working rights.
	6.2. Has the activity implements the common labour arrangements in the sector(s) in which the project will operate?	Yes	The project integrates basic working rights into all actions at their different levels, under mechanisms and laws related to working rights (organic law of labor management)
7. Indigenous Peoples	7.1. Has the activity identified if indigenous peoples are present in the area of influence?	No	N/A
	7.2. Has the activity provided a summary of complaints that have been made with respect to the rights of indigenous peoples?	No	N/A
8. Involuntary Resettlement	8.1. Has the activity identified if physical or economic displacement is required or will occur as a consequence of its implementation?	Yes	Being a service delivery, the activity will not require physical or economic displacement for its implementation.
	8.2. Has the activity identified stakeholders whose livelihoods may be affected, directly or indirectly, and if this may lead to resettlement?	Yes	Due to the characteristics of the activity, i.e., hiring a weather service, interested parties will not be directly or indirectly affected
	8.3. Has the activity identified stakeholders whose assets or access to assets may be affected, directly or indirectly, and if this may lead to resettlement and its consequences including indemnification, compensation, etc.	Yes	Due to the characteristics of the activity, i.e., hiring a weather service, interested parties will not be directly or indirectly affected
9. Protection of Natural Habitats	Not Necessary		
10. Conservation of Biological Diversity.	10.1. Will the activity implement non-endemic species?	No	In view of the characteristics of the activity, i.e., the contracting of a meteorological service, it is not related to the implementation of non-endemic species
11. Climate Change	11.1. Has the activity presented its Carbon Footprint?	No	There is no risk of significant or unjustified increase in greenhouse gases
	11.2. Has the activity presented the Monitoring system of the GHG emissions	No	There is no risk of significant or unjustified increase in greenhouse gases

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
12. Pollution Prevention and Resource Efficiency	12.1. Has the activity presented the Construction plan and specific monitoring procedure for the construction works including; Water consumption, Fuel consumption, Type of fuel consumption, Raw material consumption, Energy consumption, Solid waste generation, Wastewater / generation (quality of wastewater), Construction waste / debris generation.	No	Given the characteristics of the activity, i.e., contracting of a weather service, there are no associated construction works
13. Public Health	13.1. Has the activity presented the HIA - Health Impact Assessment?	No	Due to the characteristics of the activity, i.e., hiring a weather service, there are no associated construction works or others that can have an impact on health
14. Physical and Cultural Heritage	Not Necessary.		
15. Lands and Soil Conservation	Not Necessary.		

Table 7. Mitigation Measures

Template: Mitigation Measures			
Activity: Storm detection service contracting			Date: 16/12/2020
Area of intervention: Antofagasta y Taltal	**Responsible of fulfilling the template - Local Technical Coordinator Check:** Mauricio Soriano	**Management Coordinator Check:** Nury Bermudez	**Project Unit Check:** UNDP Chile
Environmental or social Principle	**Environmental or social risk**	**Mitigation measure**	**Verification Responsible**
Principle 2. Access and Equity	Risk 1. There is a risk that project beneficiaries are not aware of the benefits of the activity	Mitigation measure 1. Outreach of the storm detection service at the territorial tables in accordance with the provisions of the Communication and Community Relationship Strategy of Antofagasta and Taltal	Project coordinator in Chile, social specialist.
Principle 5. Gender Equality and Women's Empowerment	Risk 1. Men or women do not have the same opportunities to participate in the different events and activities planned because their work schedules or lifestyles are not considered	Mitigation measure 1. Outreach of the storm detection service at territorial committees and women's bureau, in accordance with the provisions of the Communication and Community Relationship Strategy of Antofagasta and Taltal	Project coordinator in Chile, social specialist.

Table 8. Executive Resume for Activity

<table>
<tr><th colspan="5">Template: Executive Resume for Activity</th></tr>
<tr><td colspan="5">NAME OF THE ACTIVITY: Storm detection service contracting</td></tr>
<tr><td>Area on intervention:
Antofagasta y Taltal</td><td>Responsible of fulfilling the template - Local Technical Coordinator Check:
Mauricio Soriano</td><td>Management Coordinator Check:
Nury Bermudez</td><td>Project Unit Check:
UNDP Chile</td><td>Date:

16/12/2020</td></tr>
<tr><td>Technical General Description of the Activity:</td><td colspan="4">Regarding the storm detection system for Antofagasta, a technical and financial analysis was carried out with support from the Chilean Meteorological Directorate (DMC) on the feasibility of acquiring a system as mentioned in PRODOC. As a result of the analysis, it was determined that it is not feasible to make this purchase because the project budget is lower than what is required for the acquisition. As an alternative to this activity and with the certainty of obtaining the same results, the process of hiring the storm detection service has begun.</td></tr>
<tr><td>Fulfillment of the Risk Identification</td><td colspan="4">In addition, as this activity is considered USP, the process of reviewing compliance with the 15 environmental and social principles of the Adaptation Fund has been carried out, identifying possible risks in relation to:
The beneficiaries of the project are not aware of the results and benefits of the activity
There are no gender equality conditions to participate in the various organized activities and events</td></tr>
<tr><td>Consultation with the community</td><td colspan="4">The results of this activity were shared with the beneficiaries of the project since the start of the design stage, so they are completely aware of the scope of the activity</td></tr>
<tr><td>Documentation – Evidence Base of Risk Identification</td><td colspan="4">The identified risks were addressed as part of the technical financial analysis carried out by the project in conjunction with the Chilean Meteorological Directorate for the implementation of the activity. In addition, studies carried out at the design stage of the project were considered and detailed in the Project Document and its Annexes</td></tr>
<tr><td>General / Relevant Mitigation Measures</td><td colspan="4">Within the Community Relationship Strategy, Territorial Committees and a Women's Bureau will be implemented, both of which will disseminate the advances and scopes of the Storm Detection service. This ensures the participation of beneficiaries and the appropriation of the results achieved, as well as equitable gender participation.</td></tr>
</table>

Risk identification – Mitigation measures – activity implementation

Installation of automatic meteorological stations in the watersheds of Antofagasta, Taltal

According to the project document, Outcome 3 seeks to improve climate monitoring and means to alert the local population. To meet this objective, the Project Document proposes the installation of three weather stations (2 in Antofagasta and 1 in Taltal).

The installation of meteorological stations in Antofagasta and Taltal corresponds to one of the seven unidentified subprojects, because at the time of project approval, the location of the stations was not known.

In this context, technical working groups were held, headed by the General Water Directorate of Antofagasta, with different public institutions with competencies in this area, to determine the best location for the installation of the stations to be acquired.

As a result of the technical analysis carried out, it was determined that the optimum location for the installation of the weather station for Taltal will be in the upper part of the existing basin in the city, as shown in the following map.

The two stations to be installed in Antofagasta will be in the upper northern sector of the city, in the upper part of the basins, as shown in the following map.

Table 9. Evidence Base Identification

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
1. Compliance with the law	1.1. Has the activity prior permission to implementation?	Yes	The competent technical agency is the General Water Directorate (DGA), of the Ministry of Public Works. The process and coordination for its implementation has been worked with this institution.
	1.2. Does the activity comply with the national and local technical standards, validate Annex 18?	Yes	As established in Annex 18, the activity complies with the required laws, regulations, standards, procedures and permits. The competent technical agency is the General Water Directorate DGA, of the Ministry of Public Works. The process and coordination for its implementation has been worked with this institution.
2. Access and Equity	2.1. Has the activity identified any marginalized or vulnerable groups among potential activity beneficiaries?	Yes	It corresponds to the vulnerable groups identified in the Stakeholder Analysis and in several workshops that have been held in Antofagasta and Taltal. Information is detailed in Annex 8 Similarly, the information is detailed in the Project Document in the Vulnerable Groups and Gender Situation section
	2.2. Has the activity identified the existing risk to access to the essential services and rights indicated in the principle?	Yes	Meteorological stations to be installed poses no risk in relation to access to basic services and fundamental rights.
	2.3. Has the activity developed stakeholder and local authorities' consultations?	Yes	The General Water Directorate (DGA) of the Ministry of Public Works is one of the interested parties. The process for its implementation has been worked with this institution. In addition, a working group was set up with the relevant public institutions. In addition, all project activities are shared and validated by the National Technical Committee, where local authorities are included.
	2.4. Has the activity presented a mechanism to ensure participation of communities, marginalized, vulnerable groups, stakeholder and local authorities'?	Yes	The project is provided with a communication and community relationship strategy in Antofagasta and Taltal, which includes the participation of all stakeholders.
3. Marginalized and Vulnerable Groups	3.1. In the influence area of the activity has there been identified the presence of marginalized or vulnerable groups?	Yes	In Annex 8, the Analysis of Key Stakeholders of Antofagasta and Taltal addresses and identifies existing vulnerable groups. In Antofagasta and Taltal, marginalized populations have been identified living in "campamentos". The information is detailed in the Project Document in the Vulnerable Groups and Gender Situation section

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
	3.2. Has the activity described the characteristics of any marginalized or vulnerable groups, identifying their particular vulnerabilities that would or could make them disproportionately vulnerable to negative environmental or social impacts?	Yes	The project has identified the vulnerable groups in the intervention areas. The installation of the meteorological stations does not affect or aggravate the existing vulnerabilities of the identified groups.
	3.3. Has the activity put in place under the Communication and Participatory Strategy taking into account vulnerable groups perspective?	Yes	The project is implementing the local communication and participation strategy, which emphasizes previously identified vulnerable groups
4. Human Rights	4.1. Not necessary		
5. Gender Equity and Women's Empowerment	5.1. May the activity exclude or hamper a gender group based on legal, regulatory or customary grounds?	No	In Chile, a gender group cannot be excluded or hindered for legal, regulatory, or customary reasons
	5.2. Has the activity identified particular vulnerabilities of men and women that would or could make them disproportionately vulnerable to negative environmental or social impacts?	No	The project has identified that there is the same risk for men or women, bearing in mind that both may be harmed in the event of a disaster
	5.3. Has the activity put in place under the Communication and Participatory Strategy taking into account gender perspective?	Yes	The communication and participation strategy has been implemented, considering gender perspective, so that women have a prominent role to ensure that the needs of both women and men are addressed.
6. Core Labour Rights	6.1. Has the activity identified how the ILO core labour standards are incorporated in the implementation of the activity?	Yes	Both the implementing and executing entities of the draft project comply with ILO labor standards and national laws. Any UNDP procurement process follows sustainable financial rules and regulations that include basic working rights.
	6.2. Has the activity implements the common labour arrangements in the sector(s) in which the project will operate?	Yes	The project integrates basic working rights into all actions at their different levels, under mechanisms and laws related to working rights (organic law of labor management)
7. Indigenous Peoples	7.1. Has the activity identified if indigenous peoples are present in the area of influence?	Yes	In Antofagasta and Taltal, the indigenous population identified corresponds to 1.8% and 1.0%, respectively.
	7.2. Has the activity provided a summary of complaints that have been made with respect to the rights of indigenous peoples?	No	No complaints have been received through the complaints and grievances mechanism in place
8. Involuntary Resettlement	8.1. Has the activity identified if physical or economic displacement is required or will occur as a consequence of its implementation?	Yes	The activity will not require physical or economic displacement for its implementation.
	8.2. Has the activity identified stakeholders whose livelihoods may be affected, directly or indirectly, and if this may lead to resettlement?	Yes	Due to the characteristics of the activity, the acquisition and installation of meteorological stations will be carried out in locations far from

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
			the population, and stakeholders will not be directly or indirectly affected.
	8.3. Has the activity identified stakeholders whose assets or access to assets may be affected, directly or indirectly, and if this may lead to resettlement and its consequences including indemnification, compensation, etc.	Yes	Due to the characteristics of the activity, installation of meteorological stations, the interested parties will not be affected directly or indirectly, which means that no resettlement or compensation of any kind will be required. The report of the working group led by the Antofagasta Water Directorate details the exact location of each of the three stations to be installed.
9. Protection of Natural Habitats	Not Necessary		
10. Conservation of Biological Diversity.	10.1. Will the activity implement non-endemic species?	No	Due to the characteristics of the activity, i.e., the purchasing and installation of meteorological stations, it is not related to the implementation of non-endemic species.
11. Climate Change	11.1. Has the activity presented its Carbon Footprint?	No	There is no risk of significant or unjustified increase in greenhouse gases
	11.2. Has the activity presented the Monitoring system of the GHG emissions	No	There is no risk of significant or unjustified increase in greenhouse gases
12. Pollution Prevention and Resource Efficiency	12.1. Has the activity presented the Construction plan and specific monitoring procedure for the construction works including; Water consumption, Fuel consumption, Type of fuel consumption, Raw material consumption, Energy consumption, Solid waste generation, Wastewater / generation (quality of wastewater), Construction waste / debris generation.	No	Due to the characteristics of the activity, i.e., the purchasing and installation of meteorological stations, there is no major construction work associated with the activity. Meteorological stations require only a basic infrastructure work (enclosure) for the safety and protection of meteorological equipment.
13. Public Health	13.1. Has the activity presented the HIA - Health Impact Assessment?	No	Due to the characteristics of the activity, i.e., the purchasing and installation of meteorological stations there are no associated construction or other works that could have an impact on health.
14. Physical and Cultural Heritage	Not Necessary.		
15. Lands and Soil Conservation	Not Necessary.		

Table 10. Mitigation Measures

Template: Mitigation Measures			
Activity: Installation of meteorological stations in Antofagasta and Taltal			Date: 22/04/2021
Area of intervention: Antofagasta y Taltal	**Responsible of fulfilling the template - Local Technical Coordinator Check:** Mauricio Soriano	**Management Coordinator Check:** Nury Bermudez	**Project Unit Check:** UNDP Chile
Environmental or social Principle	**Environmental or social risk**	**Mitigation measure**	**Verification Responsible**
Principle 2. Access and Equity	Risk 1. There is a risk that project beneficiaries are not aware of the benefits of the installation of meteorological stations in Antofagasta and Taltal	Mitigation measure 1 Outreach to communities about the location, use and benefits of the meteorological stations for Antofagasta and Taltal, in territorial roundtables and women's roundtables. (Community relationship and education strategy).	Project coordinator in Chile, social specialist in Chile
Principle 5. Gender Equality and Women's Empowerment	Risk 1. Men or women do not have the same opportunities to participate in the different events and activities planned because their work schedules or lifestyles are not considered	Mitigation measure 1. Outreach to communities about the location, use and benefits of the meteorological stations for Antofagasta and Taltal, in territorial roundtables and women's roundtables. (Community Relations and Education Strategy).	Project coordinator in Chile, social specialist in Chile.

Table 11. Executive Resume for Activity

<table>
<tr><th colspan="5">Template: Executive Resume for Activity</th></tr>
<tr><td colspan="5">NAME OF THE ACTIVITY: Installation of meteorological stations in Antofagasta and Taltal</td></tr>
<tr><td>Area on intervention:
Antofagasta y Taltal</td><td>Responsible of fulfilling the template - Local Technical Coordinator Check:
Mauricio Soriano</td><td>Management Coordinator Check:
Nury Bermudez</td><td>Project Unit Check:
UNDP Chile</td><td>Date:

22/04/2021</td></tr>
<tr><td>Technical General Description of the Activity:</td><td colspan="4">Regarding the acquisition of three meteorological stations, two for Antofagasta and one for Taltal, working groups were held to define their location, headed by the General Water Directorate of Antofagasta, with different public services with responsibilities in this area. As a result of the analysis, it was determined that the meteorological station for the municipality of Taltal should be located in the upper part of the basin and the two stations for the municipality of Antofagasta, in the upper northern sector of the city, also in the upper part of the basins.</td></tr>
<tr><td>Fulfillment of the Risk Identification</td><td colspan="4">As this activity is considered USP, the process of reviewing compliance with the 15 environmental and social principles of the Adaptation Fund has been carried out, identifying possible risks in relation to:
The beneficiaries of the project are not aware of the results and benefits of the activity
There are no gender equality conditions to participate in the various organized activities and events</td></tr>
<tr><td>Consultation with the community</td><td colspan="4">The results of this activity were shared with the beneficiaries of the project since the start of the design stage, so they are completely aware of the scope of the activity</td></tr>
<tr><td>Documentation – Evidence Base of Risk Identification</td><td colspan="4">The base information for risk identification was based on the technical analysis carried out by the working groups and the defined locations.</td></tr>
<tr><td>General / Relevant Mitigation Measures</td><td colspan="4">Risk 1: The beneficiaries of the project are not aware of the results and benefits of the activity
Outreach to communities about the location, use and benefits of the meteorological stations for Antofagasta and Taltal, in territorial roundtables and women's roundtables. (Community relationship and education strategy).
Risk 2: There are no gender equality conditions to participate in the various organized activities and events
Outreach to communities about the location, use and benefits of the meteorological stations for Antofagasta and Taltal, in territorial roundtables and women's roundtables. (Community Relations and Education Strategy).</td></tr>
</table>

Risk identification – Mitigation measures – activity implementation

Installation of automatic meteorological stations in the watersheds of Esmeraldas

According to the project document, Outcome 3 seeks to improve climate monitoring and means to alert the local population. To achieve this objective in the city of Esmeraldas, the "Diagnosis and proposal for the improvement of climate monitoring in Esmeraldas" was carried out. This study was conducted through a consultancy, with the technical support of the National Institute of Meteorology and Hydrology (INAMHI), the Ministry of Environment and Water (MAAE), the Decentralized Autonomous Provincial Government of Esmeraldas (GADPE), and other key actors of climate monitoring in Esmeraldas (academy, Civil Aviation Directorate and National Oceanographic Institute).

Based on the analysis of the diagnosis, considering technical, budgetary, and institutional factors of the main actors of climate monitoring in Esmeraldas, it was concluded that the optimal alternative to improve climate monitoring in Esmeraldas requires consolidating and strengthening a minimum hydrometeorological network that allows the collection of sufficient data to achieve this objective. Achieving this minimum network implies a process in which three phases have been identified for its fulfillment.

- Phase 1: Training and institutional strengthening
- Phase 2: Expansion of the monitoring network.
- Phase 3. Hydrological and meteorological forecasting

Based on a technical and budgetary analysis, the project will support the implementation of the phase 1. In this way, INAMHI will be supported in strengthening its current hydrometeorological network (stations located in the lower and middle basin of the Esmeraldas River, as well as their maintenance and operation.

In this phase, the monitoring network will consist of 15 stations: 8 meteorological, 6 hydrological and 1 pluviometric, to which the project will contribute as follows:

- Repowering of 5 existing automatic stations owned by INAMHI: 2 meteorological and 3 hydrological. The repowering consists of placing a soil moisture level sensor in the meteorological stations and placing a data transmission plan with a periodicity of minutes in the hydrological stations.
- Replacement of 8 existing conventional stations with automatic stations: 6 meteorological and 2 hydrological, owned by INAMHI.
- Installation of 1 new pluviometric station and 1 new automatic hydrological station in San Mateo, as part of the Early Warning System (EWS) of Luis Vargas Torres Island (project result 4), which will be in charge of the Municipality of Esmeraldas.
- Maintenance and operation of all the stations that make up Phase 1.

The following table shows the location of the hydrometeorological stations to be installed and repowered

Table 12. Location of stations in the lower and middle Esmeraldas River basin

Automatic stations currently in operation to be upgraded in phase 1							
Number	**Station type**	**Code**	**Name station**	**Coordinates**		**Geographic location**	**Institution**
				X	**Y**		
2	Meteorological	M0025	La Concordia	680247	9997015	La Concordia Santo Domingo	INAMHI
		M0156	Quinindé	670381	34947	Rosa Zárate Quinindé Esmeraldas	
3	Hydrological	H0177	Quinindé en Quinindé	669394	36411	Rosa Zárate Quinindé Esmeraldas	
		H0170	Guayllabamba AJ Blanco	677958	48450	Malimpia Quinindé Esmeraldas	
		H0168	Esmeraldas DJ Sade	675376	58735	Chura (Chancama) Quinindé Esmeraldas	
	Conventional stations to be exchanged for automatic stations in phase 1						
6	Meteorological	PVM1262	Las Palmas (CELEC)	729789	9964872	Manuel Cornejo Astorga (TANDAPI) Mejía Pichincha	INAMHI
		PVM0327	Chontal Bajo	749067	26683	García Moreno (Llurimagua) Cotacachi Imbabura	
		M1266	San Marcos	716087	17257	Pedro Vicente Maldonado Pichincha	
		PVM1190	San Bernabé	712564	9998168	San Miguel de los Bancos Pichincha	
		PVM0160	El Carmen	674906	9971246	El Carmen Manabí	
		PVM0444	Tabiazo	644475	90538	Tabiazo Esmeraldas	
2	Hydrological	H0138	Blanco DJ Toachi	691211	9990340	Valle Hermoso Sto. Domingo de los Tsáchilas	

		H0173	Teaone AJ Esmeraldas	643837	94483	Tabiazo Esmeraldas	
1	Pluviometric*	PVM0441	San Mateo	652512	98274	San Mateo Esmeraldas	
	New station to be implemented in phase 1						
1	Hydrological *	H1	San Mateo	652547	98241	San Mateo Esmeraldas	INAMHI

Table 13. Evidence Base Identification

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
1. Compliance with the law	1.1. Has the activity prior permission to implementation?	Yes	The competent technical agency is the National Institute of Meteorology and Hydrology (INAMHI). The process and coordination for its implementation has been worked with this institution. In addition, the management model has been developed with key stakeholders in the territory: Decentralized Autonomous Provincial Government of Esmeraldas, the Navy Oceanographic Institute (INOCAR), the General Directorate of Civil Aviation (DGAC) and local universities.
	1.2. Does the activity comply with the national and local technical standards, validate Annex 18?	Yes	As established in Annex 18, the activity complies with the required laws, regulations, standards, procedures and permits. In addition, this activity has been developed jointly with the National Institute of Meteorology and Hydrology (INAMHI), which is the competent technical agency in Ecuador, ensuring proper compliance with all existing regulations in this regard.
2. Access and Equity	2.1. Has the activity identified any marginalized or vulnerable groups among potential activity beneficiaries?	Yes	Among the potential beneficiaries of this activity are the vulnerable groups identified in the Stakeholder Analysis and in the different workshops that have been held in Esmeraldas. Detailed information is provided in Annex 9. The information is also detailed in the Project Document in the section on Vulnerable Groups and Gender Situation.
	2.2. Has the activity identified the existing risk to access to the essential services and rights indicated in the principle?	Yes	Hydrometeorological stations to be installed poses no risk in relation to access to basic services and fundamental rights.

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
	2.3. Has the activity developed stakeholder and local authorities' consultations?	Yes	The activity has been developed jointly with the key actors in climate monitoring in Esmeraldas: INAMHI, Esmeraldas Prefecture, Esmeraldas Municipality, INOCAR, DGAC and local universities (Technical University Luis Vargas Torres and Catholic University of Ecuador - Esmeraldas). In addition, all project activities are shared and validated by the National Technical Committee, where local authorities are included.
	2.4. Has the activity presented a mechanism to ensure participation of communities, marginalized, vulnerable groups, stakeholder and local authorities'?	Yes	The project is provided with a communication and community relationship strategy in Esmeraldas, which includes the participation of all stakeholders. Two participatory workshops were held, one for the diagnosis of the current state of climate monitoring in Esmeraldas and the other for the joint and consensual presentation and selection of the best alternative for strengthening climate monitoring in Esmeraldas and proposal of a network management model. Key stakeholders participated in these workshops. In addition, socializations were made with the communities where the stations of phase 1 of the network will be located, so that the population is aware of its benefits.
3. Marginalized and Vulnerable Groups	3.1. In the influence area of the activity has there been identified the presence of marginalized or vulnerable groups?	Yes	In Annex 9, the Analysis of Key Stakeholders of Esmeraldas addresses and identifies existing vulnerable groups. In the city of Esmeraldas, it has been identified that part of the marginalized population lives in informal settlements. The information is detailed in the Project Document in the section on Vulnerable Groups and Gender Situation. In addition to the vulnerable groups identified in Annex 9 of the project document, other groups were identified in the vicinity where certain hydro-meteorological stations will be installed or upgraded.
	3.2. Has the activity described the characteristics of any marginalized or vulnerable groups, identifying their particular vulnerabilities that would or could make them disproportionately vulnerable to negative environmental or social impacts?	Yes	The project has identified the characteristics of marginalized or vulnerable groups (children, women, the elderly, the disabled, and Chachi communities) in Esmeraldas, as well as in the different parishes where the weather stations to be installed or upgraded are located. The installation of the hydro-meteorological stations does not affect or aggravate the existing vulnerabilities of the identified groups.

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
	3.3. Has the activity put in place under the Communication and Participatory Strategy taking into account vulnerable groups perspective?	Yes	The project is implementing the local communication and participation strategy of Esmeraldas, which emphasizes previously identified vulnerable groups
4. Human Rights	4.1. Not necessary		
5. Gender Equity and Women's Empowerment	5.1. May the activity exclude or hamper a gender group based on legal, regulatory or customary grounds?	No	In Ecuador, a gender group cannot be excluded or hindered for legal, regulatory, or customary reasons
	5.2. Has the activity identified particular vulnerabilities of men and women that would or could make them disproportionately vulnerable to negative environmental or social impacts?	No	The project has identified that there is the same risk for men or women, bearing in mind that both may be harmed in the event of a disaster
	5.3. Has the activity put in place under the Communication and Participatory Strategy taking into account gender perspective?	Yes	The communication and participation strategy has been implemented, considering gender perspective, so that women have a prominent role to ensure that the needs of both women and men are addressed.
6. Core Labour Rights	6.1. Has the activity identified how the ILO core labour standards are incorporated in the implementation of the activity?	Yes	Both the implementing and executing entities of the draft project comply with ILO labor standards and national laws. Any UNDP procurement process follows sustainable financial rules and regulations that include basic working rights.
	6.2. Has the activity implements the common labour arrangements in the sector(s) in which the project will operate?	Yes	The project integrates basic working rights into all actions at their different levels, under mechanisms and laws related to working rights
7. Indigenous Peoples	7.1. Has the activity identified if indigenous peoples are present in the area of influence?	Yes	According to the analysis carried out, it has been identified that there is a population belonging to indigenous groups in the different parishes where the hydro-meteorological stations will be implemented.
	7.2. Has the activity provided a summary of complaints that have been made with respect to the rights of indigenous peoples?	No	No complaints have been received through the complaints and grievances mechanism in place
8. Involuntary Resettlement	8.1. Has the activity identified if physical or economic displacement is required or will occur as a consequence of its implementation?	Yes	Although the activity requires the installation of hydro-meteorological stations, most of them will be in places where there are currently conventional stations that will be replaced by automatic stations, and in the case of the new stations identified, they will be located on public land. The exact location of each of the stations of the proposed hydro-meteorological network is detailed in the document produced by the consultancy.

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
			Therefore, the activity will not require physical or economic displacement for its implementation.
	8.2. Has the activity identified stakeholders whose livelihoods may be affected, directly or indirectly, and if this may lead to resettlement?	Yes	The installation and operation of the hydro-meteorological stations to be installed or upgraded will not affect the livelihoods of the population, much less result in resettlement.
	8.3. Has the activity identified stakeholders whose assets or access to assets may be affected, directly or indirectly, and if this may lead to resettlement and its consequences including indemnification, compensation, etc.	Yes	Due to the characteristics of the activity, installation of hydrometeorological stations, the interested parties will not be affected directly or indirectly, which means that no resettlement or compensation of any kind will be required. The document produced by the consultancy details the exact location of each of the stations of the proposed hydro-meteorological network.
9. Protection of Natural Habitats	Not Necessary		
10. Conservation of Biological Diversity.	10.1. Will the activity implement non-endemic species?	No	Due to the characteristics of the activity, i.e., the purchasing and installation of meteorological stations, it is not related to the implementation of non-endemic species.
11. Climate Change	11.1. Has the activity presented its Carbon Footprint?	No	There is no risk of significant or unjustified increase in greenhouse gases
	11.2. Has the activity presented the Monitoring system of the GHG emissions	No	There is no risk of significant or unjustified increase in greenhouse gases
12. Pollution Prevention and Resource Efficiency	12.1. Has the activity presented the Construction plan and specific monitoring procedure for the construction works including; Water consumption, Fuel consumption, Type of fuel consumption, Raw material consumption, Energy consumption, Solid waste generation, Wastewater / generation (quality of wastewater), Construction waste / debris generation.	No	Due to the characteristics of the activity, i.e., the purchasing and installation of hydrometeorological stations, there is no major construction work associated with the activity. Hydrometeorological stations require only a basic infrastructure work (enclosure) for the safety and protection of meteorological equipment.
13. Public Health	13.1. Has the activity presented the HIA - Health Impact Assessment?	No	Due to the characteristics of the activity, i.e., the purchasing and installation of meteorological stations there are no associated construction or other works that could have an impact on health.
14. Physical and Cultural Heritage	Not Necessary.		
15. Lands and Soil Conservation	Not Necessary.		

Table 14. Mitigation Measures

Template: Mitigation Measures			
Activity: Installation of hydrometeorological stations in Esmeraldas			Date: 22/04/2021
Area of intervention: Esmeraldas	**Responsible of fulfilling the template - Local Technical Coordinator Check:** Verónica Ríos	**Management Coordinator Check:** Nury Bermudez	**Project Unit Check:** UNDP Ecuador
Environmental or social Principle	**Environmental or social risk**	**Mitigation measure**	**Verification Responsible**
Principle 2. Access and Equity	Risk 1. There is a risk that project beneficiaries are not aware of the benefits of the installation and repowering of hydrometeorological stations in Esmeraldas	Mitigation measure 1 Dissemination of the proposed hydro-meteorological monitoring network for Esmeraldas, in a participatory workshop with key stakeholders, including a proposal for a network management model. Mitigation measure 2. Outreach to communities about the location, use and benefits of the hydrometeorological stations for Esmeraldas	Project coordinator in Ecuador, social specialist in Ecuador
Principle 5. Gender Equality and Women's Empowerment	Risk 1. Men or women do not have the same opportunities to participate in the socialization of the hydrometeorological network and the location of the stations to be installed or repowered, because their work schedules or lifestyles are not considered.	Mitigation measure 1. Dissemination of the proposed hydro-meteorological monitoring network for Esmeraldas, in a participatory workshop with key stakeholders, including an equal number of men and women, considering work schedules and lifestyles. Mitigation measure 2. Communication and Public Education Strategy for the city of Esmeraldas considers the participation of vulnerable groups with a gender focus.	Project coordinator in Ecuador, social specialist in Ecuador.
Principle 7. Indigenous People	Risk 1. Indigenous peoples have unequal opportunities to participate in events of socialization of the hydrometeorological network and the stations to be installed and repowered, because their work schedules, lifestyles or languages are not considered.	Mitigation measure 1. Socialization with communities, including representatives of indigenous peoples, about the location, use and benefits of the hydro meteorological stations to be installed, considering their work schedules, lifestyles, and languages.	Project coordinator in Ecuador, social specialist in Ecuador.

Table 15. Executive Resume for Activity

Template: Executive Resume for Activity				
NAME OF THE ACTIVITY: Installation of hydrometeorological stations in Esmeraldas				
Area on intervention: Esmeraldas	**Responsible of fulfilling the template - Local Technical Coordinator Check:** Verónica Ríos	**Management Coordinator Check:** Nury Bermudez	**Project Unit Check:** UNDP Ecuador	**Date:** 22/04/2021
Technical General Description of the Activity:	Regarding the installation of hydro-meteorological stations to improve climate monitoring in Esmeraldas, a technical, financial and institutional analysis was carried out by hiring a consultant who conducted the "Diagnosis and proposal for the improvement of climate monitoring in Esmeraldas", which analyzed the feasibility of acquiring a weather radar and two hydro-meteorological stations, as mentioned in the Project Document. As a result of the analysis, it was determined that in order to improve climate monitoring in Esmeraldas, considering the existing weak operational capacity of the competent institutions, the installed equipment (several of which are not functioning), the scarce resources for maintenance, as well as the historical rainfall data collected, a consolidated and strengthened climate monitoring network is required. The minimum hydrometeorological network needed to improve climate monitoring includes a total of 23 operational stations. To achieve this network, a process has been established through implementation phases. Given the project's existing resources and in compliance with the objective established in the Project Document to improve climate monitoring in Esmeraldas, phase 1 of the proposed network will be developed, which includes the operation of 15 hydrometeorological stations in the middle and lower basin of the Esmeraldas River.			
Fulfillment of the Risk Identification	As this activity is considered USP, the process of reviewing compliance with the 15 environmental and social principles of the Adaptation Fund has been carried out, identifying possible risks in relation to: • There is a risk that project beneficiaries are not aware of the benefits of the installation and repowering of hydrometeorological stations in Esmeraldas • Men or women do not have the same opportunities to participate in the socialization of the hydrometeorological network and the location of the stations to be installed or repowered, because their work schedules or lifestyles are not considered. • Indigenous peoples have unequal opportunities to participate in events of socialization of the hydrometeorological network and the stations to be installed and repowered, because their work schedules, lifestyles or languages are not considered.			
Consultation with the community	Participatory workshops have been held with key climate monitoring stakeholders in Esmeraldas: INAMHI, GADP Esmeraldas, GADM Esmeraldas, INOCAR, DGAC and local universities, to diagnose the current state of climate monitoring and to socialize the alternatives for improving climate monitoring and the proposed monitoring network, in addition to working on the network management model that will provide sustainability in the medium and long term. In addition, INAMHI, as the lead agency for climate monitoring at the national level and strategic partner of the project, has reviewed and validated the results of the consultancy contracted by the project. In addition, socialization sessions were held in the communities where new stations will be installed, where the objectives and importance of the monitoring network were explained.			
Documentation – Evidence Base of Risk Identification	Potential risks were identified by the consultant together with the project team and subsequently analyzed together with technical specialists from the project's partner institutions in Ecuador. Likewise, the results of the socialization with the members of the community where the hydro meteorological stations will be installed were recorded. The results of the risk analysis are part of the final product of the consultancy.			

General / Relevant Mitigation Measures	Risk 1: There is a risk that project beneficiaries are not aware of the benefits of the installation and repowering of hydrometeorological stations in Esmeraldas • Dissemination of the proposed hydro-meteorological monitoring network for Esmeraldas, in a participatory workshop with key stakeholders, including a proposal for a network management model. • Outreach to communities about the location, use and benefits of the hydrometeorological stations for Esmeraldas. Risk 2: Men or women do not have the same opportunities to participate in the socialization of the hydrometeorological network and the location of the stations to be installed or repowered, because their work schedules or lifestyles are not considered. • Dissemination of the proposed hydro-meteorological monitoring network for Esmeraldas, in a participatory workshop with key stakeholders, including an equal number of men and women, considering work schedules and lifestyles. • Communication and Public Education Strategy for the city of Esmeraldas considers the participation of vulnerable groups with a gender focus. Risk 3: Indigenous peoples have unequal opportunities to participate in events of socialization of the hydrometeorological network and the stations to be installed and repowered, because their work schedules, lifestyles or languages are not considered. • Socialization with communities, including representatives of indigenous peoples, about the location, use and benefits of the hydro meteorological stations to be installed, considering their work schedules, lifestyles, and languages.

Risk identification – Mitigation measures – activity implementation

Bonilla Ravine Alluvial Control Construction Work

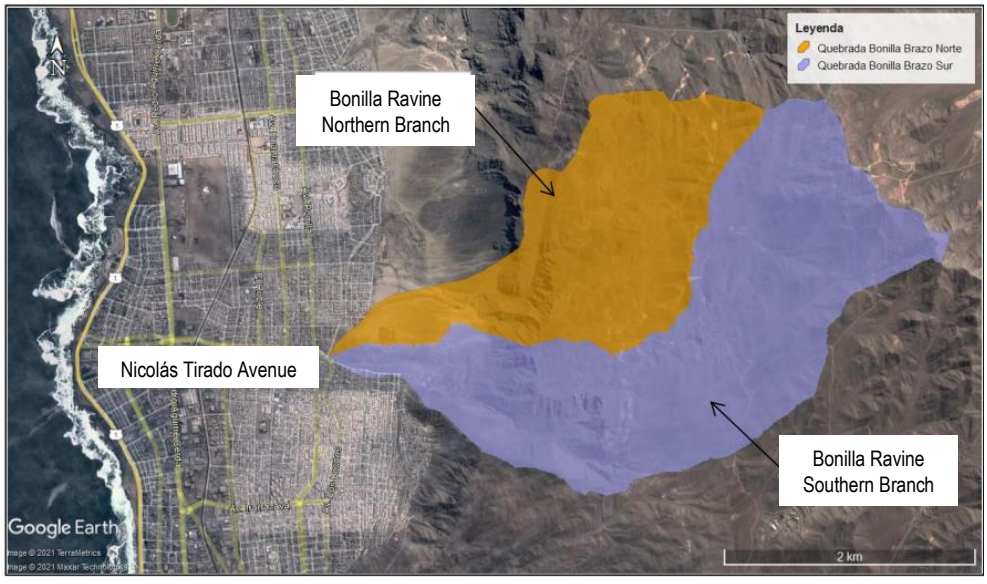
Component 1 of the Project is focused on priority actions to increase resilience in three cities. To achieve this, the construction designs of the protection works at Bonilla Ravine (located in Antofagasta-Chile) must be updated to carry out a first construction stage.

The current designs (first carried out in 2000) were updated by the Project at detail engineering level of the alluvial control works on Bonilla Ravine, incorporating the current topographic and soil conditions of the ravine, as well as hydraulic, geotechnical and structural criteria and variables that take account of future climate scenarios and the partial construction of infrastructure.

In addition, a methodology was developed to project the hydrometeorological variables that determine, at the same time, the variables of work design, carrying out the design for a 100-year plus return period, considering the climate projection for the RCP8.5 [4] (Representative Concentration Pathway, RCP by its initials in English, in W/m2) unfavorable scenario, in the design of more resilient infrastructure works to climate change.

Location

The study area corresponds to the inflow river basins of the Northern and Southern branches of Bonilla Ravine, located in the Antofagasta region, City of Antofagasta, with approximate geographical coordinates 23º35' latitude and 70º22' longitude. Bonilla Ravine has a total drainage area of 8,89 km^2, of which 3.25 km^2 correspond to the Northern branch basin inflow, and 5,64 km^2 to the Southern branch inflow area . The inflow basins are displayed in the next Figure.



Bonilla Ravine Inflow River Basins

[4] A Representative Concentration Pathway (RCP) is a greenhouse gas concentration (not emissions) trajectory adopted by the IPCC. Four pathways were used for climate modeling and research for the IPCC Fifth Assessment Report in 2014. The pathways describe different climate futures, all of which are considered possible depending on the volume of greenhouse gases (GHG) emitted in the years to come. RCP 8.5 is the most unfavorable case within the 4 considered scenarios.

Table 16. Evidence Base Identification

Template: Identification of base evidence			
Environmental and Social Principles checklist	**Questions**	**YES/NO**	**Evidence base identification**
1. Compliance with the law	1.1. Has the execution of the activity been previously authorized?	Yes	Before the start of the construction work, all the permits required by law for this type of work will be obtained. The competent technical entity is the Ministry of Public Works of Chile through the Directorate of Hydraulic Works.
	1.2. Does the activity comply with the national and local technical regulations; does it validate Annex 18?	Yes	In accordance with what is established in Annex 18, the activity complies with the law, regulations, standards, procedures and required permits. In addition, this activity has been performed in collaboration with the Ministry of Public Works, which is the competent technical authority in Chile, thus guaranteeing the adequate compliance of the existing regulations thereof.
2. Access and Equity	2.1. Has the activity identified any marginalized or vulnerable group among the potential beneficiaries of the activity?	Yes	Among the potential beneficiaries of this activity, there are vulnerable groups in zones close to the location of the works, identified during the update of the work designs. Along the study, citizen participation meetings were held, introducing the Project to this identified group and to all the potential beneficiary stakeholders.
	2.2. Has the activity identified the existing risk to access to essential services and rights specified in the principle?	No	The construction of the alluvial control works does not represent any risk in relation to the basic services and fundamental rights.
	2.3. Has the activity consulted with the stakeholders and local authorities?	Yes	The activity has been developed in conjunction with the key stakeholders, i.e., the Ministry of Public Works, through the Directorate of Hydraulic Works, the Municipality of Antofagasta, and the Ministry of the Environment. All the Project activities are socialized and validated by the National Technical Committee, where the local authorities are included. Moreover, socializations have been performed with the neighborhood coordinators through citizen participation meetings.
	2.4. Has the activity presented a mechanism to ensure the participation of the community, the marginalized and vulnerable groups, the relevant stakeholders and the local authorities?	Yes	Territorial and citizen participation roundtables have been developed, as well as socialization workshops with the beneficiary community to inform the population about the benefits of the work and to raise awareness on the care thereof, as well as its importance in front of a possible alluvium, which has already affected the site on previous occasions.

Template: Identification of base evidence			
Environmental and Social Principles checklist	**Questions**	**YES/NO**	**Evidence base identification**
3. Marginalized and vulnerable groups	3.1. In the area of influence of the activity, has the presence of marginalized or vulnerable groups been identified?	Yes	No marginalized or vulnerable groups have been identified at the site where the works will be performed. Along the areas next to the Ravines, it has been identified that part of the vulnerable population lives in informal settlements. The information is detailed in the Final Report of the alluvial control work design update in the "Population and Campsites" section.
	3.2. Has the activity described the characteristics of any marginalized or vulnerable group, identifying their particular vulnerabilities that would or could make them disproportionately vulnerable to adverse social or environmental impacts?	Yes	The Project has identified the characteristics of the marginalized or vulnerable groups (boys, girls, women, elderly, disabled and campsites), which are located in surrounding sectors of Bonilla Ravine. The information is included in the final report of the alluvial control work design update in the Population and Campsites section. The construction of the alluvial control works does not affect or aggravate the pre-existing vulnerabilities of the families that inhabit the zone; on the contrary, it generates more resilience by providing the works that could help to save lives in the event of an alluvium and the knowledge acquired thanks to the development of the study.
	3.3. Has the activity been implemented under the Communication and Participation Strategy considering the perspective of vulnerable groups?	Yes	The Project is executing the Antofagasta communication and public information strategy, and specifically the one implemented at Bonilla Ravine, which considers the previously identified vulnerable groups.
4. Human rights	4.1. Not necessary		
5. Gender Equity and Women's Empowerment	5.1. Can the activity interfere with a gender group due to legal, regulatory or customary issues?	No	In Chile it is not possible to exclude or interfere with a gender group for legal, regulatory, or customary motives.
	5.2. Has the activity identified specific vulnerabilities of men and women that would or could make them disproportionately vulnerable to adverse social or environmental impacts?	Yes	Specific vulnerabilities for men and women have been identified. This has been pointed out in the citizen participation annex of the alluvial control work design update report. Overall, said document mentions that the greatest percentage of population related to the Project are women, most of them heads of household, and a high percentage of them are taking care of their families by themselves, while the men are working away from the area of influence of the Project.
	5.3. Has the activity been developed within the framework of the Communication and Participation Strategy considering the gender perspective?	Yes	The Project has implemented actions related to the communication and participation strategy, which incorporates gender perspective. For this activity, the Project will develop a specific socialization process directed to women, and to the overall population, collecting their concerns before the onset of the construction.

Template: Identification of base evidence			
Environmental and Social Principles checklist	**Questions**	**YES/NO**	**Evidence base identification**
			The communication and participation strategy has been implemented through territorial roundtables directed to the whole community of Bonilla Ravine, on the importance of alluvial control. Within the framework of the citizen participation processes, gender perspective has been raised, so that women are provided with a key role, thus collecting their vision within other activities of the Project (evacuation plans, educational strategy, narrative initiative, and so on) to make sure the needs of men and women are covered.
6. Fundamental Labour Rights	6.1. Has the activity identified how to incorporate fundamental work regulations of the OIT in its implementation?	Yes	Both the implementing and executing entities of the preliminary Project comply with the OIT work regulations and the national laws. Any UNDP procurement process follows the sustainable financial rules and regulations that include fundamental labour rights.
	6.2. Does the activity implement the common work arrangements established for the area(s) where the project will operate?	Yes	The Project integrates the basic labour rights in all the actions at their different levels, within the framework of mechanisms and laws related to the labour rights subscribed by the Labour Code. (DFL1).
7. Indigenous People	7.1. Has the activity identified if the Indigenous Peoples are present in the area of influence?	No	N/A (There are no Indigenous communities in the area where the works will be located).
	7.2. Has the activity provided with a summary of the complaints that have been performed with respect to the rights of Indigenous Peoples?	No	N/A (There are no Indigenous communities in the area where the works will be located)
8. Involuntary resettlement	8.1. Has the activity identified if a physical or economic displacement is necessary or will be performed as a result of its implementation?	No	The activity has identified that no resettlement nor displacement is necessary as a result of the implementation for the population, as there are no population settlements in the territory where the construction works will be executed.
	8.2. Has the activity identified the stakeholders whose livelihoods could be affected, directly or indirectly, and if this could lead to resettling?	No	There are no population settlements in the territory where the works will be performed, so there is no affectation.
	8.3. Has the activity identified the stakeholders whose assets or access to their assets can be affected, directly or indirectly, and if this could lead to resettling and its consequences, including indemnification, compensation etc.?	No	During the construction of the works, the parts won't be directly affected, so it won't be necessary to carry out any resettlements or indemnifications.

Template: Identification of base evidence			
Environmental and Social Principles checklist	**Questions**	**YES/NO**	**Evidence base identification**
9. Protection of Natural Habitats	Not necessary	No	N/A
10. Conservation of Biological Diversity	10.1. Will the activity involve non-endemic species?	No	N/A The Environmental Relevance Report of the update study demonstrates that the original Project, and the update thereof, does not generate a significant effect upon the biological diversity of the area to be intervened. As specified in the current DIA, the Project is located within an area with diverse types of interventions, which do not represent any biotic particularity.
11. Climate change	11.1. Has the activity presented its Carbon Footprint?	No	According to the Environmental Relevance Report of the update study, the activity shall comply with what is established in the Updated Applicable Environmental Standards, described therein, on Atmospheric Emissions.
	11.2. Has the activity presented the GHG emissions Monitoring System?	No	According to the Environmental Relevance Report of the update study, the activity shall comply with what is established in the Updated Applicable Environmental Standards, described therein, on Atmospheric Emissions.
12. Prevention of Contamination and efficiency of resources	Has the activity presented the Construction Plan and the specific follow-up procedure for the construction works, including Water consumption; Fuel consumption; Type of fuel consumption; Raw material consumption; Power consumption; Generation of solid residues; Wastewater/ generation (wastewater quality); Construction waste / debris generation.	Yes	The final report includes the design of the alluvial control work and the planning of the construction, the technical specifications that shall include the procedures for the construction works and comply with the overall conditions for work service contracts as established by UNDP and by the regulations of the Directorate of Hydraulic Works Likewise, within the final design report, the Applicable Environmental Standards is detailed in the Environmental Relevance Annex, where the respective parameters on contamination and the compliance thereof are specified.
13. Public Health	13.1. ¿Has the activity presented the HIA – Health Impact Assessment?	Yes	According to the Environmental Relevance Report, including the final report, the Project or activity does not cause any risk for the health of the population, as the quantity and quality of effluents, emissions or residues are adjusted to the current standards.
14. Physical and Cultural Patrimony	Not necessary.		

Template: Identification of base evidence			
Environmental and Social Principles checklist	**Questions**	**YES/NO**	**Evidence base identification**
15. Conservation of Land and Soil	Not necessary.		

Table 17. Mitigation Measures

Template: Mitigation measures			
Activity: Construction of the first stage of alluvial control works on Bonilla Ravine in the City of Antofagasta			Date: 05/12/2022
Intervention Area:	**Responsible for filling the template - Local Technical Coordinator:** Anahí Encina	**Management Coordinator:** Nury Bermúdez	**Project Unit verification:** Juan Monteros, AdaptaClima Proj. Monitoring
Environmental or social principle	**Environmental or social risk**	**Mitigation measure**	**Responsible for Verification**
Principle 5. Gender Equity and Women's Empowerment	Risk 1. It has been identified that in the areas surrounding the works there is a greater female population and, due to their social conditions, they may be affected by the construction of the work. According to the citizen participation report (PAC), women mostly spend time at home looking after their families, so they will be exposed, on a daily basis, to the traffic flow caused by the works, as well as earth and machinery movement, among others.	Mitigation Measure 1. Diffusion of the construction program, presentation of the construction plan and the Importance of the alluvial control works to save lives in the case of a climate event. Mitigation Measure 2. There will be women's roundtables training them on disaster risk reduction and the Importance of the alluvial control works.	Coordinator of the Chile Project, Chile Social Specialist, Consultant Engineer on Climate Change from the contracted Construction Company.
Principle 6. Fundamental Labour Rights	Risk 1. There is a risk that the operators on the works suffer some type of accident in the course of construction, or by an eventual accident, i.e., rain and/or earthquake, which may occur during the construction period.	Mitigation Measure 1. The contracted construction company shall be responsible for the preparation and proper application of an occupational risk management plan throughout the construction process. This will be requested in the bidding process of the work.	The Project team will verify the existence of the contracted company's occupational risk management plan. DOH and the contracted construction company will verify full compliance with the occupational risk management plan.
Principle 12. Contamination prevention and resource efficency	Risk 1. The generation of waste and pollutants during the construction of the alluvial control infrastructure.	Mitigation Measure 1. The contractor must comply with what is specified in the Environmental Relevance Report in accordance with the Updated	Contractor Team, i DOH Inspector to supervise.

Template: Mitigation measures			
Activity: Construction of the first stage of alluvial control works on Bonilla Ravine in the City of Antofagasta			Date: 05/12/2022
Intervention Area:	**Responsible for filling the template - Local Technical Coordinator:** Anahí Encina	**Management Coordinator:** Nury Bermúdez	**Project Unit verification:** Juan Monteros, AdaptaClima Proj. Monitoring
Environmental or social principle	**Environmental or social risk**	**Mitigation measure**	**Responsible for Verification**
		Applicable Environmental Standards described in said report, which indicates the respective procedures on contamination and the compliance thereof. Mitigation Measure 2. The contractor shall submit the construction plan and the specific monitoring procedures for construction works, which include: • Water consumption. • Fuel consumption. • Type of fuel consumption • Raw material consumption. • Power consumption. • Solid waste generation • Wastewater / generation (wastewater quality). • Construction waste / debris generation.	

Table 18. Executive Resume for Activity

Template: Executive Resume for Activity				
NAME OF THE ACTIVITY: Construction of the first stage of alluvial control works on Bonilla Ravine in the City of Antofagasta				
Intervention area: Antofagasta	**Responsible for filling the template - Local Technical Coordinator:** Anahí Encina	**Management Coordinator:** Nury Bermúdez	**Project Unit Verification:** UNDP Chile	**Date:** 05/12/2022
General Technical Description of the Activity:	The solution developed by the Project consists of retention works of the solid material ferried by the alluviums, slope stabilization works, channeling and canals, located in the basins of the Northern and Southern branches of Bonilla Ravine and its common final section. The following are the elements that make up the overall work: Retention wall, channeling parapets, earth walls and settling pools, Northern and Southern unitary channels, slope stabilizing walls, confluence work.			
Risk Identification Compliance :	• Greater female population in the areas surrounding the works that, due to their social conditions, could be affected by the construction of the work. According to the citizen participation report (PAC), women mostly spend time at home looking after their families, so they will be exposed, on a daily basis, to the traffic flow caused by the works, as well as earth and machinery movement, among others. • The operators on the works could suffer some type of accident in the course of construction, or by an eventual accident, i.e., rain and/or earthquake, which may occur during the construction period. • The generation of waste and pollutants during the construction of the alluvial control infrastructure.			
Consultation with the community	During the design update study stage of the works several citizen participation meetings were held, in addition to socialization workshops. The citizen participation meetings were aimed at explaining the works that will be carried out, the benefits that alluvial control works will provide in the event of an alluvium, the location of the works and the description of each of them, and the doubts exposed by the community were clarified. On the other hand, the specific concerns of the population were collected in relation to the construction of the works. During the construction period, the construction company will carry out different citizen participation meetings, firstly to inform the community that the construction works are to start, and additionally during the construction to show the progress of the work.			
Documentation– Risk Identification Evidence Base	The risks identified were addressed as part of the technical-financial analysis carried out by the Project in conjunction with the Directorate of Hydraulic Works of Antofagasta for the implementation of the activity. Moreover, the study to update the design of the alluvial control work is available, which was prepared by the consultant.			

General/Relevant Mitigation Measures	Risk 1. Mitigation Measure 1. Diffusion of the construction program, presentation of the construction plan and the Importance of the alluvial control works to save lives in the case of a climate event. Mitigation Measure 2. There will be women's roundtables training them on disaster risk reduction and the Importance of the alluvial control works. Risk2. Mitigation Measure 1. The contracted construction company shall be responsible for the preparation and proper application of an occupational risk management plan throughout the construction process. This will be requested in the bidding process of the work. Risk 3. Mitigation Measure 1. The contractor must comply with what is specified in the Environmental Relevance Report in accordance with the Updated Applicable Environmental Standards described in said report, which indicates the respective procedures on contamination and the compliance thereof. Mitigation Measure 2. The contractor shall submit the construction plan and the specific monitoring procedures for construction works, which include: • Water consumption. • Fuel consumption. • Type of fuel consumption. • Raw material consumption. • Power consumption. • Solid waste generation. • Wastewater / generation (wastewater quality). • Construction waste / debris generation.

Risk identification – Mitigation measures – activity implementation

Bonilla Ravine Alluvial Control Construction Work

The Project Reducing Climate vulnerability and flood risk in coastal urban and semi urban areas in cities in Latin America and the Caribbean – Adaptaclima, is aimed at reducing the vulnerability to climate risks that cause floods, landslides, and mud flows in three coastal cities by mainstreaming a risk-based approach, building adaptation, collaboration and networking, and developing a culture of adaptation.

In component 1, result 4, the Project establishes the improvement of the mechanisms to mitigate floods through the implementation of an early alert system in Luis Vargas Torres Island, located in the City of Esmeraldas. Its objective is to provide an early alert to the local population located in flood-susceptible areas, as well as strengthen the participation of local groups, promoting a fast and effective response to floods, safeguarding human lives and physical assets. The pilot will be used as an exercise for learning and demonstration.

Luis Vargas Torres Island is a high-risk zone for floods. In January 2016, 95% of the island was flooded and the population had to be evacuated. There are no precise figures, but it is estimated that approximately 6,000 families live on the island.

The Project is provided with the design of the early alert system (SAT for its Spanish acronym), which is being implemented. During the SAT early alert system design stage, it was estimated that, for the houses that are located on the Southeastern area of the island, the fastest evacuation route is the one that crosses the two bridges, the first one between Luis Vargas Torres Island with Roberto Luis Cervantes Island and the second one between the Roberto Luis Cervantes Island and the continental zone of the City of Esmeraldas at the level of the Margarita Cortés Educational Unit. They are provided with illumination of approximately 110m and 80m, respectively. The bridges were built over 40 years ago with a mixed structure: metallic tensors, concrete towers, and wooden beams. Along this time, it has been exposed to weathering, to the crossing of motorcycles and vandalic acts, which have caused its deterioration.

In 2018, the Municipality of Esmeraldas carried out the design of the reinforcement of the two bridges, considering metallic tensors, concrete towers and wood and steel beams. In 2019, the first bridge was strengthened, but due to the lack of budget, the second one was not strengthened.

Currently, the evacuation route to leave the islands towards the continental area of the city is not safe, especially considering that the second bridge does not provide the required conditions to guarantee the evacuation of people, mainly vulnerable groups, pregnant women, children, the elderly and the handicapped, due to its poor condition.

For the Early Alert System (SAT) to work, the structural reinforcement of this second bridge is required.

Current state of the pedestrian bridge

In this sense, the AdaptaClima Project conducted the structural evaluation and update of the design of the pedestrian bridge that joins Roberto Luis Cervantes Island with the continental zone of the City of Esmeraldas, which is the main evacuation route of the SAT against floods at the Luis Vargas Torres Island, with the aim of reconstructing it.

The pedestrian bridge is located in the C42 crossroad of Bolívar street, a few meters away from the Red Cross in the City of Esmeraldas. The pedestrian bridge connects Roberto Luis Cervantes Island with the continental zone of the City of Esmeraldas.

The referential location coordinates are as follows:

Axis	X	Y
1 (start)	650325	10105164
2	650326	10105161
3	650413	10105194
4	650412	10105197

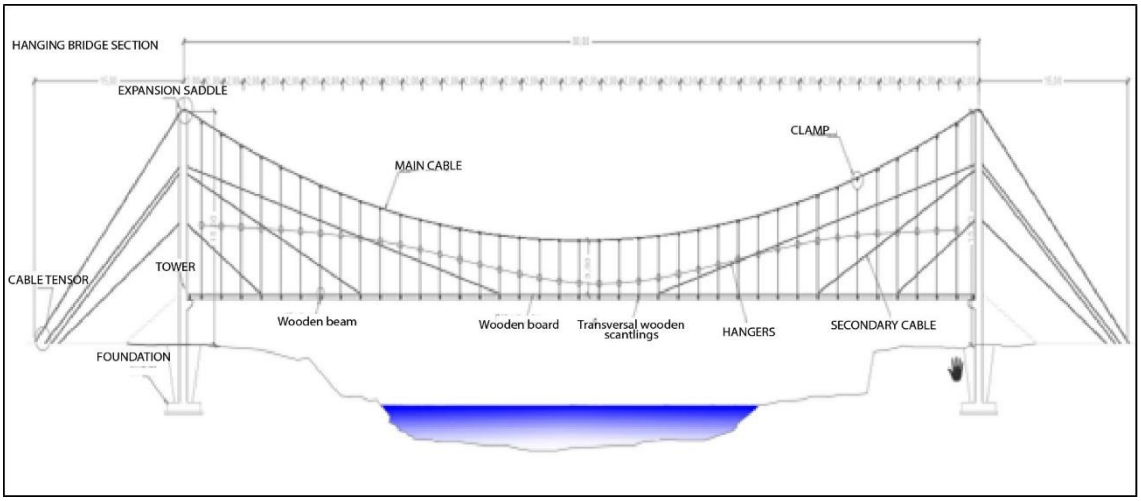
Geographical coordinates of the pedestrian bridge (WGS84 Zona 17S)

Georeferenced image of the bridge that connects Roberto Luis Cervantes Island with the continental area.

The proposal for the structural reinforcement of the bridge includes the reinforcement of the bridge piers with reinforced concrete, the readjustment of the cable crossbars that are part of the bridge, and the collocation of the wooden structure and the wooden board.

The pedestrian bridge has been configured as a wooden and concrete structural system. It is composed of rectangular beams retained by straps (cables) and it is supported on the tower pillars on the extremes, which lie on isolated plinths, transferring the charges to the ground.

The lights serve as articulated beams, secured by cables and, on their extremes, they are provided with concrete brackets, which, in turn, provide the charge to the foundation system.



Bridge design proposal

Once the environmental and construction permits issued by the Ministry of the Environment, Water and Ecological Transition and the Municipality of Esmeraldas respectively are obtained, and the bidding process has been carried out based on UNDP standards, the work for the structural reinforcement of the bridge will be executed.

Compliance of the social and environmental principles of the Adaptation Fund

Being a work that is financed by the Project, through UNDP execution and CAF implementation, and which has received funds from the Adaptation Fund (AF), the compliance with the 15 environmental and social principles established by the AF is required.

To guarantee that this activity complies with the environmental and social principles from the Adaptation Fund, the risk identification process, mitigation measures and implementation activities have been carried out, according to the precepts established in the Environmental and Social Management Plan (ESMP).

Table 19. Evidence Base Identification

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
1. Compliance with the law	1.1. Has the activity prior permission for implementation?	Yes	Before initiating a construction and reinforcement work, all the permits Will be obtained by law for this type of works, i.e., the construction permit from the GADC Esmeraldas and the environmental certification from the MAATE. According to the national regulation, this work is considered as low impact.
	1.2. Does the activity comply with the national and local technical standards, validate Annex 18?	Yes	Based on what has been established in Annex 18, the activity complies with the laws, regulations, standards, procedures and permits required.
2. Access and Equity	2.1. Has the activity identified any marginalized or vulnerable groups among potential activity beneficiaries?	Yes	Vulnerable groups are among the potential beneficiaries of this activity, identified in the stakeholder analysis and in the different workshops that have been carried out in Esmeraldas. The information is detailed in Annex 9. In the same way, the information is detailed in the Project document in the Vulnerable Group and Gender Situation Section.
	2.2. Has the activity identified the existing risk to access to the essential services and rights indicated in the principle?	Yes	The reinforcement of the pedestrian bridge does not represent any risk with relation to the access to basic services and fundamental rights. The reinforcement work of the bridge will limit the circulation of this point. It is estimated that the works will last three months.
	2.3. Has the activity developed stakeholder and local authorities' consultations?	Yes	The activity has been developed in conjunction with the key stakeholders, i.e., the Municipality of Esmeraldas and the Ministry of the Environment Water and Ecological Transition.

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
			All Project activities are socialized and validated by the National Technical Committee, where local authorities are included. In addition, the chief officers of Luis Vargas Torres and Roberto Luis Cervantes Islands have been informed, and socialization meetings have been planned with the beneficiary communities of both islands.
	2.4. Has the activity presented a mechanism to ensure the participation of communities, marginalized, vulnerable groups, stakeholders and local authorities?	Yes	The Project is provided with a communicational and community relation strategy in Esmeraldas, which includes the participation of all the interest groups. Several socialization workshops will be developed with the beneficiary community, enabling the population to know the benefits of the work and to create an awareness of its care, as well as its importance as an evaluation route for flooding and other emergencies.
3. Marginalized and Vulnerable Groups	3.1. In the influence area of the activity has the presence of marginalized or vulnerable groups been identified?	Yes	In Annex 9, in the Analysis of key stakeholders in Esmeraldas, the existing vulnerable groups are approached and identified. In the City of Esmeraldas, it has been identified that part of the marginalized population lives in informal settlements. The information is detailed in the Project Document in the Vulnerable Group and Gender Situation Section.
	3.2. Has the activity described the characteristics of any marginalized or vulnerable groups, identifying the particular vulnerabilities that would or could make them disproportionately vulnerable to negative environmental or social impacts?	Yes	The Project has identified the characteristics of the marginalized or vulnerable groups (boys, girls, women, elderly, disabled and Chachi communities) from Esmeraldas, including Luis Vargas Torres and Roberto Luis Cervantes Islands. The reinforcement of the pedestrian bridge is a minor work that does not affect or aggravate the pre-existing vulnerabilities of the families that inhabit the zone; moreover, it enables a greater resilience by having a quality access with the continental zone.
	3.3. Has the activity put in place, under the Communication and Participatory Strategy, vulnerable group perspective?	Yes	The Project is executing the communication and public education strategy in Esmeraldas, which emphasizes the previously identified vulnerable groups.
4. Human Rights	4.1. Not necessary		
5. Gender Equity and Women's Empowerment	5.1. May the activity exclude or hamper a gender group based on legal, regulatory or customary reasons?	No	In Ecuador it is not possible to exclude or hamper a gender group for legal, regulatory or customary reasons.
	5.2. Has the activity identified particular vulnerabilities of men and women		If specific vulnerabilities have been identified for men and women during the construction of the

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
	that would or could make them disproportionately vulnerable to negative environmental or social impacts?	Yes	bridge, women, NNA and elderly persons that circulate with more frequency in the zone, to carry out their daily activities, will be limited in their accessibility.
	5.3. Has the activity put in place, under the Communication and Participatory Strategy, gender perspective?	Yes	The Project has actions referred in the communication and participation strategy, considering the gender perspective. For this activity, the Project will carry out a specific socialization process directed to women, NNA and all the population in general gathering their concerns before the start of the construction.
6. Core Labour Rights	6.1. Has the activity identified how the ILO Core Labour Standards are incorporated in the implementation of the activity?	Yes	Both the implementing and executing entity of the Project follow the ILO Labour Standards and the national laws. Every UNDP procurement process follows sustainable financial standards and regulations that include basic labour rights.
	6.2. Has the activity implemented the Common Labour Arrangements in the sector(s) in which the project will operate?	Yes	The Project integrates basic labour rights in all the actions along its different levels, under the framework of mechanisms and laws related to labour rights (Work Direction Organic Law)
7. Indigenous Peoples	7.1. Has the activity identified if Indigenous Peoples are present in the area of influence?	Yes	Based on the analysis carried out, no Indigenous population has been identified in the zone of intervention (Roberto Luis Cervantes Island and southeast of Luis Vargas Torres Island) (installation site of the pedestrian bridge)
	7.2. Has the activity provided a summary of complaints that have been made with respect to the rights of Indigenous Peoples?	Yes	No Indigenous Peoples are found in the zone of intervention.
8. Involuntary Resettlement	8.1. Has the activity identified if physical or economic displacement is required or will occur as a consequence of its implementation?	Yes	The activity has identified that no relocation nor displacement is required to carry out the implementation.
	8.2. Has the activity identified stakeholders whose livelihoods may be affected, directly or indirectly, and if this may lead to resettlement?	Yes	Temporary affectations to free mobility of people have been identified during the reinforcement works, which could temporarily affect the livelihoods of the population in the zone, yet this does not lead to the need of resettlement. It is estimated that the bridge will be disabled for the direct passage to the city for approximately three months while the works are being performed.
	8.3. Has the activity identified stakeholders whose assets or access to assets may be affected, directly or indirectly, and if this may lead to resettlement and its consequences including indemnification, compensation, etc.	Yes	Due to the characteristics of the activity, i.e., the reinforcement of the pedestrian bridge, the interested parties will not be directly affected, which implies that it won't be necessary to carry out resettlements or indemnifications of any kind. It has been identified that the temporary restriction to free circulation over the bridge can cause an

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
			indirect affectation to the transport of goods between the continent and Roberto Luis Cervantes Island and vice versa.
9. Protection of Natural Habitats	Not Necessary		
10. Conservation of Biological Diversity.	10.1. Will the activity encourage non-endemic species?	No	Due to the characteristics of the activity, i.e., reinforcement of the pedestrian bridge, it is not related to the incorporation of non-endemic species.
11. Climate Change	11.1. Has the activity presented its Carbon Footprint?	No	There is no risk of a significant or non-justified increase of greenhouse gas.
	11.2. Has the activity presented the Monitoring system of the GHG emissions	No	There is no risk of a significant or non-justified increase of greenhouse gas.
12. Pollution Prevention and Resource Efficiency	12.1. Has the activity presented the Construction plan and specific monitoring procedure for the construction works, including Water consumption, Fuel consumption, Type of fuel consumption, Raw material consumption, Energy consumption, Solid waste generation, Wastewater / generation (quality of wastewater), Construction waste / debris generation.	Yes	The bridge reinforcement work will present the construction plans, the technical specifications that will be required, the procedure for the construction works, and it will be required to comply with the general conditions for service contracts of works based on what is established in UNDP's standards.
13. Public Health	13.1. Has the activity presented the HIA - Health Impact Assessment?	No	Due to the characteristics of the activity, catalogued as low impact work by the Ministry of the Environment, Water and Ecological Transition of Ecuador, a Health Impact Assessment is not required.
14. Physical and Cultural Heritage	Not Necessary.		
15. Land and Soil Conservation	Not Necessary.		

Table 20. Mitigation Measures

Template: Mitigation Measures			
Activity: Structural reinforcement of the pedestrian bridge connecting Roberto Luis Cervantes Island with the continental zone of the City of Esmeraldas			Date: 12/09/2022
Area on intervention: Esmeraldas	**Responsible of filling the template - Local Technical Coordinator Check:** Verónica Ríos	**Management Coordinator Check:** Nury Bermudez	**Project Unit Check:** Juan Monteros, Adaptaclima Proj. Monitoring
Environmental or social Principle	**Environmental or social risk**	**Mitigation measure**	**Verification Responsible**
Principle 2. Access and Equity	Risk 1. The inhabitants of the zone will be temporarily limited to move along freely over the bridge while the reinforcement works are in place (the estimate is three months)	Mitigation measure 1. Socialization through workshops and communication and public education strategy implementation. Mitigation measure 2. The population will be adequately informed, and the alternate route to access the continent will be marked. Mitigation measure 3. Other measures could be implemented to mitigate the impact, especially for vulnerable population, such as transport availability.	Social technical
Principle 5. Gender Equality and Women's Empowerment	Risk 1. Men and women in the community do not have the same opportunities to participate in the socialization workshops, as their work schedules or lifestyles are not considered.	Mitigation measure 1. Diffusion of the reinforcement proposal of the pedestrian bridge, through participatory workshops with the beneficiary community, including an equal number of men and women and considering work schedules, lifestyles and differentiated needs. Mitigation measure 2. During the execution of the works, the established measures for minimizing the impact of the bridge accessibility restrictions will be monitored to reduce any specific impact among women and vulnerable groups.	Project Coordinator in Ecuador, Social specialist in Ecuador, Contracted construction firm
Principle 6. Core Labour Rights	Risk 1. Men and women hired for the work are exposed to work-related accidents during the bridge reinforcement construction process.	Mitigation measure 1. The contracted construction firm will be responsible for the elaboration and correct application of the Occupational Risk Management Plan throughout the construction process. Mitigation measure 2. The contracted auditor will ensure the application and compliance of the Occupational Risk Management Plan throughout the construction process.	Contracted construction firm
Principle 8. Involuntary Resettlement	Risk 1. Temporary affectations have been identified to free mobility of the people during the reinforcement works, which could	Mitigation measure 1. Socialization and temporary signaling of the alternative routes and transfer times. Mitigation measure 2.	Project coordinator in Ecuador, Social Specialist in Ecuador

Template: Mitigation Measures			
Activity: Structural reinforcement of the pedestrian bridge connecting Roberto Luis Cervantes Island with the continental zone of the City of Esmeraldas			Date: 12/09/2022
Area on intervention: Esmeraldas	**Responsible of filling the template - Local Technical Coordinator Check:** Verónica Ríos	**Management Coordinator Check:** Nury Bermudez	**Project Unit Check:** Juan Monteros, Adaptaclima Proj. Monitoring
Environmental or social Principle	**Environmental or social risk**	**Mitigation measure**	**Verification Responsible**
	temporarily affect the livelihoods of the inhabitants of the zone.	To minimize this impact, a previous communication process will be carried out with the inhabitants of Roberto Luis Cervantes Island and transport will be offered in specific cases, whenever vulnerable groups are involved.	

Table 21. Executive Resume for Activity

Template: Executive Resume for Activity				
NAME OF THE ACTIVITY: Structural reinforcement of the pedestrian bridge connecting Roberto Luis Cervantes Island with the continental zone of the City of Esmeraldas				
Area on intervention: Esmeraldas	**Responsible of filling the template - Local Technical Coordinator Check:** Verónica Ríos	**Management Coordinator Check:** Nury Bermudez	**Project Unit Check:** UNDP Ecuador	**Date:** 12/09/2022
General Technical Description of the Activity:	The pedestrian bridge is composed by a wooden and concrete structural system. It is composed of rectangular beams retained by straps (cables) and it is supported on tower columns on the extremes, which lie on isolated plinths, transferring the charges to the ground. The lights behave as articulated beams, secured by cables and, on their extremes, they are provided with concrete brackets, which, in turn, provide the charge to the foundation system. The structure of the board is new, and it is composed by wooden scantlings. The width of the board is 2.45 m in total, with a net width of 2.00 meters for pedestrians. Rails have been placed on the borders of the bridge. The rails will be elaborated with stainless steel pipelines, which will be anchored to the wood trough anchor bolts. The main board clamping elements will be kept, and a cable will be added on each side of the board. In addition, new secondary cables will be added to ensure the level of service that is required. The support tensors, located on the lower part of the bridge board, will be kept once they have been cleaned to aid the board in supporting the deformations in case of non-previewed charges. The piers that constitute the bridge clamping towers will be reinforced. The dimensions of the anchorage chambers will be kept, and a protection threading will be added, which in turn will serve as an additional weight for the extra stress that could arise.			

Fulfillment of the Risk Identification	The compliance of the Adaptation Fund environmental and social principles has been reviewed. The following risks were identified: • The inhabitants of the zone will be temporarily limited to move along freely over the bridge while the reinforcement works are in place. (estimated time, three months) • Men and women in the community do not have the same opportunities to participate in the socialization workshops, as their work schedules or lifestyles are not considered. • Men and women hired for the work are exposed to work-related accidents during the bridge reinforcement construction process. • Temporary affectations have been identified to free mobility of the people during the reinforcement works, which could temporarily affect the livelihoods of the inhabitants of the zone.
Consultation with the community	During the structural reinforcement analysis stage, socializations have been carried out with the leaders of the Roberto Luis Cervantes and Luis Vargas Torres islands. The socialization process of the definitive designs will be performed with the community (men, women and NNA) once there is a validation of the reinforcement solution with the national and local counterparties. The socialization workshops with the inhabitants of the zone will be supported by the GADC Esmeraldas. Such socialization process includes the explanation of the works that will be carried out, the benefits that the bridge will provide, and the construction schedule. On the other hand, the concerns of the population will be collected in detail in relation to the reinforcement works, and the established mitigation measures will be thoroughly shared, based upon the document.
Documentation – Evidence Base of Risk Identification	The risks were raised by the consulting company that developed the design of the reinforcement of the pedestrian bridge and subsequently analyzed with the project team and technical staff of the Municipality of Esmeraldas.
General / Relevant Mitigation Measures	Risk 1. • Socialization through workshops and implementation of communication and public education strategy. • The population will be adequately informed and the alternate route for accessing the continent will be marked. • Other measures could be implemented to mitigate the impact, especially directed to vulnerable population, such as transport availability. Riesgo2. • Diffusion of the reinforcement proposal of the pedestrian bridge, through participatory workshops with the beneficiary community, including an equal number of men and women and considering work schedules, lifestyles and differentiated needs. • During the execution of the works, the established measures for minimizing the impact of the bridge accessibility restrictions will be monitored to reduce any specific impact among women and vulnerable groups. Risk 3. • The contracted construction firm will be responsible for the elaboration and correct application of the Occupational Risk Management Plan throughout the construction process. • The contracted auditor will ensure the application and compliance of the Occupational Risk Risk 4. • Socialization and temporary signaling of the alternative routes and transfer times. • To minimize this impact, a previous communication process will be carried out with the inhabitants of Roberto Luis Cervantes Island and transport will be offered in specific cases, whenever vulnerable groups are involved.

Risk identification – Mitigation measures – activity implementation

Reforestation in urban and peri-urban settings of the city of Esmeraldas

Outcome number one of the AdaptaClima project states “improved plans and green infrastructure reduce vulnerability to floods, landslides and mudflows in coastal cities”.

Evidence regarding water, air and soil contamination, as well as that connected with various types of risks and climate change induced effects have worked as catalysts for the establishment of sustainable cities. Green infrastructure is a system in which the human and environmental spheres interact, the latter being one of the main supports for the development and quality of life of human beings. Solutions based on ecosystems enhance resilience against natural risks, being of special importance in the urban environment, as they provide ecosystem services necessary for the functioning of the city, simultaneously contributing to efforts to adapt to climate change. On the other hand, the delimitation of green infrastructure at the municipal level constitutes the reference to structure planning decisions for residential, public use and, above all, green public equipment. Therefore, it must be integrated into all sectors and areas of the city.

In this sense, a Green Infrastructure Plan (PIV) was prepared for the city of Esmeraldas, which was presented by the Mayor's Office of Esmeraldas in October 2021 and was approved by ordinance in March 2022 by the Municipal Council of Esmeraldas.

This instrument promotes changes in the way the city grows and develops by incorporating four general principles: transition, containment, connection and integration and a series of framed programs structured from the management of landscape units, as well as thinking in terms of certain components. urban. In this context, the AdaptaClima Project will support the reforestation of the urban and peri-urban area of the city of Esmeraldas, framing this intervention in the city's Green Infrastructure Plan Program 1 / natural capital: preserving green heritage.

Program 2 / activated banks: (re) reconcile the river with the city,

Program 5 / ecological urban resilience: integrate nature and urban life to increase the adaptive capacity of Esmeraldas for adaptation and mitigation to climate change and biodiversity, and

Program 6 / green culture Esmeraldas: understand the local natural heritage and prepare for climate risk.

For this purpose, it has established a local strategic alliance, such as the Pontifical Catholic University of Ecuador Esmeraldas headquarters (PUCESE), for the design and implementation of the reforestation plan of 40 hectares in the urban and peri-urban area of Esmeraldas.

PUCESE has more than 40 years of institutional presence in Esmeraldas, with environmental responsibility being one of the values it teaches its students and understands reforestation as one of the activities available to the population to help alleviate environmental detriment and risks associated with events linked to poor management of natural resources that increase with the anomalous effects of climate change.

In this sense, PUCESE is involved in a national reforestation campaign and in the last period has implemented some facilities to produce useful plant resources for the purpose of reforestation in the city of Esmeraldas.

PUCESE carried out a study for reforestation in urban and peri-urban areas of the city of Esmeraldas as a measure of adaptation to climate change and disaster risk reduction. In this study, the ideal areas for the reforestation process were identified. The selection of the areas was carried out in close coordination with the Municipality of Esmeraldas, jointly identifying the areas of intervention. To prioritize the areas to be intervened, spaces belonging to educational institutions and government properties were chosen, without ruling out possible actions on private properties.

Another determining factor for the selection of areas was the issue of security. Given the complex situation that the city of Esmeraldas is experiencing and the high rate of crime and violence in the last year. Thus, properties were established to guarantee the safety of the people who are going to intervene in the reforestation actions. 40 hectares were identified in the urban and peri-urban areas of the city. The following figure identifies the location of these areas on the map.

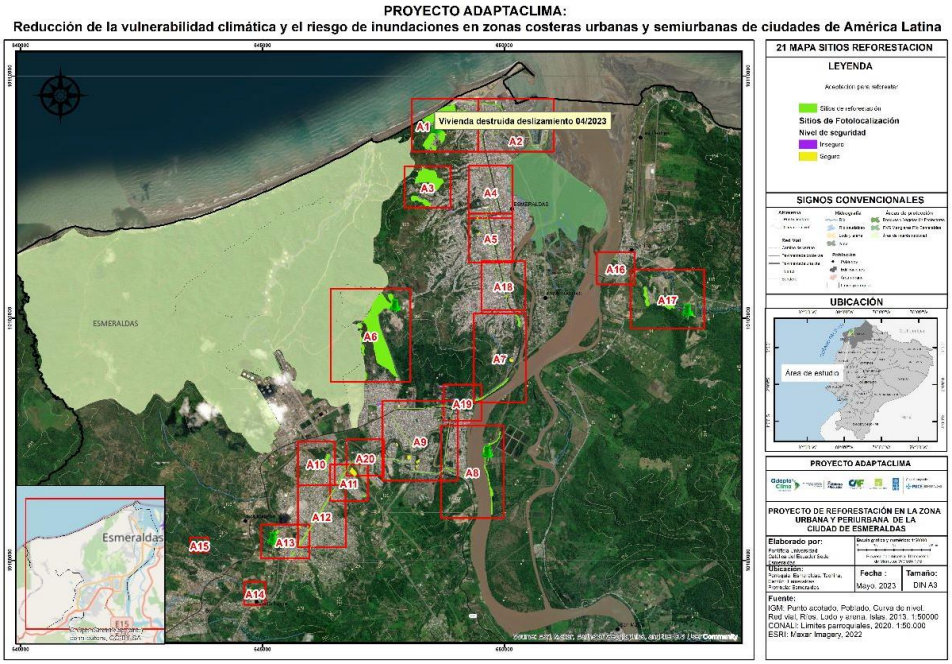


Figure 1: Determination of potential areas of urban and peri-urban reforestation of Esmeraldas

For the implementation of reforestation actions, the forest species that would be used were chosen. The following criteria were used to select the species:

1. Soil Conservation: Tree roots help prevent soil erosion by keeping it in place, preventing nutrient loss and land degradation. Especially in riverbank and hillside areas.

2. Carbon capture: Reforestation contributes to the capture of carbon from the atmosphere, helping to mitigate climate change. Plants absorb carbon dioxide and convert it into oxygen during the process of photosynthesis.

3. Improved air quality: Forest species release oxygen during photosynthesis, which helps improve air quality by reducing levels of carbon dioxide and other air pollutants.

4. Habitat for fauna: The presence of reforested areas provides vital habitat for numerous species of fauna, such as birds, mammals and reptiles. These animals depend on trees for shelter, food and reproduction.

5. Protection of biodiversity: Reforestation contributes to conserving biodiversity by providing a suitable environment for various species of plants and animals.

6. Recovery of degraded ecosystems: Reforestation in degraded areas, such as vacant land or areas affected by anthropogenic activities, can help restore ecological balance and promote the recovery of these ecosystems.

In this way, once the analysis of the environment has been carried out, the most suitable species selected for this activity are the following:

N°	Common Name	Scientific Name
1	Guayacán blanco	*Tabebuia sp*
2	Guachapelí	*Albizia guachapele*
3	Fernán Sánchez	*Triplaris cumingiana*
4	Moral Fino	*Maclura tinctoria*
5	Caoba	*Swietenia macrophylla*
6	Tangare	*Carapa guianensis*
7	Pachaco	*Schizolobium parahybum*
8	Laurel	*Cordia alliodora*
9	Roble	*Terminalia sp*
10	Melina	*Gmelina arborea*
11	Cedro	*Cedrela odorata*
12	Chíparo	*Zygia longifolia*
13	Almendro	*Terminalia catappa*
14	Higuerón	*Ficus aurea*

Once the plant species useful for the different categories and purposes pursued have been identified, taking the Esmeraldas Green Infrastructure Plan as a reference, the collection of vegetative material and seeds from the natural environment will begin, which will be germinated and/or developed in the PUCESE facilities. , which will allow us to supply 15% of the plants required for reforestation. The remaining 85% of the required plants will be acquired in different nurseries in the city of Esmeraldas, which have been previously identified.

For the implementation of reforestation, two specific points have been considered:

• Reforestation in fiscal and trustee educational centers. The aim is to involve students of different ages to be part of this reforestation project within their educational units and sites adjacent to intervention schools. Two environmental education workshops will be held (practical and theoretical) related to climate change and reforestation. The workshops will be taught by PUCESE staff and students.

• The other line of intervention is through direct reforestation, this will be carried out with personnel previously selected by PUCESE, who will receive prior training.

For each planting, information must be collected on the size and diameter of the plants planted by species or a fraction of the total plants, useful information for subsequent monitoring and care that includes the visit of

a team of people to weed, water and fertilize. the main stem, disinfect with organic pesticides (prepared from soap, tobacco, garlic, chili and onion) and report the number of successful and lost plants, recording the descriptive height and diameter for the estimation of growth rates that will appear in a report of visit.

Replanting will occur when at least 10% of the initial plantation has been lost, replanting the lost individuals per site with the option of changing species if it is evident that mortality occurred in a certain species. Each maintenance visit involves cleaning and gentle watering with fertilization and, if necessary, the spraying of natural pesticides and will have a record of activities on a descriptive sheet.

The planting and monitoring databases will be entered into calculation templates and statistical processors for sectoral comparisons (between sites) and temporal comparisons (between dates) in order to generate useful knowledge for future reforestations.

It is important to mention that in this reforestation process a participatory methodology will be used, which has research, planning and decision-making approach that actively involves the participants in the process. This method integrates the perspectives, knowledge and experiences of people directly affected by a project, program, or process.

The participatory methodology will empower communities, promoting equity and inclusion, and improving the quality and relevance of interventions. By integrating local perspectives, the capacity of communities to address their own needs and challenges is strengthened.

Finally, according to the planting dynamics carried out in the different areas, monitoring and follow-up visits will be carried out, in order to guarantee that the plants are established. Monitoring visits will occur 30 days after planting, determining the need to replant lost specimens and the necessary care in the future.

Compliance with the social and environmental principles of the Adaptation Fund.

To guarantee that this activity complies with the environmental and social principles of the Adaptation Fund, the process of risk identification, mitigation measures and implementation activities has been carried out, in accordance with the provisions of the Environmental and Social Management Plan (ESMP).

Table 22. Evidence Base Identification

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
16. Compliance with the law	16.1. Has the activity prior permission to implementation?	Yes	The identification of the areas to be reforested and the implementation plan for reforestation was worked on jointly with the Municipality of Esmeraldas, an institution that has jurisdiction over reforestation issues in urban and peri-urban areas. Coordination with the Municipality of Esmeraldas was essential to align the reforestation planning activity with its plans and strategies. For the implementation of reforestation activities, an agreement will be previously signed with the

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
			owner of the property that provides a legal guarantee and sustainability to the actions implemented.
	16.2. Does the activity comply with the national and local technical standards, validate Annex 18?	Yes	As established in Annex 18, the activity complies with the laws, regulations, standards, procedures and required permits.
17. Access and Equity	17.1. Has the activity identified any marginalized or vulnerable groups among potential activity beneficiaries?	Yes	Among the potential beneficiaries of this activity are the vulnerable groups identified in the analysis of actors and in the different workshops that have been held in Esmeraldas. Information is detailed in Annex 9. Likewise, the information is detailed in the Project Document in the section on vulnerable groups and gender situation.
	17.2. Has the activity identified the existing risk to access to the essential services and rights indicated in the principle?	Yes	The planned reforestation activities do not present any risk in relation to access to basic services and fundamental rights.
	17.3. Has the activity developed stakeholder and local authorities' consultations?	Yes	The activity has been developed jointly with the key actors involved in the process: Municipality of Esmeraldas, Ministry of Environment, Water and Ecological Transition and Pontificia Universidad Católica del Ecuador. Furthermore, all project activities They are socialized and validated by the National Technical Committee, which includes local authorities. Likewise, the entire reforestation process is widely socialized with the property owners.
	17.4. Has the activity presented a mechanism to ensure participation of communities, marginalized, vulnerable groups, stakeholder and local authorities'?	Yes	The project has a communication and community relations strategy in Esmeraldas, which contemplates the participation of all interest groups. Several socialization workshops will be held with the owners of the properties and with the beneficiary population so that they know the benefits of reforestation activities and learn about the care of the intervened areas. This activity will be carried out with special emphasis on properties belonging to educational institutions, where socialization is carried out with the entire educational community (fathers, mothers, teachers and students) who belong to the institution.
18. Marginalized and Vulnerable Groups	18.1. In the influence area of the activity has there been identified the presence of marginalized or vulnerable groups?	Yes	In Annex 9, in the Analysis of Key Actors of Esmeraldas, the existing vulnerable groups are addressed and identified.

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
			In the city of Esmeraldas it has been identified that part of the marginalized population lives in informal settlements. The information is detailed in the Project Document in the section on vulnerable groups and gender situation.
	18.2. Has the activity described the characteristics of any marginalized or vulnerable groups, identifying their particular vulnerabilities that would or could make them disproportionately vulnerable to negative environmental or social impacts?	Yes	The project has identified the characteristics of marginalized or vulnerable groups (boys, girls, women, senior citizens, disabled people and Chachi communities) in Esmeraldas. Reforestation is an activity that does not affect or aggravate the existing vulnerabilities in the identified groups.
	18.3. Has the activity put in place under the Communication and Participatory Strategy taking into account vulnerable groups perspective?	Yes	The project is executing Esmeraldas' public education and communication strategy, which emphasizes previously identified vulnerable groups.
19. Human Rights	19.1. Not necessary		
20. Gender Equity and Women's Empowerment	20.1. May the activity exclude or hamper a gender group based on legal, regulatory or customary grounds?	No	In Ecuador, a gender group cannot be excluded or hindered for legal, regulatory or customary reasons.
	20.2. Has the activity identified particular vulnerabilities of men and women that would or could make them disproportionately vulnerable to negative environmental or social impacts?	No	No particular vulnerabilities have been identified that derive from reforestation activities in the selected areas; That is, there is the same risk for men or women, in the event of the presence of a disaster or damage in relation to reforestation.
	20.3. Has the activity put in place under the Communication and Participatory Strategy taking into account gender perspective?	Yes	The Esmeraldas communication and public education strategy is underway that includes the gender perspective as a transversal axis, so that women have a prominent role, allowing their vision to be collected in this activity. This ensures that the needs of both women and men are addressed.
21. Core Labour Rights	21.1. Has the activity identified how the ILO core labour standards are incorporated in the implementation of the activity?	Yes	Both the implementing entity as the executor of the project and the PUCESE as the Responsible Party obey the labor standards of the ILO and national laws. All UNDP and PUCESE procurement processes follow sustainable financial rules and regulations that include basic labor rights.
	21.2. Has the activity implements the common labour arrangements in the sector(s) in which the project will operate?	Yes	The project integrates basic labor rights in all actions at different levels, under the framework of mechanisms and laws related to labor rights (organic law of labor management).

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
22. Indigenous Peoples	22.1. Has the activity identified if indigenous peoples are present in the area of influence?	Yes	According to the analysis carried out, no presence of indigenous population has been identified in the intervention area.
	22.2. Has the activity provided a summary of complaints that have been made with respect to the rights of indigenous peoples?		There is no presence of indigenous peoples in the intervention area.
23. Involuntary Resettlement	23.1. Has the activity identified if physical or economic displacement is required or will occur as a consequence of its implementation?	Yes	The activity will not require physical or economic displacement for its implementation.
	23.2. Has the activity identified stakeholders whose livelihoods may be affected, directly or indirectly, and if this may lead to resettlement?	Yes	Planned reforestation activities do not affect the livelihoods of the population and much less lead to resettlements.
	23.3. Has the activity identified stakeholders whose assets or access to assets may be affected, directly or indirectly, and if this may lead to resettlement and its consequences including indemnification, compensation, etc.	Yes	Considering the characteristics established for the execution of reforestation in urban and peri-urban areas of Esmeraldas, the interested parties will not be directly affected, which implies that it will not be necessary to carry out resettlements or compensation of any kind.
24. Protection of Natural Habitats	Not Necessary		
25. Conservation of Biological Diversity.	25.1. Will the activity implement non-endemic species?	No	The PUCESE technical team determined a list of 14 endemic forest species to be used in reforestation interventions.
26. Climate Change	26.1. Has the activity presented its Carbon Footprint?	No	There is no risk of a significant or unjustified increase in greenhouse gases.
	26.2. Has the activity presented the Monitoring system of the GHG emissions	No	There is no risk of a significant or unjustified increase in greenhouse gases.
27. Pollution Prevention and Resource Efficiency	27.1. Has the activity presented the Construction plan and specific monitoring procedure for the construction works including; Water consumption, Fuel consumption, Type of fuel consumption, Raw material consumption, Energy consumption, Solid waste generation, Wastewater / generation (quality of wastewater), Construction waste / debris generation.	No	Due to the characteristics of the reforestation activity in urban and peri-urban areas of Esmeraldas, it is not required to carry out any type of construction works.
28. Public Health	28.1. Has the activity presented the HIA - Health Impact Assessment?	No	Due to the characteristics of the activity, reforestation in urban and peri-urban areas of Esmeraldas, there is no associated construction

Template: Evidence Base Identification			
Checklist of E&S Principles	**Questions**	**Yes / No**	**Evidence Base Identification**
			or other work that could generate an impact on health.
29. Physical and Cultural Heritage	Not Necessary.		
30. Lands and Soil Conservation	Not Necessary.		

Table 23. Mitigation Measures

Template: Mitigation Measures			
Activity: Reforestation in urban and peri-urban settings of the city of Esmeraldas			Date: 19/02/2024
Area on intervention: Esmeraldas	**Responsible of fulfilling the template - Local Technical Coordinator Check:** Marcos Ballesteros	**Management Coordinator Check:** Nury Bermudez	**Project Unit Check:** UNDP Ecuador
Environmental or social Principle	**Environmental or social risk**	**Mitigation measure**	**Verification Responsible**
Principle 10. Conservation of Biological Diversity.	Risk 1. Reforestation with species not endemic to the area that could alter the natural ecosystem of Esmeraldas.	Mitigation measure 1. Carry out thorough monitoring to guarantee that the species selected in the reforestation plan are those that are actually used for reforestation in the different selected areas. Mitigation measure 2. The project coordinator will ensure the application and compliance of the reforestation plan presented by the PUCESE.	Project coordinator in Ecuador. Coordinator of the PUCESE reforestation activity

Table 24. Executive Resume for Activity

Template: Executive Resume for Activity				
NAME OF THE ACTIVITY: Reforestation in urban and peri-urban settings of the city of Esmeraldas				
Area on intervention: Esmeraldas	**Responsible of fulfilling the template - Local Technical Coordinator Check:** Marcos Ballesteros	**Management Coordinator Check:** Nury Bermudez	**Project Unit Check:** UNDP Ecuador	**Date:** 19/02/2024
Technical General Description of the Activity:	The AdaptaClima Project will support the reforestation of the urban and peri-urban area of the city of Esmeraldas, framed in the city's Green Infrastructure Plan. For the implementation of this activity, the project made a Responsible Party Agreement with the Pontifical Catholic University of Ecuador, Esmeraldas headquarters (PUCESE) for the design and implementation of the reforestation plan of 40 hectares in the urban and peri-urban area of Esmeraldas. Within the planning of reforestation activities, PUCESE identified the properties (40 hectares) where reforestation will be carried out and the native species to be used in this process. Prior to the start of reforestation in the selected areas, agreements will be signed with the owners of the properties and workshops will be held with them to socialize the scope of the agreement and the benefits of reforestation. In the event that reforestation is carried out in educational institutions, theoretical-practical workshops will be held to involve students in this activity. On the other hand, the plan contemplates a strategy for supplying the plants required for this activity. 15% of them will be provided from the PUCESE nurseries, while the remaining 85% will be acquired from previously selected nurseries. Reforestation activities will be carried out mainly in the last quarter of the year, taking advantage of the winter period, which is conducive to planting the selected forest species. Finally, monitoring of the reforested areas will be carried out to guarantee the growth of the plants and, if necessary, to carry out a replacement.			
Fulfillment of the Risk Identification	As this activity is considered a USP, the process of reviewing compliance with the 15 environmental and social principles of the Adaptation Fund has been carried out, identifying possible risks in relation to: • Risk 1. Reforestation with species not endemic to the area that could alter the natural ecosystem of Esmeraldas.			
Consultation with the community	Socializations have been carried out with the owners of the previously identified properties in which the reforestation actions will be carried out. Once the reforestation agreements have been signed with the owners, workshops will be held to socialize the activity. In the event that the properties correspond to educational institutions, training workshops will be held for students to involve them in reforestation and subsequently in the care of the planted plant species.			
Documentation – Evidence Base of Risk Identification	The possible risks were raised by PUCESE together with the project team and technical staff of the Municipality of Esmeraldas. Likewise, the observations made by the owners of the properties where the reforestation will be carried out and by the community in general were recorded.			
General / Relevant Mitigation Measures	Risk 1. Reforestation with species not endemic to the area that could alter the natural ecosystem of Esmeraldas. • Carry out thorough monitoring to guarantee that the species selected in the reforestation plan are those that are actually used for reforestation in the different selected areas. • The project coordinator will ensure the application and compliance of the reforestation plan presented by the PUCESE.			

2. Grievance mechanism

Response to petitions, complaints, and claims

In order to respond adequately and effectively to petitions, complaints, or claims that may arise in any stage of the project cycle, a mechanism should be designed that allows effective and rapid response to the needs. All the population should be informed of this mechanism regarding how to present a petition, complaint, or claim, and on the time and manner in which they will receive a response. The planned mechanism should be presented and communicated among the local population with transparency and privacy if required.

Periodically, the results of the cases addressed should be disseminated, and this information will also be used as a feedback to improve the project's practice.

Principal agents of complaints

Beneficiaries, organizations affected by the project activities can complain. Complainants do not need to be directly affected by the project decision, action and are not required to identify the applicable rule, regulation or policy that may have been breached.

Subject of complaints

Complaints can be made regarding actions or decisions that stakeholders identify the project has carried out incorrectly, unfairly or unlawfully. These may concern:

- The social and environmental impacts of a project;
- Arrangements for involvement of affected communities, minorities and vulnerable groups;
- Project implementation;
- Access to information;
- Procurement procedures;
- Human rights issues;

Complaints can be lodged, by letter or email addressing the Project Management Unit – Director (to be confirmed by the email). Complainants need to identify themselves, clearly state the subject of the complaint and what complainer expects to achieve. The complainant should provide as much detailed and relevant information as possible about the complaint. Complaints must be lodged within one year from the date on which the facts upon which the allegation is grounded could be reasonably known by the complainant. In the case of complaints concerning access to information, a complaint must be taken within 30 working days from the date of the reception which is the subject of the complaint. In order to ensure the protection of agents of complaints, all complaints should be treated confidentially.

The contact information of the Adaptation Fund will also be publicized (i.e. project website, facebook and mailbox) for the public to directly address concerns regarding the project:

Adaptation Fund Board secretariat
Mail stop: MSN P-4-400
1818 H Street NW
Washington DC
20433 USA
Tel: 001-202-478-7347
afbsec@adaptation-fund.org

Resolution of conflicts

It is necessary to define a mechanism for the resolution of conflicts that may emerge during any stage of the project. Mechanisms that exist in the area or country where the project is developed may be used, ensuring impartiality and efficiency in their resolution. Social actors must be informed about the existence of said mechanisms and the way to access them, if required. Using these mechanisms must not imply any cost for the person who decides to use it. To access these mechanisms, an individual must prove that a petition, complaint or claim was presented to the Proponent through a mechanism designed for that purpose, and the individual did not receive a response, or the response was not satisfactory according to the person's arguments.

The grievances and complaints mechanism is summarized in Figure 2. The process starts with the submission of a grievance/complaint) and continues with the consultation and verification of enforcement.

Before the implementation of the project, the grievances system document will be updated according to an actual contact point to address the needs (e.g., contact information in Chile and Ecuador) and translated into the local language, Spanish. Furthermore, the project website will be developed archiving the information on (i) a brief explanation of the grievances and complaints system, (ii) the contacts to file a grievance/complaint, and (iii) the grievances and complaints system document.

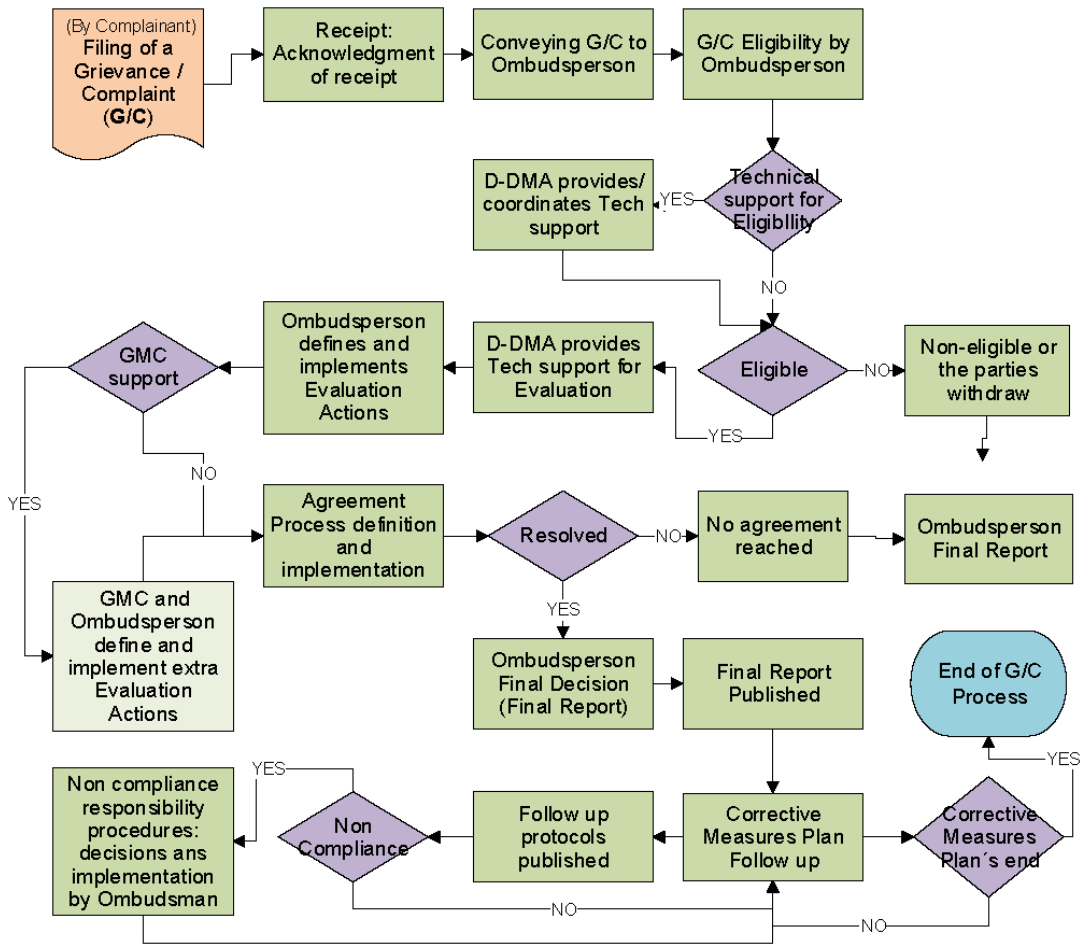


Figure 2. Grievances and complaints reception mechanism. G/C = Grievance/Complaint - GMC = Grievances Management Committee - D-DMA = Environmental and Climate Change Division Director

3. Monitoring, evaluation and oversight program

The monitoring of environmental and social safeguards will be undertaken through the following table which details for each ESP, the identified risks, impacts, mitigation measures, indicators, baseline, responsible for verification and means of verification.

A six-monthly analysis will be conducted on the risks identified and the measures taken to mitigate these risks. If additional risks are identified, the matrix will be updated.

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
1 - Compliance with the law	Insufficient alignment with laws and technical standards, especially related to implementation of concrete infrastructure works and climate monitoring	Grey and green infrastructure implementation could not get the Environmental Registry - Ecuador or the Environmental Impact Declaration – DIA for Chile	Act 5. Interventions in Chile have to comply with technical standards, environmental permits and construction code regulations. Act 6. Interventions in Ecuador have to comply with technical standards, environmental permits and construction code regulations.	Updated studies for implementation of grey and green infrastructure Environmental permit application submitted	0 updated studies 0 environmental permit application processed	Project coordinator in Chile, Project coordinator in Ecuador. Monitoring specialist	Final structural design for the infrastructure works in Antofagasta Eco-engineering designs for green and grey infrastructure works in Esmeraldas Documents submitted for the processing of environmental permits
2 - Access and equity	The beneficiary might have no access to project benefits because of inexistent mechanism to ensure participation of communities, marginalized, vulnerable groups, and stakeholder and local authorities.	If the community is not properly communicated and involved in the process of updating the plan, their local knowledge in their surrounding area such as “Campamentos” or in the ravine routes will not be taken into account. If the community does not participate in the process of preparing the green-infrastructure plan for Esmeraldas, the community will not be informed of risks of residing on hill and will repeat and conceive it as a possible settlement place. If the community is not properly communicated and involved in the process of updating the designs of the infrastructure, their local knowledge in their surrounding area such as “Campamentos” or in	The Local Social Specialist for Chile and Ecuador respectively will prepare a “Communication and Participatory Strategy” that will contain all the activities and how the local community should be involved . The media specialist works on behavioral understanding messages to explain the importance of activities to the population The Regional Media Specialist in the “Communication and Participatory Strategy” shall include the development of the regional electronic platform.	Number of Communication and Participatory Strategies	0 Communication and Participatory Strategy	Media Regional Specialist Local Social Specialists	Communication and Participatory Strategies approved by the Project Board

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
		the ravine routes will not be taken into account.					
		Community members could harm or steal the monitoring instruments, early warning systems and other equipment					
		If the community does not participate or comment the evacuation maps and procedures for Esmeraldas, Antofagasta and Taltal, they will not help with their local knowledge and own situation. Also, it is important that they are aware of all the ideas and must agree with the plan. If not, human lives could be in danger.					
		The use of the electronic platform may be limited if the community or community - social leaders does not empower themselves to use it.					
	Population against the Declaration of protected forests by the GADE	Do not exist conditions to approve the declaration and preserve the protected forest					
	Lack of involvement of the community and local authorities in the annual evacuation drills, actualization of evacuation maps and their location	Unable to help their community in an emergency situation. Human lives could be in danger. Lack of sustainability of the action and population still in danger. If the community is not able to participate in localization of the banners they may be unused increasing the possibility of accidentally					

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
	There is a risk that not all the community is aware of the community in practice in Esmeraldas, Taltal and Antofagasta.	Not participation of the social community in the communities of practice. The heterogeneity could be lost.					
	There is a risk that this activity might impede an access to basic services such as clean air, energy and housing, safe may be affected.	Claims, complaints of non-conformity and possible interruption of the works could occur.	The Local Social Specialist for Ecuador will communicate about the Grievance mechanism available. Also the Operational contractor shall: • Re-Identify the vulnerable groups in the area of influence before the implementation of the project and organize a consultation meeting with the direct beneficiaries and affected groups. • If there is any possibility of interruption of the basic services caused such as water shortage or energy disruptions, the operational contractor team shall make communication to the community affected. • The operational contractor team shall be responsible for the coordination action related with traffic and temporary closure of traffic. In accordance with communities, routes and schedules of access to the Gatazo operational area can be planned. • Fences or barriers and pedestrian pathways are required to be installed. • Receive inquires, suggestions from beneficiaries and	Number of grievances received related to access to basic services	0 grievances received related to access to basic services	Project coordinator in Ecuador Monitoring specialist	Registration of complaints received

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
			communities involved during the consultancy process and if needed the proceed with the grievance mechanism.				
	Best location found for meteorological stations and radar are inaccessible by car or truck.	Impossibility to install the radar and meteorological stations in the best location reached.	The study to identify the location must analyze different places based on a criteria matrix, such as: accessibility, security, no disturb landscape or other telecom instruments among others.	Number of Technical report of location for equipment installation	0 Technical report of location for equipment installation	Project coordinator in Chile, Project coordinator in Ecuador. Monitoring specialist	Technical reports approved by Project Board
	Lack of technical staff to operate the radar and do a proper maintenance.	Radar and meteorological stations without maintenance could not operate properly or not lasting the expected lifetime.	The project will ensure that the government has technician in the area and train them to used and maintain the radar.	Number of training workshops for the technical staff of the institutions in charge of the stations	0 Training workshops for the technical staff of the institutions in charge of the stations	Project coordinator in Chile, Project coordinator in Ecuador.	Minutes of workshops held
	Lack of involvement and real interest in the courses by the technical staff of the project.	Technical Staff with lack of knowledge would cause misunderstanding of the disaster risk reduction and adaptation subject and create some difficulties on the implementation phase.	The Project Board and the Project Manager of the project will require them to participate in the Courses. The courses will be mandatory for all technical staff in both countries.	Percentage of project technical staff who have taken the regional risk-based adaptation course	0% project technical staff who have taken the regional risk-based adaptation course	Media Regional Specialist and Local Social Specialists	Registration of course participants

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
3 – Marginalized and vulnerable Groups	The project might impede an access to basic services such as clean air, energy and housing, safe may be affected. This referred to Component 1.	Claims, non-conformity and possible interruption of works may occur.	The Local Social Specialist for Ecuador will communicate about the Grievance mechanism available. The procedure and forms will be accessible to all actors directly involved in the actions. Also the Operational contractor shall: • Re-Identify the vulnerable groups in the area of influence before the implementation of the project and organize a consultation meeting with the direct beneficiaries and affected groups. • The operational contractor team shall be responsible for the coordination action related with traffic and temporary closure of traffic. In accordance with communities, routes and schedules of access to the Gatazo operational area can be planned. • Fences or barriers and pedestrian pathways are required to be installed. • Receive inquires, suggestions from beneficiaries and communities involved during the consultancy process and if needed by the grievance mechanism.	Number of grievances received related to problems of access to basic services	0 grievances received related to problems of access to basic services	Project coordinator in Ecuador Monitoring specialist	Registration of complaints received
4 – Human rights	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5 – Gender equality and women's empowerment	Either women or men has unequal opportunities to participate taking into account their working	Only one gender could assist to the course. The gender perspective could be lost, is women cannot assist, children assistance also could be put in risk.	The Local Social Specialist for Esmeraldas shall be aware that the socialization and presentation of the plans should the in schedules that women can attend and be part of the	Percentage of women's participation in events held by the project	0% of event attendees have been women	Local social specialists	Registration of participants in meetings with beneficiaries

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
	schedules or lifestyles	Only one gender could assist to the communities of practice. The gender perspective could be lost, if women cannot participate.	"Communication and Participatory Strategy".				
6 – Core labour rights	Insufficient alignment with core labour rights, especially related to implementation of concrete infrastructure works and climate monitoring	Persons and workers in the surroundings areas could be injured or affected.	The operational contractor team in Chile and Ecuador shall be responsible for the control of the entire works and implement specific mitigation measures to cope with casualties during construction. • Consider the identified hazards including those that may originate from outside the workplace that are capable of adversely affecting the health and safety of persons under the control of the organization within the workplace. • Applied control related to risk assessment • Follow an accident investigation form. • Recognize extra hours of work, in compliance with the labour regulation of each country. • Be aware of the equipment that the workers use during the infrastructure works. • Take into consideration the medical care emergency kit at the infrastructure works. • Keep in mind the medical check provided at the beginning of the works. • Construction workers must also be provided with identification tags. • Comply with the national legislation – Labour Codes of Ecuador and Chile	Number of grievances received related to problems of violation of labour rights	0 grievances received related to problems of violation of labour rights	Local Social Specialists	Registration of complaints received

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
			• Ensure that employment procedures/ policy of the operational contractor is communicated to local stakeholders. • The intention of giving preferential employment to locals is clearly communicated, to discourage an influx of job-seekers from other areas.				
7 – Indigenous people	Indigenous beneficiary families not being adequately informed and engaged to access the range of project benefits.	Not use of the information developed. Not participation of the indigenous community in the Narrator's initiative. Not participation of the indigenous community in the communities of practice. The heterogeneity could be lost perspective could be lost, is the indigenous community cannot assist.	The Regional Media Specialist in the "Communication and Participatory Strategy" shall include the development of the regional electronic platform. The Local Social Specialist for Esmeraldas shall be aware that the socialization and presentation of the plans should the in schedules that Chachis can attend and be part of the "Communication and Participatory Strategy".	Communication and participation strategy guarantees participation of indigenous groups	0 Communication and participation strategies developed	Local Social Specialists	Communication and Participatory Strategy approved by the Project Board

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
8 – Involuntary resettlement	Temporary physical relocation for the nearest families leaving informal settlements in the proximity of the intervention in Cerro El Gatazo – Esmeraldas, basically related with the removal of mud and soil to stabilize the hill.	Claims, nonconformity and possible interruption of the works could occur.	The Local Social Specialist for Ecuador will prepare a "Communication and Participatory Strategy" that will contain all the Activities and how the local community should participate during their development. Implementation of the activities related with the Landslide mitigation infrastructure in Cerro Gatazo - Ecuador, the Operational contractor shall: • Re-Identify the vulnerable groups in the area of influence before the implementation of the project and organize a consultation meeting with the direct beneficiaries and affected groups. • If there is any possibility of the need of possible temporary resettlements this shall be presented as a Plan to the Project Board. • Receive complaints, inquires, suggestions from beneficiaries and communities involved during the consultancy process and if needed by the grievance mechanism. • The GADE team shall be responsible for the coordination action related to the temporary resettlements. • The GADE team shall be responsible for the temporary localization during the project	Number of grievances received related to problems of access to basic services Number of families relocated	0 grievances received related to problems of access to basic services 0 families relocated	Project coordinator in Ecuador Local Social Specialists	Registration of complaints received Dispositions of the municipality to carry out the resettlement Report of resettlement carried out
9 – Protection of natural habitats	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
10 – Conservation of biological diversity	The introduction of non-endemic species for the stabilization of Cerro Gatazo in Esmeraldas may pose a risk for the project.	Introducing non-endemic species could damage the natural biodiversity, even though it is an area already intervened.	A study will be undertaken prior to the selection of which species will be used on the implications of introducing different species. The operational contractor has to develop the revegetation in accordance with the Green Infrastructure Plan approved by the Project Board previously. The species that are going to be used should be in the Green Infrastructure Plan. Based on the findings of study, the choice of native species will be appealed.	Technical report on the selection of species to be used for reforestation	0 Technical report on the selection of species to be used for reforestation	Project coordinator in Ecuador	Technical report on the selection of species to be used for reforestation approved by the Project Board
11 – Climate change	There is no a risk of significant or unjustified increase in greenhouse gas emissions, considering that the project preliminary will not produce more than 1 MM ton /CO2eq during its lifespan. However, for the sake of the project and the compliance of the E&SP this will be attended with a Carbon Footprint recognized tool. This will be classified as risk.	The contribution of GHG emissions directly affects the adaptation of Antofagasta, Taltal and Chile. The contribution of GHG emissions directly affects the adaptation of Esmeraldas and Ecuador.	Carbon Footprint shall be presented Monitoring system of the GHG emissions shall be presented Approval of Carbon Footprint and the Monitoring system of the GHG	Monitoring system of the GHG emissions developed	0 Monitoring system of the GHG emissions	Project coordinator in Chile, Project coordinator in Ecuador.	Monitoring system of the GHG emissions approved by the Project Board

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
12 – Pollution prevention and resource efficiency	The project may be implemented in a way that does not meet applicable standards for minimizing material resource use, the production of wastes, and the release of pollutants.	The generation of wastes and pollutants during the construction works will pollute the surrounding area of Antofagasta. Health diseases affecting the population of the surroundings and workers. The generation of wastes and pollutants during the construction works will pollute the urban area of Esmeraldas. As environmental impact of gabion retaining walls is basically the slight increment the of greenhouse emissions taking into account the transport of materials.	A construction plan shall be presented to the Project Board. A specific monitoring procedure for the construction works shall be presented to the Project Board. The operational contractor shall implement a monitoring plan to control: • Water consumption. • Fuel consumption. • Type of fuel consumption • Raw material consumption. • Energy consumption. • Solid waste generation. • Wastewater / generation (quality of wastewater). • Construction waste / debris generation. Approve the Construction Plan The mitigation measures are part of the Health Impact Assessment (HIA) A specific monitoring procedure for the construction works shall be presented to the Project Board.	Monitoring plan for pollution prevention and resource efficiency developed	0 Monitoring plan for pollution prevention and resource efficiency	Project coordinator in Chile, Project coordinator in Ecuador.	Monitoring plan for pollution prevention and resource efficiency approved by the Project Board

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
13 – Public health	The project designed and implemented in a way that produces potentially significant negative impacts on public health. Like any common infrastructure work, there is a low probability risk of collapse, especially during the period of construction and if a hazard materialized during this period, hazards such as: heavy rains, earthquake.	Community – public health affected in noise or air pollutants.	A Health Impact Assessment shall be presented to the Project Board. Approval of the HIA. The operational contractor team in Chile and Ecuador shall be formed responsible for the control of all project related to Public Health and will: • Develop an Occupational Health and Safety Management Protocol. • Consider the routine and non-routine activities of the organization to be sure all of them are coordinated. • Beware how all persons accessing the work place including contractors and visitors (clothing, signals, helmets, etc.). • Bear in mind the human behavior, capabilities and other human factors that could increment the potential failure of structural elements of the Project. • Take into consideration how the operational contractor control threats created near the workplace during work -related activities. • Keep in mind how the infrastructure, equipment and materials at the workplace affects construction works. • Consider how the organization identifies changes or proposed changes to its activities or materials it uses. • Consider how modifications to the OH&S protocol / system, whether they be temporary or not, impact on the operations,	Occupational Health and Safety Management Protocol developed	0 Occupational Health and Safety Management Protocol developed	Project coordinator in Chile, Project coordinator in Ecuador.	Occupational Health and Safety Management Protocol approved by the Project Board

ESP principle	Risk	Impact	Mitigation measure	Monitoring indicator	Base Line	Responsible for verification	Means of verification
			processes and activities of the organization. • Consider how the project identified legal requirements for health and safety of persons beyond the immediate workplace, including those who are exposed to the workplace activities. • Consider the effects of the design of work areas, processes, installations, machinery/equipment, operating procedures and work project, including their adaptation to human capabilities.				
14 – Physical and cultural heritage	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15 – Lands and soil conservation	N/A	N/A	N/A	N/A	N/A	N/A	N/A