



ADAPTATION FUND

PROJECT PROPOSAL TO THE ADAPTATION FUND

**Implementing Measures
for Climate Change Adaptation
and Disaster Risk Reduction Mitigation
of School Facilities
in Haiti**

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List of acronyms and abbreviations

Acronym	Description
AF	Adaptation Fund
CC	Climate Change
CCA	Climate Change Adaptation
CSSF	Comprehensive School Safety Framework
DRR	Disaster Risk Reduction
MARNDR	Ministry of Agriculture, Natural Resources and Rural Development
MAST	Ministry of Social Affairs and Labour
MEL	Monitoring, Evaluation and Learning
MTPTCE	Ministry of Public Works, Transport, Communication and Energy
NAPA	National Adaptation Action Plan
NDC	National Development Contribution
PARDH	Action Plan for the Recovery and Development of Haiti
PNGRD	National Risk and Disaster Management Plan
PSDH	Strategic Development Plan of Haiti (<i>Plan Stratégique de Développement d’Haïti</i>)
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNOPS	United Nations Office for Project Services
SDG	Sustainable Development Goals
TOT	Training of Trainers
VISUS	Visual Inspection for the definition of Safety Upgrading Strategies

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ADAPTATION FUND

PROJECT/PROGRAM PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT INFORMATION

Project Category:	Regular Project Concept
Country:	Haiti
Title of Project:	Implementing Measures for Climate Change Adaptation and Disaster Risk Reduction Mitigation of School Facilities in Haiti
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	United Nations Educational, Scientific and Cultural Organisation (UNESCO)
Executing Entity:	United Nations Office for Project Services (UNOPS)
Amount of Financing Requested:	US\$ 9.890.000 (in U.S Dollars Equivalent)

Table I-1 Project Information

Project Background and Context

Provide brief information on the problem the proposed project is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.

a. Brief project area context

1. Haiti, officially the **Republic of Haiti** with the capital Port au Prince, is a Caribbean country located on the west side of the island of Hispaniola, eastern Cuba in the islands of the Caribbean Sea. It occupies three eighths of the island; the remaining area is the Dominican Republic.
2. It covers 27,750 square kilometers and has approximately 10.2 million inhabitants. The country develops along a peninsula in the shape of a horseshoe, which spans 1,771 km of coastline.
3. Rugged mountains, fertile rivers and valleys mostly characterize the country's **topography**. With about 70% of the island covered by mountains, most people live along the coast. The highlight of Haiti is Pic la Selle, reaching 2,680 meters.
4. The Decree of 30 October 2003 covering the territory of the fixed division cutting of Haiti in **ten (10) departments**, forty-two (42) districts, one hundred forty (140) towns, five hundred seventy (570) communal sections¹.

<u>IHSI Code</u> ²	<u>Department</u>	<u>Chef-Lieu or Capital</u>	<u>Area (km)</u>	<u>Population (2002)</u>	<u>Density / km²</u>
5	<u>Artibonite</u>	<u>Gonaïves</u>	4984	1168800	234.5
6	<u>Center</u>	<u>Hinche</u>	3675	564200	153.5
8	<u>Grand'Anse</u>	<u>Jeremi</u>	1871	733000	391.7
10	<u>Nippes</u>	<u>Miragoâne</u>	1268	266379	210.0
3	<u>North</u>	<u>Cap-Haitien</u>	2106	872200	414.2
4	<u>Northeast</u>	<u>Fort Liberté</u>	1805	283800	157.2
9	<u>North West</u>	<u>Port-de-Paix</u>	2176	488500	224.5
1	<u>West</u>	<u>Port au Prince</u>	4827	2943200	609.7
7	<u>South</u>	<u>Les Cayes</u>	2794	745000	266.6
2	<u>South East</u>	<u>Jacmel</u>	2023	518200	256,

Table I-2 Statistics of departments of Haiti



Figure I-1 Map of ten departments of Haiti

¹ The Decree of 30 October 2003 on the division of the territory of Haiti

² [http://www.ihsi.ht/pdf/Methodes_et_procedures/Manuel_instruct_agents_codifi\(RGPH2003\).](http://www.ihsi.ht/pdf/Methodes_et_procedures/Manuel_instruct_agents_codifi(RGPH2003).)

5. The **climate** of Haiti is mainly tropical with distinct climatic zones that allow a wide variety of biodiversity. The bush, conifers and mangrove, characterizes vegetation. The rainy season in most parts of Haiti is between May and November. Haiti is expose to various **natural hazards**, namely hurricanes, floods, volcanic eruptions, earthquakes, tsunamis, landslides, droughts and fires. These risks have compromised the strategies of poverty reduction in the country, impeded progress and development of education systems endangered. The expected effects of changes in the global climate and extreme weather events potentially more frequent and severe can amplify their impact.
6. As a small island developing state, due to **climate change**, Haiti is expose to the threat of sea level rise, and to increasingly intense hurricanes and frequent tropical storms. Haiti is also particularly vulnerable to droughts, coastal erosion and landslides. These disasters can jeopardize the country's food security, infrastructure, and the safety of the population. Haiti's vulnerability to climate change is due to a combination of factors, ranging from its geographical location, deforestation and land degradation, to high poverty rates and weak institutional capacity.

b. Hydrography and climate context

7. Because of its latitude, between latitudes 18° and 20° north, the country has a **tropical climate** characterized by alternating between a wet season and a dry season. In the plains, average temperatures vary between 28 ° C in winter and 32 ° C in summer.
8. On mountaintops, the temperature can fluctuate between 18 ° C and 22 ° C. **Rainfall varies** not only with altitude but also with the orientation of mountain ranges in relation to the trade winds from the Northeast.
9. Haiti is located in full trajectory of **Atlantic tropical systems** that affect the Caribbean each year is from June to November. Hurricane Jeanne in September 2004 was one of the deadliest in decades for Haiti. In 2008, the country has faced four successive hurricanes. More recently, Matthew hurricane occurred in October 2016 decimated the deep south of the country, causing considerable damage.
10. Haiti is also expose to periods of intense **drought**. The rainy season is now shorter. Some areas may not receive a drop of rain for several successive months. **30 major watersheds** and river units of different sizes divided the country³: the largest is the Artibonite River that extends into the country's central region over an area of 6,435 km², and the smallest is the Turtle that has an area of 179 km².
11. The study of Socioeconomic Impacts of Climate Change in Haiti and coping responses⁴, Conducted jointly between the Ministry of Environment, Economic Commission for Latin America, the Caribbean and UNDP, indicates that climate trends in the country are planning a considerable risk profile. Indeed, the progress scenarios project a temperature rise ranging from 0.8 ° C to 1.0 ° C. According to the **scenarios** realized on the first Communication⁵, Climate change

³ The IDB and watersheds

⁴ Temperature changes expected for the 2041-2050 decade (Ministry of Environment Haiti, 2009) <http://www.social-protection.org/gimi/RessourceDownload.action?ressource.ressourceId=17690>

⁵ The Kyoto Protocol was ratified by Haiti on 6 July 2005 and entered into force on 4 October 2005. The country has made and submitted its first National Communication to the UNFCCC in August 2001 and the second in October 2013

is projected to Haiti, which indicates a **temperature increase** ranging from 0.8 ° C to 1.0 ° C for the year 2030; for the 2060 year, this increase will vary from 1.5 ° C to 1.7 ° C. These results are consistent with those of the temperature obtained by the application of models ACCURATE, that predict changes up to 1.7 degrees Celsius for a few months.

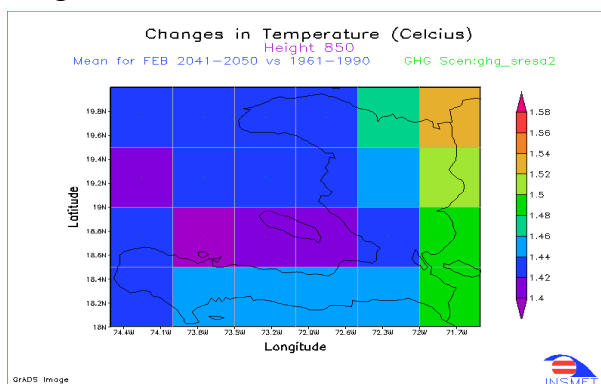


Figure I-2 Temperature changes expected for the Decade 2041-2050 (Ministry of the Environment, 2009).

12. In addition, rain can happen to decrease from year to year, depending on the area of the country. It can lead to phenomena of droughts and reduced adaptability provided by forests. Conversely, it is important to note that the extreme precipitation events would quickly drain the water upstream and provoke floods. The climate of Haiti has undergone several changes in recent times. According to data collected by the Ministry of Agriculture, Natural Resources and Rural Development (MARNDR)⁶ of Haiti, the average temperature has increased by more than 1 degree between 1973 and 2003.
13. The conditions extreme and variable weather alternated between drought in the dry season (usually between December and April) and strong storms and hurricanes during the rainy season (usually between August and November). **Changes in variability and extreme weather conditions** of our interlocutors noted are in line with the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)⁷. For example, the report indicates that in 90 years, 30% of cyclones have been classified category 4 or 5 compared to 20% in the 70s.

Department	hurricanes	floods	droughts
Artibonite	10	2	3
Center	9	9	6
Grande Anse	2	7	9
Nippes	5	8	8
North	7	5	7
Northeast	8	10	2
North West	6	4	1
West	4	1	4
South	1	3	10
South East	3	6	5

Table I-3 Severity of disasters in the departments of Haiti (1 = maximum risk, 10 = minimum risk)⁸

⁶ Unite statistique agricole et informatique MARNDR Haiti

⁷ The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change.

⁸ Source: Haiti Lifeline / FOE Haiti, "The Events of Climate Change in Haiti", 2006.

14. During the 20th century, 34 storms, cyclones or hurricanes hit Haiti. About 80% of them took place after 1954 and 44% of these were recorded in the 90s. Just in 2016, the hurricane evaluation report of the hurricane season shows a balance of 546 dead, 128 missing, 439 injured and 2.1 million people affected.

Dated	Name	Areas affected	Speed (Km / h)	Dead	Disaster	Damages (US \$ 1000)
08/12/1915		The entire Southern Peninsula	76	1600		
1935		South, Southeast, Grand Anse		2150		
12/10/1954	Hazel	South Grand Anse, Port-au-Prince		410	250000	
03/10/1963	Flora	South-East Zone	240	5000		180 000
24/08/1964	Cleo	Cayes Camp-Perrin Arniquet	150	100	80000	10000
29/09/1966	Inez	South, Port-au-Prince of Marigot Grand Goave	120-190	480	67000	20000
13/11/1994	Gordon	All territory		1122		
22/09/1998	Georges	All territory		242	385000	80 000-180 000

Table I-4 Major Hurricanes that hit Haiti.

15. If we consider only the major hurricanes, of the 39 recorded between 1700 and 1997, 15 have been between 1900 and 1997. It can therefore have a probable passage of a cyclone in Haiti every six to seven years. The damage caused by these phenomena, as well as those resulting from heavy rainfall, can affect the entire country. The devastating winds can affect any part of the country, although the most violent winds cannot easily affect the central and northern regions. Considering only the major events such as hurricanes, tropical storms and depressions occurred in the last 50 years the Southern peninsula is the most threatened of the country (Table 3 & Figure 1). All catastrophic hurricanes that struck Haiti hit the South. Rather, it is subject to much localized nature of events like tornadoes and gales. They estimate that nearly 2 million Haitians submit each year, the risk of cyclones and hurricanes.

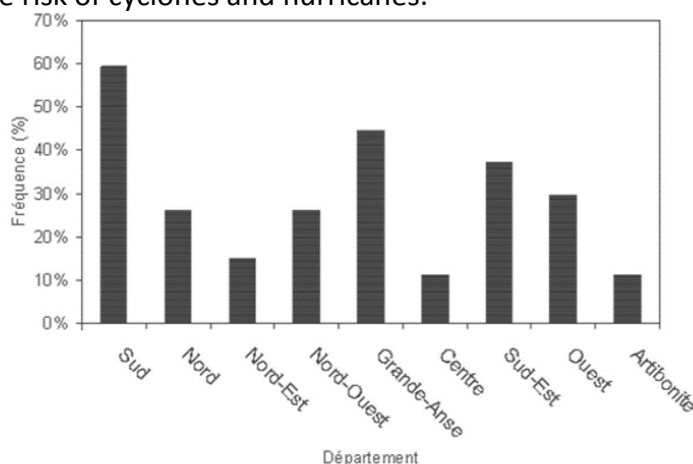


Figure I-3 Frequency of cyclones in Haiti's geographical department.

c. Economic, social and environmental context

Vulnerability socio-political history of the country

16. Haiti was a former French and Spanish colony, which had its independence since 1804. However, the country could not capitalize on the opportunities offered by socio-political independence. It

quickly evolved into a cycle of violent dictatorial regimes and a series of military coup. It was in 1990 that the country recorded a precarious democratic transition followed by a series of post-election violence and an unprecedented institutional instability making the country ungovernable.

17. This has resulted from a political stalemate punctuated by long social crises that last until 2015. Today, although the socio-political situation becomes calmer and more stable, we can recognize that challenges remain in governance of the country. Similarly, the establishment of a political, institutional and legal.

Population vulnerability

18. In 2015, the population estimated about 10,512,474 inhabitants (IHSI, 2015). The country has the highest population density in the region (or 379 people per km²). The annual growth rate of the population is 1.3%. The Haitian population is mainly youth. Children and young people under 25 represent over 56% of the total population. There are 86 men for every 100 women in urban areas and 98 men per 100 women in rural areas.
19. Population projections indicate that in 2050, the Haitian population could exceed 16 million people. In 2030, the urban population would consolidate over 60% of Haitians and by 2050 over 70% (IHSI, 2015). This urban trend could increase vulnerability to natural disasters centered on cities if we do not plan mitigation measures in terms of urban development, organization of space, to promote good building standards of human settlements etc.

Societal Context

20. Haiti is one of the poorest countries in the world. About a quarter of the population lives on less than \$ 1.25 a day (Sustainable Development Framework, 2016). The same document indicates that the monetary poverty rate is estimate at 58.6% and is about 6.3 million in the same period.
21. The service sector strongly drive the national economy. The latter, which covers 59% of GDP, is mainly based on services of catering, hotels, financial institutions, transportation etc.
22. The secondary sector contributes 18% of GDP and relate to the processing of raw materials. In recent years, in favor of post-seismic reconstruction projects, the construction sector and Public Works (BTP) has largely contributed to the growth of the economy.
23. The primary sector, which mainly includes vulnerable groups account for 23 to 25% of GDP. The sector employs over 70% of the population, particularly the poorest. It is mainly rural and agricultural. Indeed, more than half of Haiti's population (between 5 and 6 million) live in rural areas and nearly 85% of the population practice farming.
24. From the above, one can note that the Haitian economy is not pro-poor and it mostly benefits the wealthy classes. Moreover, it is comparatively extroverted and is not inclusive enough. Thus, it is not a robust resilience floor for the most vulnerable to disasters.

d. Disaster and CC risk

25. Haiti is subject to a range of natural hazards that may be of hydro meteorological or geodynamic origin. They consider Haiti as **the fifth country and the most exposed to the risk of disasters worldwide**. Nearly 98% of the population expose to at least two natural hazards: earthquakes,

hurricanes, landslides, floods and drought. Indeed, more than a hundred disasters hit the country in the years of 1900-2016⁹.

26. These disasters have so often ravaged several cities including an earthquake of magnitude 7.0(Mw), nearly 40 cyclones, over fifty floods and seven periods of drought.
27. According to EM-DAT¹⁰ 96% of Haiti's population lives in less exposed to two risks of disasters. The country has an index of vulnerability to cyclones of 12.9 on a scale of 13 and ranks first in terms of vulnerability to cyclones in the region of small island states.
28. The global index on climate change indicates that the country ranks 3rd among the most affected by the effects of extreme weather events countries worldwide. In the Caribbean countries, Haiti is the one that suffers the highest number of disasters per square kilometer¹¹.
29. In 2018, the figures for the index of vulnerability to natural disasters and humanitarian crises published by the Group INFORM¹² show that the country's vulnerable situation has not changed much. This index, Haiti class in 14th place globally on 119 and first place in the Region Latin America and Caribbean (LAC).

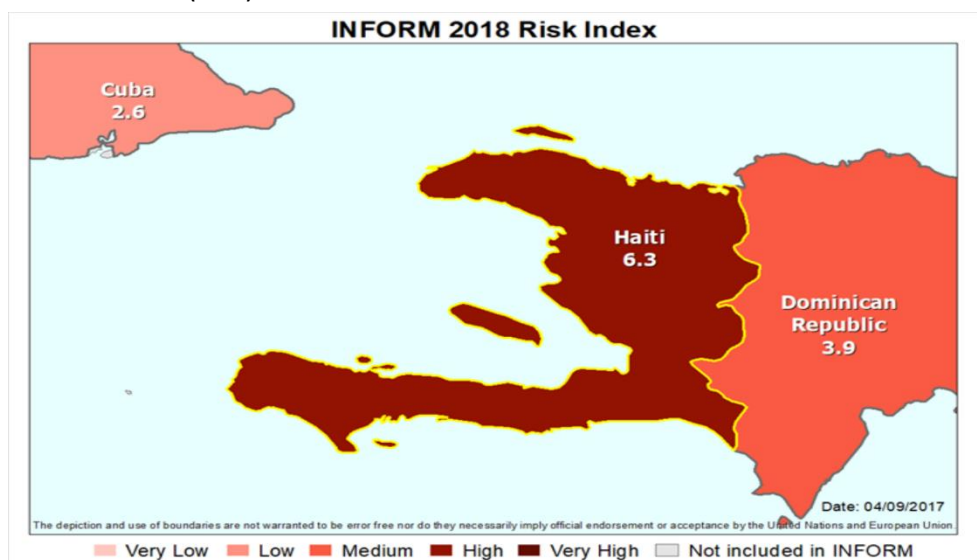


Figure I-4 Inform Risk Index 2018.

30. According to the World Bank, 56% of the country's production of GDP are located in areas at risk of disaster. To this end, it notes that the recurrent flooding would cause an economic impact of 2% of GDP (World Bank, 2014).
31. According to the analysis of historical data disasters made by the GFDRR¹³, an amount of 150 million USD per year on average was estimate on losses from extreme events hydro meteorological kind. Moreover, the average annual damage associated with tropical cyclones estimated over a period of 10 years, cost more than 442 million USD per year.

⁹ UN Office for Disaster Risk Reduction, Government of Haiti Document Country for Disaster Risk Reduction: Haiti, 2016

¹⁰ Emergency Events Database (EM-DAT) <https://www.cred.be/projects/EM-DAT>

¹¹ Source [link](#)

¹² INFORM is an open source method for quantitative risk assessment crisis and disaster. The results obtained with this tool can support decision making prevention

¹³ Global Facility for Disaster Reduction and Recovery (GFDRR)

32. Chronic food insecurity related to the **drought** affecting all areas of livelihood of the country, about 70% of the population. More than three million people were in moderate or severe chronic food insecurity in 2016 and 9 out of 10 departments are periodically under stress (CNSA¹⁴). As for chronic malnutrition, affects about 22% of children under 5 years. The moderate or severe food insecurity affected 3.2 million people (or 29% of the total population), of which 2.8 million moderately malnourished and 450000 severely malnourished.
33. **Flooding** is a major problem in almost all the 30 largest rivers in Haiti due to heavy seasonal rains, the occurrence of storm in coastal areas, eroded and deforested landscape, and filled rivers sediments. Coastal cities with large concentrations of people such as Jacmel, Les Cayes and Gonaives are in the direct path of the storm.
34. The coastal plains contain important aquifers that are more prone to **salinization** and as soils become saltier, resulting from **rising sea levels**, they will no longer be cultivable, which will cause huge economic regressions. Communities with low incomes located near rivers and coastal plains live the bitter experience of significant loss of human life during the hurricane season result in flooding and power gusty winds. The subsequent flooding downpours also affect public health: they facilitate the spread of diseases such as cholera.

e. Impact on school safety

35. Disasters have a **major impact on children**, youth and education systems. Studies suggest that in the world, every year 175 million children are likely to affect by natural hazards leading to disaster, and children in Haiti are no exception. In January 2010, some 38,000 students and 1,300 teachers and education personnel died in Haiti. The Ministry of Education offices were destroyed along with 4,000 schools – close to 80 % of educational establishments in the Port-au-Prince area.
36. In 2016, **Matthew hurricane** struck Haiti resulted in significant physical damage to Haiti's education sector after an assessment by the MENFP¹⁵. An average figure estimated that 3,452 schools were affected and 521 schools have been destroyed. The cost of damage due to the passage of hurricane to school in the southern departments reached an estimated \$ 62.9 million U.S. dollars. A school on four average was damaged.
37. In Haiti, technical and financial resources are scarce or unavailable to perform tasks on a standalone basis. Despite this, they implemented the main strategies to improve school adaptation, mitigation and preparedness. A comprehensive education sector safety contains three overlapping areas of focus: Safe School Facilities, School Disaster Management and Disaster Prevention Education. Enveloping these three pillars are education policies and plans at the government level, ideally undertaking systematic analysis of threats to school and system safety and developing policy and plans that address each of these three areas.

¹⁴ National Coordination for Food Security (CNSA) institution of the Haitian state is to influence public policies to sustainably improve food security conditions of the Haitian population.

¹⁵ Ministry of National Education and Vocational Training (MENFP) post Hurricane Matthew evaluation report

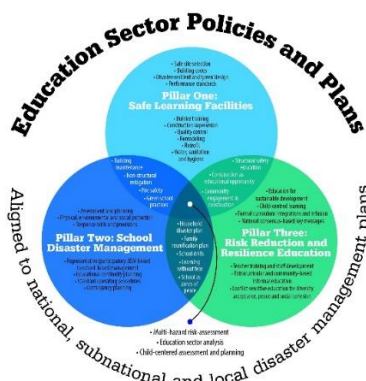


Figure I-5: Comprehensive School Safety Framework (CSSF)

38. Recognizing that school age children spend majority of their waking hours at school, there is always a high possibility that a natural hazard struck while they are at school. Therefore, they need to protect school facilities from disasters as they save life of children. They can also help to work as temporary shelter in post disaster scenario. Safer schools are necessary to prevent lives of children during natural hazards events. The concept of school safety is not limited to prevent the collapse of school buildings in disasters, and the safety of teachers and students. However, it extends to meet the broader goal “disaster risk management”.
39. Moreover, resilient schools are effective medium to disseminate the awareness of disaster risk reduction in the communities, can act as center of learning, can be instrumental in transfer of technology to the communities and have significant role to build disaster resilient communities. The activities like retrofitting of school and new construction with safety measures can spread message to the community of the importance of resilient buildings to reduce disaster impact.

Project Objectives

List the main objectives of the project

40. The aim of the project is to enhance the adaptive capacity and resilience of the Haitian education sector to disaster risk of natural hazards related to climate change, through the establishment of appropriate risk assessment tool, schools retrofitting and implementing adaptation actions in Haiti.
41. The project promotes and adopt innovative, structural and non-structural resilient resolutions. More specifically, this project is intended to strengthen the resilience to typhoon and flood of the Haitian education sector by:
 - Improving a national and comprehensive knowledge of exposure and physical vulnerability of school facilities and decision process of intervention in Haiti;
 - Strengthening the school safety by promoting rehabilitation, retrofitting, reconstruction or relocation on selected schools and risk management school protocols;
 - Enhancing the capacity and awareness of local population and civil protection stakeholders in risk management at national and local levels;

Project Components and Financing

Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.

Project Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
Component 1 Assessment of school facilities by VISUS methodology	Output 1.1 Improve trainers competence to provide inclusive, technical and effective training	Outcome 1 Improve the national knowledge to the exposure and physical vulnerability of school facilities and capacity of the decision process of intervention in Haiti	20.000
	Output 1.2 Enhance decision makers understanding of the VISUS approach		30.000
	Output 1.3 VISUS surveyors know-how to transfer to university students		50.000
	Output 1.4 Assess the exposure and vulnerability of school facilities		600.000
	Output 1.5 Put on place GIS-based web platform knowledge-sharing		50.000
	Output 1.6 Develop Strategic intervention plan for school facilities		20.000
Component 2 Schools adaptation and safety Improvement	Output 2.1 Design detailed intervention of the selected schools	Outcome 2 Strengthening the school safety by promoting rehabilitation, retrofitting, reconstruction or relocation on selected schools and risk management school protocols	550.000
	Output 2.2 Implement Adaptation, Rehabilitation, retrofitting, reconstruction or relocation of school facilities		5.500.000
	Output 2.3 Improve trainers competence to provide inclusive, technical and effective training		50.000
	Output 2.4 Good DRR and CCA practices are adopted by students and school staffs		200.000
	Output 2.5 Adopt risk management school protocols		100.000
Component 3 Enhancement of the climate resilience of social community	Output 3.1 Enhance knowledge and awareness of the disaster risk due to CC in Haiti	Outcome 3 Enhancing the capacity and awareness of local population and civil	50.000
	Output 3.2 Community emergency plan		300.000

through the educational sector	Output 3.3 Put on place community capacity to cope with disasters improved	protection stakeholders in risk management at national and local levels	500.000
	Output 3.4 National action plan for resilient schools facilities and their surrounding communities.		300.000
Component 4 : Monitoring and evaluation	Output 4.1 Assessment of VISUS methodology in the schools		20.000
	Output 4.2 Assessment and monitoring the safety level of the schools		30.000
	Output 4.3 Assessment and monitoring enhancement level of climate resilience of school communities		30.000
6. Project Execution cost (9.5%)			785.000
7. Total Project Cost			8.320.000
8. Project Cycle Management Fee charged by the Implementing Entity (8.5%)			705.000
Amount of Financing Requested			9.890.000

Table I-5 Project Components and Financing

42. The components of the project are developed following the process of change outlined by the causal linkages between the outputs and the hypothesis behind each single step. Figure I-6 present the Theory of Change of the proposed project.

Projected Calendar

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project/Program Implementation	October, 2020
Mid-term Review (if planned)	April, 2022
Project/Program Closing	October, 2023
Terminal Evaluation	December 2024

Table I-6 Projected calendar

Education Sector		Extended School Community
Present situation	The Haitian Education sector is exposed and vulnerable to multi-hazards climated related risk	
<i>so that (A)</i>	University students, professionals and decision makers come to training on school facilities assessment of multi-risks	
<i>so that (B)</i>	They will be able to assess with standardized methodology the vulnerability and exposure of the facilities	Present situation The Haitian communities are aware of the risks that are exposed
<i>so that, Outcome 1</i>	Decision makers will have the knowledge, competence and information to develop a strategic intervention plan	<i>so that (i)</i> Comes to workshops and trainings to enhance their knowledge and awareness on the effects of climate change
<i>so that (C)</i>	With limited budget, the adaptation and rehabilitation of the physical vulnerability of the most relevant facilities will have the highest impact	<i>so that (ii)</i> The decision makers will promote the development of emergency plan involving the extended community of the rehabilitated schools
<i>so that (D)</i>	Students and schools staff can come to trainings/courses and do simulation of CCA and DRR practice inside the rehabilitated schools	<i>so that (iii)</i> The extended population learn how to behave in case of emergency
<i>so that (E)</i>	The risk management schools protocols and CCA actions implemented can be efficacely adopted by the people in the shools	<i>so that (iv)</i> The population will properly use the school facilities as temporary shelters during extreme events
<i>so that, Outcome 2</i>	The safeness and resilience of people inside the school increases	<i>so that, Outcome 3</i> The safeness of extended population increases
<i>so that (AIM)</i>	Haitian education sector enhances the resilience to disaster risk of natural hazards related to climate change	
The hypothesis behind the So that Chain are:		
A	Students, professionals and decision makers accept to use the VISUS methodology as school assessment tool	
B	The trainings have transferred the methodology to the surveyors	
Outcome 1	The decision makers agree to develop the strategy based on the input of the methodology	I Haitian people recognize that the climate change will increase the hazards of their communities
C	The rehabilitation interventions will be implemented accordingly to the designs	II The extended communities is involved in the development process of emergency plan
D	People in the schools recognized the importance of knowing how to behave in case of emergency and how to adapt to CC	III The extended communities recognize the values of adopt appropriate behave in case of emergency
E	The retrofitted and adapted schools has implemented a emergency protocols and courses on CC related topics	IV The extended communities and the retrofitted schools agree on common protocols in case of emergency
Outcome 2	People in the rehabilitated schools apply the emergency protocols during the next events and implement CCA actions	Outcome 3 The extended population in the rehabilitated schools apply the emergency protocols during the next events
AIM	Haitian education sectors is supported by other national sectors (e.g. economy, civil protections, etc.) to promote the resilience in the communities	

Figure I-6 Theory of change

PART II: PROJECT JUSTIFICATION

A. Project Components

Describe the project components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience.

43. The project is extremely important to enhance the national resilience of Haiti by increasing the capacity to absorb and react to the extreme events increased by climate change. In fact, these events are constantly challenging the country and are becoming one of the major restraints for a sustainable development. The project aims to enhance the adaptive capacity and resilience to disaster risk of natural hazards focusing on the Haitian education sector. The aim's pursuit is to achieve the following three major objectives. 1) Improve the national knowledge to the exposure; physical vulnerability of school facilities; and capacity of the decision process of intervention in Haiti. 2) Strengthening the school safety by promoting rehabilitation, retrofitting, reconstruction or relocation on selected schools and risk management school protocols. 3) Enhancing the capacity and awareness of local population and civil protection stakeholders in risk management at national and local levels. These objectives will be achieved through three interlinked components:
- Component 1: Assessment of school facilities by VISUS methodology;
 - Component 2: Schools safety improvement
 - Component 3: Enhancement of climate resilience of social community through the educational sector.
44. The components is design to translate the four rebuilding pillars (i.e. territorial rebuilding, economic rebuilding, social rebuilding and institutional rebuilding) of the Strategic Development Plan of Haiti into concrete action on the ground. The project components respond to this plan by immediate increase the resilience of some prioritized schools by adopting a long-term development perspective.

Component 1: Assessment of school facilities by VISUS methodology

45. Component 1 specifically responds to the first of three objectives of the project: Improve the national knowledge to the exposure and physical vulnerability of school facilities and capacity of the decision process of intervention in Haiti.
46. Haiti is very vulnerable to extreme events due to climate change and the education sector is not far behind, as recent event unfortunately confirms. In order to increase the resilience of Haiti, in particular into the education sector, this component aims to improve the competence and the knowledge of local technical experts. These specific competences will allow to assess the vulnerability of the school facilities across the country, this knowledge in fact is the first step to start a properly implementation interventions of rehabilitation. The assessment will be based on

the **VISUS¹⁶ methodology, a Visual Inspection for the definition of Safety Upgrading Strategies**, which allow ranking the priority interventions, to define specific actions required and how much they would cost. This classification will be the base for the development of strategy of intervention that component 2 implement.

47. Component 1 contains 6 outputs described below.

Output 1.1: Improve trainers' competence to provide inclusive, technical and effective training

48. The Training of Trainers (ToT) is a strong predictor of sustainability of this project because it will allow to up-skilling the workforce rapidly, cheaply and exponentially by developing local educators. They provide participants with horizontal and crossing information and skills to plan, develop and to mainstream active participation, gender and youth inclusion in their trainings. Further, the horizontal information, the ToTs will provide vertical competence on the multi-risk of Haiti and the VISUS technical guidelines, characterization and standards for the multi-hazard assessment of school facilities in Haiti.

49. Indicative activities:

- Identify and map national, regional (department) and local organizations mandated to work on DRR, including climate related risks;
- Identify and select trainer of trainers that could be nationwide representative;
- A ToT at the beginning of the project;
- A second ToT planned after the first trainings implementation to share lesson learnt and if necessary to review the methods.

Output 1.2: Enhance decision makers understanding of the VISUS approach

50. VISUS especially address to stakeholders from the Ministries of Education, National Disaster Management Authorities and other relevant institutions to help them to understand which schools need priority interventions, which specific actions are required and how much they would cost. The very comprehensive VISUS assessment provide a large amount of information and a set of indicators used to support decision-makers in the definition of safety upgrading strategies. They represent in a collective report with the outcomes for the entire analysed geographical area, along with individual reports illustrating the situation of each of the inspected schools. The assessment become concrete action put in place as soon as the decision makers will start to take strategically decisions based on the results from the VISUS approach. For this reason, it is important that the value and power of the methodology are clearly transfer to those figures that more relate to the schools' safety in Haiti.

51. Indicative activities:

- Identify the national and regional Haitian offices mandated to work on the education sectors, DRR and climate related risks;
- Identify and select the relevant decision-makers that could be benefit from the adoption of VISUS methodology;

¹⁶ UNESCO Guidelines for Assessing Learning Facilities in the Context of Disaster Risk Reduction and Climate Change Adaptation: [VOLUME 1](#): Introduction to learning facilities assessment and to the VISUS methodology; [VOLUME 2](#): VISUS Methodology; [VOLUME 3](#): VISUS Implementation

- A training on how to use the outputs of the VISUS assessments;
- Final workshop on the results of the AF application project.

Output 1.3: VISUS surveyors' know-how to transfer to university students

52. Trained VISUS surveyors carry out the survey phase; they collect information for each school using the pre-codified VISUS survey forms. For this reason, it is important to introduce the VISUS methodology to lecturers, researchers, practitioners, and students for them to use the survey tools and to take the lead in assessing the schools safety during the field survey.
53. Indicative activities:
- Identify the national university student courses and technical organizations that will be interested and appropriate to be involved in the surveys;
 - Capacity building of local engineers, architects, geologist, student etc., that will perform assessment of school
 - Training to the teams that will perform the assessment at the school level.
 - Production of technic guidelines for the assessment of school facilities

Output 1.4: Assess the exposure and vulnerability of school facilities

54. The core of the first outcome is the implementation of the VISUS assessment in the selected 750/1000 schools in those areas of the country that are more exposed to extreme hazard as underlined in the project background. Trained team of four people, three students and one professor will carry out the assessment surveys. The inspectors from related ministries or national institutions, and/or final year civil engineering or architecture students of local universities will collect information for each school using the pre-codified VISUS survey forms.
55. Indicative activities:
- Elaboration of a plan and a calendar for the implementation of the assessment by geographical localities and number of teams;
 - Implementation of the assessment by survey teams;
 - Selection of schools that will need further and deeper assessment investigation.
 - Implementation of a more detailed assessment to the previous selected schools that particular specialists will perform.

Output 1.5: Put on place GIS-based web platform knowledge sharing

56. The pre-codified VISUS survey will allow the collecting of all the assessments in the same format and comparing theme. To facilitate the consultation and the knowledge sharing between stakeholders they will upload in a geographical web-platform all the evaluation. The geographic information system will show, further the location, the individual report of each single assessed school and the relative collective report that allow to easily compare with other schools.
57. Indicative activities:
- Elaborate a Geo-spatial inventory of schools and a comprehensive school mapping of Haiti.

Output 1.6: Develop strategic intervention plan for school facilities

58. The development of the strategic intervention plan based on the outputs of the VISUS methodology links the first and second outcomes. Public administrations are facing a complex problem and they often need to answer the following questions: which school must be adequate first? Why? What typologies of intervention are necessary? What level of safety is it possible to reach? How much is the cost of retrofitting? How many interventions the available resources manage? These questions point out that the definition of a rational and effective strategy for the mitigation of natural hazards risk implies the necessity to know the level of risk and the criticalities together with the required countermeasures and their costs. All this knowledge provided by the VISUS assessment permits to carry out an evaluation of the needed economical effort in terms of necessary global financial amount and, consequently, the definition of the practicable strategies for building a resilient school sector and enhance adaptive community.
59. Indicative activities:
- Identification and maps of the schools, areas, regions, localities; which will need urgent intervention.
 - Workshop with the relevant stakeholder to discuss about the results of the assessment
 - Selection of schools which could be used as temporary community shelters (even if it is not recommended), and reinforce their physical capacities to meet these special needs.
 - Definition of a strategy for intervention.

Component 2: Schools adaptation and safety improvement

60. The objective of component 2 is to strengthen the school safety by promoting rehabilitation, retrofitting, reconstruction or relocation on selected schools and risk management school protocols. The budget allocated for this component allow the intervening only to some of all the 750/1000 schools assessed in component 1. In particular, 10% of this budget will be used to adapt and rehabilitate schools from the beginning of the project based on the VISUS assessment carried out in 2017 (precedent project). The remaining 90% will be used to rehabilitate approximately 15 to 30 schools that have at least 300 student, and require light level of interventions with estimated budget. Each between 100K\$ and 200K\$; 5 to 10 schools that have at least 450 students and require medium level of interventions with estimated budget each between 200K\$ and 400K\$; finally, 2 to 3 schools that have at least 800 students and the require heavy level of interventions with estimated budget each between 400K\$ and 600K\$. The VISUS methodology provided the level of interventions and budget estimation.
61. Component 2 contains 5 outputs described below.
- Output 2.1: Design detailed intervention of the selected schools**
62. The strategy of intervention defined in the first component propose a list of interventions according to the VISUS assessment and the estimated necessary budget. The first output of Component 2 is the detailed design of the upgrading level of safety of learning facilities accordingly to the developed strategy. In fact, only after this step will be possible to confirm the exact number of intervention and set up each specific subcontract for the intervention.
63. Indicative activities:
- Detailed designs of all schools considered in the strategy
 - Detailed budget estimation for each intervention

- Sign the subcontracts for the selected interventions

Output 2.2: Implemented Adaptation, rehabilitation, retrofitting, reconstruction or relocation of school facilities

64. According to the detailed designs of previous output it will be possible to put in actions all the interventions that are considered strategic in order to adapt and improve the safety of the schools. The actions will first upgrade the safety of students in the schools and also people that will use the facilities as shelter areas. Furthermore, some interventions will allow the school facilities to better adapt to the adverse and extreme conditions exacerbated by climate change. Some of these interventions will be the installation of water harvestings tanks (e.g. bathrooms for girls and for emergency when the schools will be used as shelter) and renewable energy systems for consumption in the school (n.b. in the evening schools do not have electricity at nights).
65. Indicative activities:
- Program the works without interrupts the education service provided to students
 - Implement the interventions to upgrade the safety of school facilities
 - Implement the necessary adaptation interventions

Output 2.3: improve trainers' competence to provide inclusive, technical and effective training

66. As for outcome 1.1, the ToT provides participants with horizontal and crossing information and skills to plan, develop and to mainstream active participation, gender and youth inclusion in their trainings. The construction sector is extremely sensitive to these issues, for that reason the project proposes specific ToT integrated with construction vertical competences.
67. Indicative activities:
- Identify and map national, regional (department) and local organizations mandated to work on constructions;
 - Identify and select trainer of trainers that could be nationwide representative;
 - A ToT at the beginning of the project;

Output 2.4: Students and school staffs adopt good DRR and CCA practices

The people safeness within the schools is not only obtained by decreasing the vulnerability of the building (output 2.1) but also by transferring appropriate behaviors to students and adults who are in the facilities. People trained are able to recognize the risk and individually adopt measures and behaviours to reduce their exposure and vulnerability. Furthermore, it will provide students with specific sciences laboratories to transfer knowledge related to climate change and appropriate behavior on how to adapt to the new climate challenges.

68. Indicative activities:
- Training programs on how to behave in case of hazardous events tailored to students and adults working in the school;
 - Plan with school representative an internal simulation of emergency;
 - Establish laboratories related to the climate change sciences.

Output 2.5: Adopt Risk management school protocols

69. Simple actions at school level can make a great difference in safeguarding people, vital records, manuals, notebooks and furniture and equipment. This output aim to increase the schools' capacities by developing and implementing emergency preparedness and management plans and identify the School Emergency Response Teams (SERT).
70. Indicative activities:
- Review of the existing information regarding the local hazard and historical events
 - Internal workshop with schools' personnel with the local authorities and major stakeholders to collect information
 - Establish an emergency plan for schools' facilities
 - Install warning messages and instructions within the schools

Component 3: Enhancement of climate resilience of social community through the educational sector

71. The third component aim to transform the education sector in community resilience fertilizer built around the schools. The object of this component is to enhance the capacity and awareness of local population and civil protection stakeholders in risk management at national and local levels.
72. The project has the ambition to bridge gaps from assessment to practice, and from knowledge to action. The project will make all the information of assessment available to all stakeholders, because information is an essential forerunner to risk reduction and mitigation. Through a wide range of activities, the project also benefits from a broad range of stakeholders, bringing a once-scarce resource to all sectors and beneficiaries. By making risk assessment inclusive, despite its complexity, the project will collaboratively create a culture of awareness and resilience. The open web datasets allow users to explore different types of risk information, facilitates data contribution and supports open sharing of information through maps and layers. These will be concretely implemented by routing meetings (planning, consultation, review, etc.) between stakeholders and project partners, round-table discussions with locally involved organizations (schools, civil protection, neighbourhood groups, etc.) and public conferences with interested populations. All these experiences will enable transferring knowledge during all the project stages and will facilitate the understanding and adoption of the results that the project will disseminate at the end. Only if the beneficiaries understood and adopt the results, it is possible to implement the behavioural change and then the project's impact.
73. Component 3 contains 4 outputs described below.

Output 3.1: Knowledge and awareness of the disaster risk due to CC in Haiti enhanced

74. The first output of the third component aim to raise the awareness on the increase of risk due to CC and the importance of implement adaptation actions. The extreme events induce by CC are slaking, and in some case blocking, sustainable development of the country. For this reason, it is important that at national level the knowledge of CC and the consciousness of the risk will promote a behavioural change of the decision makers.
75. Indicative activities:
- One National conference regarding the effect of climate change to the extreme natural hazards and the importance to adapt to them

- One National workshop on the role of education sector into DRR interventions and the intervention strategy adopted

Output 3.2: Put on place community emergency plan

76. The enhancement of climate resilience of social community, further the raise of knowledge and awareness at national level (output3.1), is achievable through the implementation of local actions. In particular, this output aims to implement a disaster risk management actions at community level. These activities allow to increase the knowledge of risk at community level and to strengthen the operational procedures in case of emergency. Those communities will develop emergency plans, and the schools that the project will select for a medium and heavy adaptations and rehabilitation actions.
77. Indicative activities:
- Review of the existing information regarding the local hazard and historical events
 - Workshop and consultation at community level with the local authorities and major stakeholders to collect information
 - Analyse the impacts of CC scenario to local events
 - Establish an emergency plan for the communities

Output 3.3: Improve community capacity to cope with disasters

78. This output aims to transform the emergency knowledge and plan into concrete action by increasing the coping capacity of community, and to strengthen the connection between the community and the school facilities during an emergency. The output will test the emergency plan and proactively propose appropriate behaviors in case of emergency.
79. Indicative activities:
- Install warning messages and instructions in the community
 - Plan a simulation evacuation with local authorities and school representative
 - Implement a full simulation evacuation

Output 3.4: National action plan for resilient schools facilities and their surrounding communities.

80. The final output aims to collect all the lessons learnt from the three components and rationally summarize them into a proposal for a National action plan, which could be a milestone for future replication and auto-sustainability of the project results. The knowledge provided by the schools' assessment and the methodology adopted for the strategy of intervention, the techniques to strengthen the school safety and the disaster risk management activities implemented to transform the school facilities into temporary shelters, will be integrated into a document that will allow to strategically implement similar interventions in the future.
81. Indicative activities:
- Review of the existing national and local plans regarding the upgrading of the existing and new school facilities;
 - Report on the methodology adopted for the strategy intervention and the implementation of DRM activities on the extended school community;

- Organize workshops with relevant ministries to share the output of the project and involve in the proposal of the national action plan;
- Develop of the National action Plan proposal.

B. Economic, social and environmental benefits

Describe how the project provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund (the Environmental and Social Policy) and its Gender Policy.

Outcomes of the projects	Benefits		
	Social	Environmental	Economic
<p>Outcome 1: Improving a national and comprehensive knowledge of exposure and physical vulnerability of school and decision process of intervention in Haiti;</p>	<ul style="list-style-type: none"> ▪ Decision makers empowered on climate-resilient development ▪ Enhanced technical capacities of university students and professionals to improve resilient builds; ▪ Strengthen cohesion and integration between stakeholders 	<ul style="list-style-type: none"> ▪ More sustainable use of natural resources thanks to a better knowledge of the interaction between climate, environment and human factors 	<ul style="list-style-type: none"> ▪ National governments will be able to use their resources more efficiently and make better decisions related to their existing livelihoods and risks exposure ▪ Cost decrease for external knowhow thanks to an increase in availability of national expertise
<p>Outcome 2: Strengthening the school safety by promoting rehabilitation, retrofitting, reconstruction or relocation on selected schools and risk management school protocols;</p>	<ul style="list-style-type: none"> ▪ Reduce fatalities related to the education sector from climate-related disasters ▪ Children and teachers empowered on climate-resilient development; 	<ul style="list-style-type: none"> ▪ Reduced soil loss lead by improving land management and conservation of school facilities 	<ul style="list-style-type: none"> ▪ Reduce school facilities losses from climate-related disasters
<p>Outcome 3: Enhancing the capacity and awareness of local population and civil protection stakeholders in risk management at national and local levels;</p>	<ul style="list-style-type: none"> ▪ Reduce community fatalities from climate-related disasters ▪ Adaptive and cope capacity of communities to climate related risk increased ▪ Improve community participation, ownership and accountability ▪ Strengthening the active participation of vulnerable populations in decisions linked to climate change and greater gender empowerment ▪ General raising of awareness of climate related risk to the community and the need for an enhanced role by the community 	<ul style="list-style-type: none"> ▪ Reduce pressure and degradation on the natural environment 	<ul style="list-style-type: none"> ▪ Reduce community losses from climate-related disasters ▪ Improve the local capacity to invest in climate-resilient future projects

Table II-1 Economic, social and environmental benefits

Avoiding or mitigating negative impacts

82. The project activities are designed and implemented in ways that do not cause negative social or environmental impacts. To ensure it, the project adopts measures both at project management level, also monitoring the involvement of all beneficiaries.
83. At the project management level, the following measures are adopted both project and activities levels:
 - *Project:* Environmental and social screening and categorization against the AF’s Environmental and Social principles at full project formulation stage;

- *Activity:* Environmental and social screening for component 2 activities (output 2.1) at project implementation stage; and planning, implementation and monitoring of necessary mitigation measures as identified by the activity-level environmental and social screening.
84. The project guarantees the monitoring and the involvement of all beneficiaries through the following measurements both in activity design and implementation:
- Continuous open collaboration with relevant stakeholders, (e.g. Ministry of Education, The directorate of Civil Protection, The State university of Haiti, the Ministry of the Environment +);
 - The local resilience and adaptation plans to climate-related disaster will be planned on the empower and inclusive community;
 - Promote pro-active engagement of the community leader and schools' representatives;
 - Consultation and engagement with beneficiary communities, including vulnerable groups and schools' representatives;
 - Beneficiaries will be able to raise their voice, report any irregularities, and allow for pre-emptive operational adjustment, the establishment of complaint and feedback mechanisms will allow this. In section "K" we report more information regarding on how the project will avoid or mitigate negative environmental and social impacts, and attached in the annex the report of the consultation process with the main findings (Annex 1).
85. The project is designed also to avoid and mitigate negative impacts in compliance with the Gender Policy of the Adaptation Fund. They design numerous project's activities and decision-making processes to promote inclusive participation across sex, age, and different ability levels. These include targeting of gender-differentiated and other vulnerabilities into project interventions so that the most vulnerable groups to climate variability and change can receive support, and designing women and youth capacity building and skills enhancement aspects. The project results framework will include gender- and age-disaggregated indicators and targets to track and ensure participation of women and youth in awareness-raising activities, capacity building, and any management committees. The UNESCO Country Office will monitor and support on an ongoing basis, and motivate for change in the operational procedures should this be required. Implementation collaborators such as the Ministry of Youth, the service of handicapped people, the Ministry of Women are integrally involved in project planning. They will continue to be throughout the implementation, to ensure the appropriate mainstream of the project activities in gender and other inclusion considerations.

C. Cost-effectiveness

Describe or provide an analysis of the cost-effectiveness of the proposed project.

86. The AF project boosts natural disaster resilience of the disaster prone areas more vulnerable to extreme weather events and natural disasters induced by climate change. The three project components comprise both hard and soft technologies and aiming to promote innovative adaptation technologies projects. The objective of the project is to 'climate proofing' the built environment and evaluate risk management measures and make school facilities more hazard resilient. The AF project will also raise awareness and educate on the importance of climate

change and disaster risk management. The direct target and high intensity category of beneficiaries are the people in the education sector (e.g. students, teachers and all the people who work in the school facilities) and the neighbouring households to the school facilities that will receive the implementation of components 2 and 3. Instead, the indirect targeted and medium intensity category beneficiaries are all the people who relate to the school facilities that the implementation of component 1 will assess. Finally, the not targeted and medium intensity category of beneficiaries are communities within the region coverage in which we implement the project.

87. The typical benefits of the concrete natural risk prevention actions of the AF project are to improve the health conditions of the beneficiaries and to reduce the damage of the school facilities. The improved health conditions aim to change the human mortality and morbidity rates. It is not possible to predict when an actual disaster will occur and with what intensity. Thus, we estimate the effectiveness of disaster prevention projects through risk and vulnerability assessments that include a degree of uncertainty because they depend on a large number of factors, ranging from the deterministic socio economic characteristics of the area to the probabilistic nature of the event and its magnitude. Therefore, while the costs are well defined, benefits derived from avoided losses are not definitive, but are rather probabilistic, at best.
88. In addition to the improvement of health conditions, natural risk prevention is also associated with the reduction of damages to properties. The reduction of damages to school facilities is related to the implementation of interventions (Component 2) aimed at preventing and reducing the impact of natural disasters due to climate change, such as the development of tools and systems for risk management (Component 3).
89. The estimation of avoided damages to capital stocks (i.e. school facilities) incurred by the public sector to repair or replace the damaged assets should be based on the average avoided damage methodology. Component 1 of the project aim to assess the distributions of risks, school facilities vulnerability and exposure and the strategic intervention plan (Output 1.6) quantify the effect of the project intervention in terms of potential avoided losses (i.e. reduced schools' vulnerability) and the severity of the avoided impact (i.e. number of people served by the school facilities). An example of cost benefit analysis can be conducted on the results obtained by the implementation of VISUS in 2017 in Haiti on 101 schools. Considering a quantitative rationale for the school prioritization, it possible to find the 41 schools that can maximize impact on the number of school population (20676 over 48796) within the project budget allocation. Considering that the total budget allocated for the 101 schools is estimated between 38M\$ and 55M\$, selecting these 41 schools with only 16% of the total allocated budget it is possible to reach 42% of the population. The following graph shows the population served by the 41 selected schools and the minimum and maximum budget allocation for each schools. A similar approach will be used to select the intervention of component 2 based on the assessment of component 1 in order to maximize the cost-effectiveness.

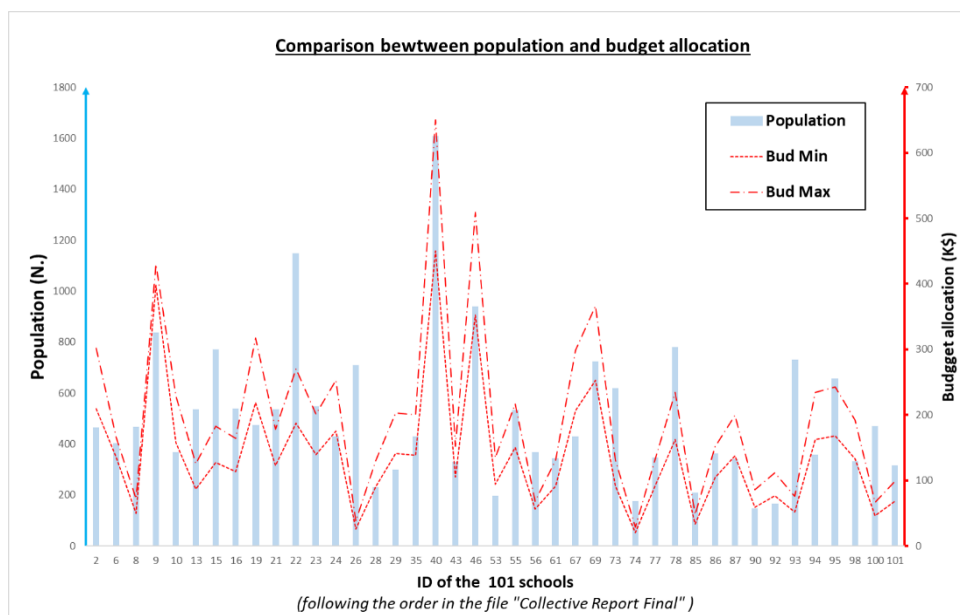


Figure II-1: A rational approach to prioritize school intervention to maximize the cost-effectiveness

D. Consistency with national priority

Describe how the project is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

90. The proposed project will contribute to achieve the respective national adaptation priorities. Over the last decade, Haiti has been victim of several hydro-meteorological disasters, often induced by adverse impacts of climate change. In accordance with Article 4, paragraph 12 of the Paris Agreement, the **National Development Contribution (NDC)**¹⁷ submitted by Haiti, illustrates the country’s priorities to mitigate the adverse impact of hazards and climate change, towards sustainable development. Consequently, the project is in alignment with national or sub-national sustainable development strategies, development plans, poverty reduction strategies, national communications and national adaptation programs of action. It is also consistent with national socio-economic priorities, national climate change priorities and national disaster risk management priorities.
91. Rooted in the urge to increase the country’s resilience to the impacts of climate-related extreme events, the **National Adaptation Action Plan (PANA)** ¹⁸has developed a set of priorities for actions. Within this framework, they give particular importance to improve the country’s resilience through information, education and awareness, as well as through habitat and land planning. Addressed by this project proposal are the country’s priorities towards:
 - Integrated management of coastal areas and rehabilitation of infrastructure;
 - Information, education and awareness.

¹⁷ Contribution Prévue Déterminée au niveau National ([Link](#))

¹⁸ PIAN D’ACTION NATIONAL D’ADAPTATION (PANA)

92. In particular, under the terms of the country's NDC, Haiti has committed to protect and relocate infrastructure at risk from the impacts of climate change, with the follow up of the implementation of the project's activities can greatly facilitate achievement.
93. Among the measures of adaptation, some of the following are directly addressed within the present project proposal:
- Reduced risk of disasters in the most vulnerable areas exposed to floods.
 - Establishment of resilient infrastructure to adverse climatic events.
 - Development and implementation of Urban Planning and Sustainable Development Plans for cities at risk of flooding.
 - Update of the National Risk and Disaster Management Plan (PNGRD) integrating the risks related to Climate Change.
 - Strengthening the National Risk and Disaster Management System.
 - Strengthening early warning systems for disasters.
 - Development and implementation of local risk and disaster management plans in the largest / most vulnerable cities.
 - Strengthening building standards.
 - Production, communication and dissemination of knowledge related to climate change, including migration (primary, secondary schools and universities).
 - National awareness on the causes and effects of climate change and adaptation strategies.
 - Strengthening the Department's Climate Change Directorate of the Environment
94. Haiti's Ministry of Environment (an EE of the project) supervises and validates Strategic Environmental Assessments (SEAs) and Environmental Impact Assessments (EIAs) that integrate consideration for climate change adaptation, and monitors the implementation of measures recommended by SEAs/EIAs. This ministry also sets up an enabling institutional and budgetary framework for the replication of successful experiences and the dissemination of practices and techniques that promote enhanced resilience to climate change and climate risks, as well as the development and implementation of an advocacy, communication, and awareness raising strategy and plan.
95. This project proposal bases its understanding of school safety on the definition provided by the Global Alliance for Disaster Risk reduction and Resilience in the Education Sector within its **Comprehensive School Safety Framework (CSSF)**. The CSSF provides a comprehensive approach to reducing risks from all hazards to the education sector by addressing three pillars of school safety:
- Safe Learning Facilities
 - School Disaster Management
 - Risk Reduction and Resilience Education
96. The CSSF aims to provide a unified focus for child-centered and evidence-based efforts to promote Disaster Risk Reduction throughout the education sector and to assure universal access to quality education. This CSSF provides a comprehensive approach to reducing risks from all hazards to the education sector bringing children's advocates together:

- To improve all children's equitable and safe access to a quality, inclusive and integrated basic education
- To monitor and evaluate progress of initiatives for reducing disaster and conflict risks
- To increase availability of and access to hazard-related evidence, such as multi-hazard early warning systems' data and disaster risk information
- To promote risk reduction and resilience in the education sector, including clear focus in major international agreements (eg. Sustainable Development Goals and Sendai Framework for Disaster Risk Reduction 2015-2030)
- To strengthen coordination and networks for resilience from all levels- local to international
- To strengthen education governance and local participation
- To strengthen conflict risk reduction in order to implement integrated, inclusive measures to prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and strengthen resilience

From international to national context:

97. The joint effort between Republic of Haiti and the United Nations stipulates the **United Nations Development Assistance Framework (UNDAF) 2017-2021**, which aims to break the vicious cycle of political and institutional instability, as well as multidimensional poverty, which has jeopardized the promotion of sustainable human development in the country for three decades. Furthermore, because of the vulnerability of Haitian society to external economic shocks, the recurrence of natural disasters and humanitarian and political crisis, the UNDAF 2017-2021 aims to strengthen the political, human, territorial and economic resilience. UNDAF 2017-2021 underline that **the vulnerability of the population and territories to natural disasters have been the main cause of recurring humanitarian crises**. Due to the upsurge of humanitarian crises, resilience building of the population and territories is a key objective of the UNDAF 2017-2021.
98. The project proposal is consistent with the 5 important area of intervention of UNDAF 2017-2021 and the related defined outcomes, which will make a valuable contribution to the achievement of national priorities and SDGs. In particular with **outcome 2**: *"The population, specifically the increasing of the most vulnerable groups equitable access. The use of quality basic social services, particularly education and health for all"* and **outcome 4**: *"National, regional and local institutions, along with civil society strengthen sustainable management of natural resources and environment, territorial and population resilience, especially for the most vulnerable, to respond to natural disasters, to climate change and humanitarian crisis while ensuring continued sustainable development."*
99. The UNDAF 2017-2021 focus on five priority areas of intervention that the common country assessment identified and framed. This includes poverty reduction and promote decent employment; access and use of quality basic social services; gender equality and protection; resilience; and governance. These priority intervention areas are consistent with the four rebuilding pillars of the **Strategic Development Plan of Haiti (Plan Stratégique de Développement d'Haïti, PSDH)** 2012-2030 particularly territorial rebuilding, economic rebuilding, social rebuilding and institutional rebuilding.

100. In New York on March 31, 2010, Haiti's international partners accepted the principle of long-term support for the reconstruction of the country, based on the **Action Plan for the Recovery and Development of Haiti** (*Plan d'action pour le relèvement et le développement d'Haiti*, PARDH). The focus of this plan was on the immediate reconstruction needs viewed in a long-term development perspective and the PSDH expands and details this long-term perspective.
101. The PSDH address four major "action areas", in particular the project proposal is consistent with the third action area "**Social Rebuilding**" and second programs "**Improve access to preschool, elementary and secondary school**". The shortfalls in this sector are significant and include an insufficient number of spaces, average quality of education, poorly motivated instructors, etc. The need is there for a network of daycare, preschool, elementary school, high school, as well as facilities for a network of Professional Teaching Certification Schools (*Écoles d'Application et Certification d'Aptitudes Professionnelles à l'Enseignement*).
102. The project objectives are compliance with several global initiatives and frameworks that advocate for school safety. The goals of CSSF are: 1) to protect children and education workers from death and injury in schools; 2) to plan for educational continuity in the face of expected hazards; 3) to strengthen a disaster resilient citizenry through education and 4) to safeguard education sector investment.
103. **The 2030 Agenda for Sustainable Development:** The 2030 Agenda for Sustainable Development addressed School safety issues through two main SDG: **SDG 4** and **SDG 11**. SDG 4 particularly focuses on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all; 4.a. particularly stresses the need for building and upgrading education facilities that are child, disability and gender sensitive and providing safe, non-violent, inclusive and effective learning environments for all. SDG 11 specifically aims to make cities and human settlements inclusive, safe, resilient and sustainable.
104. **The Sendai Framework for Disaster Risk Reduction 2015-2030:** Adopted on 18 March 2015, the Sendai Framework for Disaster Risk Reduction highlights as priorities the need, on the one hand, of *understanding disaster risk (priority 1)* and on the other hand *investing in disaster risk reduction for resilience (Priority 3)*. To this end, the framework states that policies and practices for disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment. Such knowledge can be leveraged for the *purpose* of pre-disaster risk assessment, for prevention and mitigation and for the development and implementation of appropriate preparedness and effective response to disasters. It also calls for reducing disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030 (Target D). The indicators adopted by the United Nations General Assembly for the measurement of global Target D of the Sendai Framework, D-1 (i.e. damage to critical infrastructure attributed to disasters); D-3 (i.e. number of destroyed or damaged educational facilities attributed to disasters) and D-6 (i.e. number of disruptions to educational services attributed to disasters), are particularly relevant^[2].
105. **Paris Agreement on Climate Change:** The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the

temperature increase even further to 1.5 degrees Celsius. More particularly, **Article 7, Point 9 (c)** focuses on assessment of climate change impacts and vulnerability, with a view of formulating nationally determined prioritized actions, taking into account vulnerable people, places and ecosystems. **Article 8, Point 1**, recognizes the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, while **Point 4** recognizes the need for areas of cooperation and facilitation to enhance understanding, action and support: (e) Comprehensive risk assessment and management. Finally, **Article 11, Point 1** stresses the need for capacity building to take effective climate change action, including, inter alia, to implement adaptation and mitigation actions.

Agenda for Humanity: The Agenda for Humanity is a five-point plan that outlines the changes needed to alleviate suffering, reduce risk and lessen vulnerability on a global scale. In the Agenda, humanity – people’s safety, dignity and the right to thrive – the heart of global decision-making indicate them. To achieve this, we call upon global leaders and all humanitarian actors to act on five core responsibilities. Responsibility 3 (“Leave no one Behind”) particularly stressed the need to ensure education for all in crisis, while Responsibility 5 (“Invest in Humanity”) requests to invest according to risk.

E. Consistency with national technical standard

Describe how the project meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

106. The proposed project will comply with several national guidelines, policies and regulations including the country’s national building codes (*Code National du Bâtiment d’Haïti 2012, CNBH*) and the evacuation shelter management guide (*Guide de gestion des abris d’évacuation 2013*); always in respect to the Environmental and Social Policy of the Adaptation Fund.
107. The **National Intervention Plan (NIP)** of the Republic of Haiti, as part of the Emergency function VI (“Service to the population”), aims to provide a framework for structuring national actions in disaster management, the evacuation and management of shelters. It responds to the collective care needs of the victims of a disaster or state of emergency and will ensure the delivery care services to the population affected (evacuation shelter, food and first aid, non-food items) provide and organize the transport of aid to affected areas. From a functional point of view and according to the NIP, the responsibility for Function VI lies mainly with the Ministry of Social Affairs and Labor (MAST). Supported by other governmental bodies, including the Ministry of Public Works, Transport, Communication and Energy (MTPTCE), the Ministry of National Education and Vocational Training (MENFP), the Ministry of Youth, Sports and Civic Action (MJSAC) and the Ministry of Justice and Public Security (MJSP), as well as supporting partners to provide the necessary assistance identified. Integrated into the Risk and Disaster Management (DRM) policy, the **evacuation shelter management guide (ESMG)** developed by the Temporary Shelter Thematic Management and Management Committee and aims to facilitate and organize the installation of evacuees in shelters.
108. ESGM takes into account the experience of disasters or previous interventions, in particular the passage of hurricanes or storms, or even more simply on the occasion of warnings and formalize a process of management of evacuation shelters in front of adapt to all emergencies. The

component 1 of the project, and more specific the VISUS methodology (output 1.4), complies with the ESMG the technical conditions. In fact, the rapid multi-hazard safety assessment methodology is conforming to the ESMG, in particular to the Security Evaluation (*ESMG – par. 1.2.2*), technical evaluation of the infrastructure (*ESMG – par. 1.2.3*) and the functional evaluation (*ESMG – par. 1.2.4*). The ESMG defines that is up to the Communal Committees of Civil Protection (CCPC) to propose to the mayor (municipal council) the buildings or sites likely to be used as evacuation shelters during an emergency, as well as to negotiate and plan the conditions of use and the necessary adjustments. The VISUS assessment of component 1 and the activities of component 3 will allow the coordinating and facilitating of the decision of the CCPC and the municipal council. The output 3.2 set up the actions that the committee of the evacuation shelter management under the responsibility of the CCPC Coordinator need to take.

109. The outputs of the concrete actions of component 2 of the project are complied with the minimum requirements for achieving safety, health and general well-being for the user and accessibility, structural strength and stability for the buildings regardless of the demands and hazards considered (e.g. safety, lighting, ventilation, energy efficiency and fire protection) established by **CNBH**.
110. The CNBH define three risk categories based on the intended use and associate to each of them different level of hazard intensity (i.e. rain, wind and earthquake loads). The category I-Low consider buildings that collapse pose a low risk of loss of life (i.e. buildings with low human occupation, small storage buildings, farm buildings, barns). The category II-Normal are all buildings except those in the other three categories. Category III-High are buildings that can be used as a civil protection shelter (i.e. schools, community centers). Finally, category IV- Civil protection are civil protection buildings providing essential services in the event of a disaster (i.e. hospitals, telephone exchanges, power stations, distribution substations, control centers and emergency response facilities). The rehabilitation and retrofitting of school facilities implemented during the project will consider hazard intensity for category III.
111. The environmental impact of the proposed project, mainly related to the outputs of components 2, will comply with the country's national environmental standards as well as the Environmental and Social Policy of the Adaptation Fund. The project will not cause unnecessary harm or degradation to the natural habitat, concerning limit negative impacts of climate change. They will do exclusively retrofitting or reconstruction of school facilities according to necessity and materials that they will chose in respect to the environment and local habitat. The project will not affect the benefits deriving from ecosystem services. The project will avoid any significant or unjustified reduction or loss of local biological diversity.

F. Duplication in project design

Describe if there is duplication of project with other funding sources, if any.

112. For the preparation of this proposal, the consultation process with the key stakeholders provide a complete mapping of potential overlapping activities. The proposed project will focus on the concrete implementation of on-the-ground climate change adaptation interventions, with an emphasis on DRR initiatives in the education sector and school facilities.
113. Such DRR initiatives, were especially implemented immediately after 2010 earthquake without having the possibility to adopt a national wide assessment of the facilities vulnerability, in

particular focusing on earthquake and not considering a multi-hazards approach. The proposed AF project will not create duplications with other international or national organizations, but will create synergies with, strengthen and build on current and former initiatives and activities implemented in the area. We expect the proposed project to have positive impacts not only in short-term, but, by building capacities among the locals and guaranteeing long-term monitoring and implementation of the methodology.

114. Several countries implemented the VISUS Methodology, developed by UNESCO and the SPRINT-Lab. They undertake a preliminary assessment of school facilities in Haiti in 2017, targeting 101 schools between the northern and eastern regions of the country. For this purpose, they created technical capacities within the country. The proposed project aims to upscale the assessment to a larger area of the country, and to create more capacities while proceeding with retrofitting or reconstruction of schools based on the assessment results.

115. UNOPS work on school safety in Haiti

116. The proposed project will build on, complement and /or strengthen the projects set out in Table below.

Project Title	Funding	Dates	Description
<i>Child-focused Disaster Preparedness, Mitigation and Management (Save the Children)</i>	655,780\$	2009 (12 months)	The project implemented in the City of Gonaives in Department of l'Artibonite in Haiti, has been focused in. 1) Adopt an overarching child-focused DRR approach that empowers children to participate meaningfully in planning for their own safety and that of their family and actively contributing to disaster risk reduction. 2) Build the capacities of teachers, school principals, educational inspectors, parents, locally based child protection committees and the DPC to develop and implement child-focused disaster preparedness plans in the school and its surrounding communities. 3) Engage the private sector – cell phone companies and radio – in explicit and informational early warning messaging. 4) Provide material support to schools and the DPC to better equip themselves to mitigate the effects of disasters, improve their communications and enhance their coordination mechanisms. 5) Support the DPC to develop and implement a communication and information strategy that increases people's knowledge of what to do in an emergency and where to go to seek safe shelter.
<i>Education and Protection of Children Affected by the Earthquake in Haiti (Save the Children)</i>	2,453,820\$	2010 and 2011 (21 months)	To achieve overall goal to build back better for children in Haiti after the 2010 earthquake, Save the Children has intervened in health and nutrition, water and sanitation, shelter and relief, child protection, food security and livelihoods and education. The objective of the education program was to ensure that children are able to access safe and quality education both in the directly affected areas and in the indirectly affected areas. The plans adopted to help the return of children to school more relevant. This project were: setting up, furnishing and supplying temporary learning spaces; installing water and sanitation facilities in schools; rehabilitating, furnishing and supplying slightly damaged schools; training teachers on psychosocial approaches in the classroom, disaster risk reduction; Integrating disaster risk

			reduction measures in schools; improving school governance by promoting wider parental and community participation and grounding school governance in child rights. In particular, Activity 1.2 worked 12 classrooms to conduct basic rehabilitation of their facilities.
<i>Increasing Human Security to Disaster Risk in Haiti</i> (UNESCO Haiti)	4,112,230\$	2016 and 2017 (24 months)	The project aim to develop a 'culture of risk' with the education sector, in particular output 3.3 is the most pertinent to the AF project (component 3): reinforce the extended school community capacity to address its insecurities and implement tailored disaster prevention and management protocols. The project supported the Ministry of Education in the elaboration and validation of disaster risk reduction of training modules. Conduct trainings to head teachers, teachers, schools inspectors, and officers at DDE for the development and implementation of tailored protocols for disaster risk prevention and management; support head teachers, teachers, schools inspectors, and officers at Departmental Delegation of Education to evaluate the disaster vulnerability of selected school structures and develop strategies to mitigate the identified risks (component 1). Conduct awareness raising initiatives towards teachers, school inspectors, pupils and parents in disaster preparedness and response, through the participation of all stakeholders.

G. Knowledge management

If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

117. The Haiti Government pay close attention to this project: the wide and spread school assessment. The relevant trainings to professionals and students, the strengthening of the school safety, enhance the capacity and awareness of local population and civil protection actors; represent the core of the project. It is also a learning model that will give the various stakeholders the opportunity to test, review and learn context specific approaches, establish best practice and scale up successful activities to achieve climate change resilience at national scale. The learning and knowledge activities planned in the three components are involving both policy and decision makers, private sector, local and international NGOs as well as local communities.
118. Most activities in the component 1, "Assessment of school facilities by VISUS methodology", entail trainers to trainers, decisions makers and surveyors. This knowledge sharing will contribute to the autonomous upscaling and replication of project interventions beyond demonstration sites, thereby also enhancing the climate resilience of non-direct beneficiary communities. The very comprehensive results of each single school by the VISUS assessment that they will share by a geographical web platform; this will allow the different stakeholder to directly access. Output 1.6 provide a strategic prioritization intervention plan for school facilities, this is the most important knowledge for the Government in order to be efficiently and sustainably program the interventions to build a resilient country. In addition, in component 3, most of the activities are focused on knowledge and learning processes. In fact, they enhance the knowledge and awareness of the disaster risk due to CC, promotes development and simulation of the community emergency plan. Furthermore, we will summarize the lessons learnt from this project

through a policy/regulation briefs regarding on how to develop good practice in managing schools facilities as short temporary shelters.

119. We will developed a Monitoring, Evaluation and Learning (MEL) system during the project, it will allow us to improve and influence the implementation within the project and amongst actors engaged in similar work; this instrument will allow the active creation, sharing, and use of gained knowledge and information. We will share the knowledge generated by the MEL system with stakeholders and donors working in the climate adaptation space in Haiti. The MEL system will be composed on three major phases:

- Inception analysis: elaboration of document that will show the lesson learnt during previous similar projects, this analysis (e.g. SWOT, SCORE, SOAR, etc.) will identify the actions that the project can apply in the different activities based on the lesson learnt.
- Periodic review: to promote an adaptive management the project will set up a quarterly project review, which will identify the project gaps and then inform project improvement.
- Final review: before the end of the project, the project will produce a learning document that will form a basis for replication and scale-up of future activities.

120. The project will collect and share the knowledge and competence generated by:

- We will share the assessment knowledge and capacity on VISUS methodology with government partners, universities and other stakeholders for future projects and policies. A geographical web platform will share the results.
- We will analyze and document as a case study the schools' safety improvement pilot, to further inform potential upscaling and disseminate lessons learned at the national level.
- The trainer and VISUS methodology-reporting manual is for training surveyors and decision makers to better assess and take decision regarding climate resilient facilities, these will also generate a culture of disaster risk reduction and resilient solutions.
- Through the Direction of Civil Protection, the lesson and experience learnt during the development and implementation of the community emergency management plans in pilot cases will be used to potential upscaling and disseminate at the national level.

121. Finally, the project will ensure nationwide dissemination and sharing of knowledge to reach also the indirect beneficiaries. As part of management activities, the project will disseminate through different media (e.g. newsletters, radio channels, television, and social media streams) the project events, success stories and progress reached.

H. Consultation process

Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

122. The National Consultation for adaptation to climate change allows determining risk of adverse consequences, the intensity of these risks and identify factors that could reduce or increase the response and adaptation capacity at local and national level. As such, the consultation has required the implementation of methods and tools likely to help give trustworthiness to the project concrete actions.

The objective of the consultation process was to gather information relating to the assessment of beneficiaries' vulnerability to climate change. The methodology implemented in the process allowed working with all stakeholders and provided them tools to reach the objective. The stakeholders already consulted are:

- The relevant ministries (Ministry of National Education, Ministry of Environment) (July 4th to 7th, 2019)
- Local authorities (mayors of Cap Haitien, Gonaives, Les Cayes, Jeremie) (August 4th to 18th, 2019)
-
- NGOs working in Haiti (Oxfam Haiti Plan, Save the Children) (July 12th to 17th, 2019)
-
- The United Nations system (UNDP, UN Women) (July 4th to 7th, 2019)
- The Civil Society Organizations (July 12th to 17th, 2019)
-
- The National Technical Services (Engineering School of Management)(July 21th to 25th, 2019)

123. The consultation process adopted different techniques according to the typology of stakeholder and the specific required information:

- Focus group: gathered and selected people participated in a planned discussion intended to highlight their perceptions regarding the vulnerability to climate change; members of a group invited to interact and influence each other during the discussion and consideration of ideas and perspectives.
- Testimonials; statement that confirms the veracity of what we have seen, heard, perceived, lived
- Semi-structured interviews with local relevant people: an open framework of questions allowed a focused, conversational, two-way communication. The base guideline was flexible enough to follow topical trajectories in the conversation that may stray from the guide when it seems appropriate.

124. Ultimately, all the information collected during the consultation was crossed with expert data and research results published in research reports and relevant national and international publications.

125. The complete documentations regarding the analysis of the key consultation findings are available upon request in French, due to the limited number of pages allowed in the Concept Note, below are summarized the 6 main analysis carried out during the concept design:

126. **A] The vulnerability of water and agricultural sector to climate change** - The figure below shows the water balance for the reference period and its estimate for 2030 and 2060 for the model projections HadCM2. It notes that the potential volume of water resources (W, red) and the flow obtained by the water balance equation (Q, green), drastically reduced year by year. Regarding the agriculture section the three crops representative of the Haitian production are shown in

different conditions: potato (C3 plant grown in temperate environments), rice (C3 plant grown in hot environment), corn (C4 plant grown in warm areas irrigated conditions or not). The results show that the yields of these crops decrease for each of the scenarios developed for the XXI century.

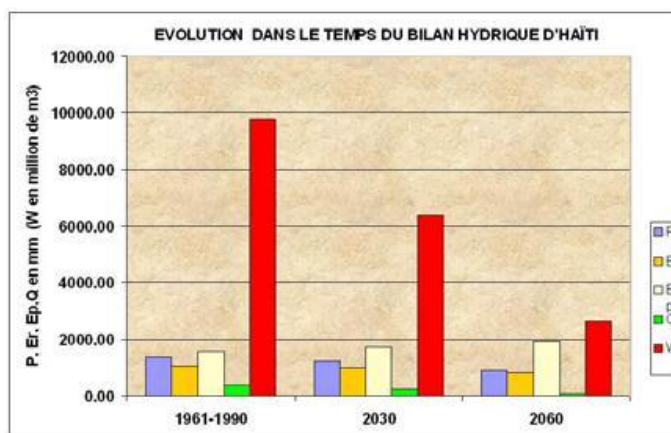


Figure II-2 Water balance for the reference periods.

- 127. B] Impacts (economical and financial) of disasters related to climate change** - The fragility of agricultural infrastructure and crops to climate hazards makes this sector vulnerable to cyclones and floods increasingly recurrent in the country. Cost analysis relating to climate change shows that in 2025 the cost of inaction would be between 15.7 million USD annually for the main agricultural sector production and 170 million for the entire industry.
- 128. C] Adaptability capacity restricted due to low income level** - With a GDP per capita of 846 USD 2014, Haiti is the poorest country in the Americas and one of the poorest in the world. It has been estimated that 59% of Haitians live below the poverty threshold of 2.44 USD per day and even 24% live below the extreme poverty line of 1.24 USD per day. In addition, more than half of Haiti's population lives in rural areas and 85% of the rural population is engaged in agriculture; which is by far the largest provider of jobs, further increasing the vulnerability of the Haitian economy when natural disasters affect crops.
- 129. D] Fragility of the institutional framework regarding CC issues** - in line with its international commitments, the country also strengthened its institutional capacity in the field of the fight against climate change, even though existing institutions remain fragile. MDE is the focal point in the UNFCCC, it develops and coordinates projects against climate change but the lacks of necessary means to face these challenges and the limited financial and human resource limits its efficacy. The National System for Risk Management and Disaster (SNGRD) is involved in the planning and implementation of actions to risk management and response to natural disasters, however, the organization remains undersized in the event of a major disaster.
- 130. E] The gender-based vulnerability** - Women are present in almost all agricultural value chains, and perform often difficult production functions in addition to their domestic and reproductive functions. At some places, the water collection for women has become an exhausting chore. Considering the centrality of women in the use and consumption of energy, women can become -from their charism- real change agents in communities over any attempt to innovation.

131. **F] Barriers to education access** - 80% of teachers are not qualified, the basic education curriculum is unsuited to the needs of children and the current context, and finally the schools do not meet the standards and norms minimum quality and safety. The budget for the sector is largely insufficient; barely 15% of the national budget and represents about 2% of GDP. The education system is not able to respond to emergencies and does not have enough resources to cope. Moreover, a recent study reveals that before the passage of Matthew cyclone, more than 300,000 children 6-15 years were already outside the school system nationally.

I. Funding justification

Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

Component 1	
Assessment of school facilities by VISUS methodology (USD 770.000)	
<i>Baseline scenario (without AF resources)</i>	<i>Additionally (with AF resources)</i>
<p>Haiti Government does not have a strategy to prioritize intervention according to the exposure and vulnerability level of the schools and the necessary cost to strengthening the resilience.</p> <p>The schools assess through the VISUS methodology are 100 and all are focused in the north of the country, the preliminary state was important because it was able to show the usefulness of the methodology but the study area was not representative of the country.</p> <p>The technical training competences, the understanding of the VISUS approach by the decision makers is delimited to the previous project area and the VISUS surveyor's know-how is transferred to few university students.</p>	<p>This component aims to extend the application of VISUS methodology up to 750/1000 schools.</p> <p>In particular, according to the results from the consultation process, the selected schools are spreads across the country and more representative of the socio-economic condition.</p> <p>Furthermore, this component aims to produce a prioritization strategy to upgrade the safety of schools in the country, and defining global budget requirements.</p> <p>The assessment implementation of the will increase the number of trainers, technicians and students with enhanced capacity to assess, design and build facilities more resilience.</p>
Component 2	
Schools safety Improvement (USD 6.400.000)	
<i>Baseline scenario (without AF resources)</i>	<i>Additionally (with AF resources)</i>
<p>The estimation of damage due to the passage of Hurricanes Matthew is up to 62.9 million \$. 25% of schools on average was damage and 521 schools that were destroy.</p> <p>Most of the schools in the country do not have any plan for managing emergency in case of the most dangerous hazard as flood or hurricane. The absence of emergency plan generate serious casualties in the children at</p>	<p>This component aims on average to do 15/30, 5/10 and 2/3 respectively light, medium and heavy school interventions (by VISUS methodology).</p> <p>The safeness of the schools will be integrated with tailored emergency management plan for the schools. The plan will be developed in consultation with the local communities in order to increase their resilience as well</p>

<p>schools but also to the people in the surrounded community.</p>	<p>without focusing only to the people that are inside the school buildings (i.e. teachers and children). The resilient schools will become an emergency shelter areas for the hazards related to climate change (e.g. hurricane and floods).</p>
<p>Component 3 Enhancement of climate resilience of social community through the educational sector (USD 1.150.000)</p>	
<p><i>Baseline scenario (without AF resources)</i></p>	<p><i>Additionally (with AF resources)</i></p>
<p>The Haitian communities are vulnerable and continuously stressed by extreme weather due to climate changes. The daily challenges due to the socio-economic conditions of the population force to leave in the background the urgency of considering the future impact due to climate change. This situation is exacerbating by the limited knowledge and population awareness regarding these topics. Furthermore, the absence of a local population capacity to properly re-act and respond during an emergency is reducing their resilience.</p> <p>Haiti Government does not have a Policy/regulation briefs to manage and use the school facilities as short temporary shelters.</p>	<p>This component aims to enhance the knowledge and awareness of the disaster risk due to CC in the Haitian population. Workshops, training will improve the population capacity to recognize the potential critical situations and provide resilient solutions.</p> <p>The school resilient facilities, provided by Component 2, will transform an actual short temporary shelter, through the adoption of local community emergency plan. Real simulation scenarios will be the mean of testing.</p> <p>At national level, the management and the use the school facilities as short temporary shelters will be standardized by the adoption of a Policy/regulation briefs.</p>
<p>Component 4: Monitoring and evaluation</p>	
<p><i>Baseline scenario (without AF resources)</i></p>	<p><i>Additionally (with AF resources)</i></p>

J. Sustainability of the project

Describe how the sustainability of the project outcomes has been taken into account when designing the project.

- 132. We will reach the project outcomes sustainability considering the sustainability of all project activities in all these aspects: technical, environmental, social, economic and institutional sustainability. The sustainability of the project will be achieved by using participatory community approach, with particular attention to engaging the most vulnerable and marginalized people in all project phases. The full structure of the project does not consider the single components separately but as one single unite in which they are reinforcing each other. In particular, the sustainability is ensured through all beneficiaries at all levels to the progressive structure of

implementation: assessing, prioritization and intervention. Finally, all the components are devoted to build the technical and institutional capacity at local and national levels to integrate climate-resilient practices into guidelines, strategies and policies.

133. Project sustainability will be achieved by implementing concrete adaptation interventions to schools across all Haiti, which can be replicated in vulnerable communities across the country. The prioritization strategy developed during the project will be a fundamental document for a sustainable replication of the intervention also after the end of the project. These will also be guaranteed due to the relevant involvement of the project partners of the Haitian ministries as executive entities: education, environmental and civil protection. Furthermore, the project strongly emphasizes the involvement of the students from the Haitian State University, this will expose the student to the best international best practice and constitute a foundation for future sustainability of the project activities.
134. **Technical sustainability** - the project strengthens the school safety by promoting rehabilitation, retrofitting, reconstruction on selected schools to be more resilient and technologically sustainable in long term under different climate conditions. The implementation of the VISUS assessment methodology on field by the university students will guarantee that these engineering techniques will be replicable and scale-up in the future. All the project components have many activities to promote the capacity building of all stakeholders including technical staff handling the vulnerability assessment, the rehabilitation and construction of schools and development of school emergency management plan and protocols. The technical capacity building will ensure enhanced schools resilience but also the possibility that this technical knowledge would be applied in future also in contexts different from the schools.
135. **Environmental sustainability** – the Environmental and Social Management Framework (ESMF) is the central document that will be developed during the implementation that all the activists are referring in terms of environmental and social issues. The ESMF has an environmental and social monitoring plan that will guide periodic monitoring and evaluation to track changes that could have adverse environmental and social impacts and ensure adequate mitigation.
136. **Social sustainability** – the project primarily focuses on students and workers involved in the educational sector, but indirectly it involves the larger communities that are built around the schools. The consultation process between all beneficiaries will guarantee fair and equitable access to benefits and this will enhance the community capacity to tolerate, absorb, cope with & adjust to climate threats and as well as social sustainability that will ensure projects' results conservation and valorization even after its end date.
137. **Economic sustainability** – the design of the component 1 of the project is to provide a sustainable tool to the Haitian government in order to have results of the projects. In fact, the knowledge of assessment of school facilities by VISUS methodology will contribute to facilitate a rational and autonomous upscaling and replication of project interventions beyond demonstration sites. The project will provide also the strategic prioritization intervention plan, which is the most important knowledge for the Government in order to efficient and sustainable program rational interventions.
138. **Institutional sustainability**: The project design will ensure that the project will be implemented in strong partnership with the already existing government structures at national and sub-national levels. At country level, the project will be implemented using the structures of the focal

ministries i.e. Ministry of Environment and Education. Furthermore, the guidelines regarding the school' facilities assessment and interventions developed through the proposed project will further enhance long-term sustainability. Finally, the policy briefs (output 3.4) will facilitate the institutionalization of the proposed adaptation solution for climate change, as well as lessons learned and information generated from project interventions.

139. Institutional arrangement

Entities	Responsibilities
UNESCO	will be responsible for implementing this project
UNOPS	will be responsible for carrying out the concrete activities of the project
MDE	The ministry of environment will be responsible have the supervision, assessment and monitoring this project
MICT	support the implementation of the project
MENFP	support the implementation of the project

K. Environmental and social impacts and risks

Provide an overview of the environmental and social impacts and risks identified as being relevant to the project.

140. A preliminary social and environmental risk assessment was performed during the consultation process based on the Adaptation Fund's 15 environmental and social principles outlined in the Adaptation Fund Environmental and Social Policy.
141. Some activities of the project might have potential negative impacts if not implemented properly. However, these activities are not yet fully defined at this early stage and will be further developed with the communities during the project implementation. The project is therefore categorized to be category B: "with potential adverse impacts that are less adverse than Category A projects, because for example they are fewer in number, smaller in scale, less widespread, reversible or easily mitigated". All activities will be screened against the Adaptation Fund's 15 principles. An environmental and social risk assessment will be carried out during full project preparation, when concrete activities will be defined, and an environmental and social risk management plan will be developed to mitigate risks identified.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Compliance with the Law</i>	x	No risk - The proposed project abides by relevant national guidelines and regulations such as The country's national building codes (CNBH), the National Intervention Plan (NIP) and evacuation shelter management guide (ESMG)

<i>Access and Equity</i>		Low risk - As underlined in the consultation process (section H), one of the main finding is the significant barriers to education access. The project will ensure that there will be neither discrimination nor favouritism in allocating and accessing project benefits: both education and safety. This will be guarantee by the application of the multi parameters VISUS assessment methodology of the schools; which allows assessing not only the structural element of the schools but also the social vulnerability indicators (e.g. gender, access, etc.). Furthermore, the strategic intervention plan, based on the data provided by the VISUS assessment, will consider put particular attention in avoid any form of discrimination and favouritism. Participatory assessment will be carried out to ensure full and equitable participation of and equal benefits to men and women and vulnerable and marginalized groups: student in component 1 and 2, and extended community in component 3.
<i>Marginalized and Vulnerable Groups</i>		Low to no risk – The risk to not involve marginalized and vulnerable groups is more related to components 3, for this reason the project will empower vulnerable groups to make decisions on concrete adaptation measures, valuing their traditional and local knowledge integrated with the best available information and international practice (output 3.2 and 3.3). The elderly and the youth will be involved considering the respective value each will bring to the project and to the community.
<i>Human Rights</i>	x	Low to no risk - This project affirms the rights of all people and does not violate any pillar of human rights.
<i>Gender Equity and Women's Empowerment</i>		Low risk - The consultation's process draw attention to the fact that women can become real change agents in communities over any attempt to innovation. For this reason, the project activities will promote and empower women leadership in public spaces and decision-making. Through targeted consultations with women, project design and implementation will ensure that gender considerations are integrated. During project formulation, a gender assessment will be carried out to ensure that the project effectively responds to the unique needs of women and girls and promotes gender equity.
<i>Core Labour Rights</i>		Low risk – Component 2 of the project, in particular output 2.1, will involve labour for the implementation of rehabilitation of school facilities. Local communities will be involved in the implementation and maintenance of the concrete interventions via local contractors and consultants. Compliance with all labour rights will be ensured in all project activities through the involvement of labour officers in target community. The local contractors and consultations will comply with the national labour right. We will eliminate all forms of negative discrimination in respect of employment and

		occupation will. The project will not engage in child labour in any of its activities or interventions. We will eliminate all forms of forced or compulsory labour
<i>Indigenous Peoples</i>		XXX
<i>Involuntary Resettlement</i>	x	No risk - No activities are or will be included in the project design that will result in involuntary resettlement.
<i>Protection of Natural Habitats</i>	x	No risk – No activities are or will be included in the project design that will result dangerous for the natural habitats.
<i>Conservation of Biological Diversity</i>	x	No risk - No activities are or will be included in the project design that will result dangerous for the biological diversity.
<i>Climate Change</i>	x	No risk – Project activities will contribute to the adaptation efforts for climate change and none of them will not result in any significant or unjustified increase in GHG emissions or other drivers of climate change.
<i>Pollution Prevention and Resource Efficiency</i>		Low to no risk – We do not expect project activities to produce any significant amounts of waste or other pollutants (particularly hazardous or toxic waste. In terms of resource efficiency, the project implementation will not require (during or after implementation) excessive amounts of materials or other natural resources. Only output 2.2 will have the low risk related to the use of material, for reason we will monitor these activities in order to be compliance with the environmental principle.
<i>Public Health</i>	X	Low to no risk – All project activities will be designed and implemented in order to avoids any foreseeable negative impact on public health.
<i>Physical and Cultural Heritage</i>	X	Low to no risk – The risk to have a negative impact to a cultural heritage by the implementation of the project activities is low and only related to potential rehabilitation interventions in schools facilities that are close or within a cultural heritage area. The VISUS assessment take into account the presence of physical or cultural heritage, and in case this risk will be underlined, we will adopt action to protect the physical and cultural values.
<i>Lands and Soil Conservation</i>	X	No risk - No activities are or will be included in the project design that will result dangerous for the land and soil conservation.

Table II-2 Checklist of environmental and social principles

PART III: IMPLEMENTATION ARRANGEMENTS

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government¹⁹ *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

<i>Joseph Jouthe Ministre de l'Environnement</i>	Date: 12-26-2019
--	------------------

B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (.....list here.....) . it is subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/program in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/program.	
<i>Alvarez-Laso, Pilar</i> <i>UNESCO representative in Haiti</i>	
Implementing Entity Coordinator	
Date: 12-26-2019	Tel.and email: p.alvarez@unesco.org
Project Contact Person:	Alvarez-Laso, Pilar
Tel. And Email:	p.alvarez@unesco.org

⁶. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programs proposed by the implementing entities.



MINISTÈRE DE L'ENVIRONNEMENT

MDE/JJ/DEISE/DCC/12-19-736

Port-au-Prince, le **December 20, 2019**

**To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email : Secretariat@Adaptation-Fund.org
Fax : 202 522 3240/5**

Subject: Endorsement for Implementing Measures for Climate Change Adaptation and Disaster Risk Reduction Mitigation of School Facilities in Haiti.

In my capacity as designated authority for the Adaptation Fund in **Haiti**, I confirm that the above national program proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the **Republic of Haiti**

Accordingly, I am pleased to endorse the above program proposal with support from the Adaptation Fund. If approved, the program will be implemented by the **UNESCO Office in Haiti** and executed by the Ministry of the Environment in collaboration with the Ministry of National Education, Civil Protection and UNOPS.

Sincerely,



Ing. Moïse JEAN-PIERRE
Point Focal Adaptation Fund

Seen and approved by



Joseph JOUTHE
Ministre de l'Environnement



Atelier de validation du document de projet

"Mesures d'Adaptation aux changements climatiques et réduction des risques de catastrophes dans les établissements/installations scolaires en Haïti.

Liste de présence

Date : 27 novembre 2019

Lieu : Ministère de l'Environnement

no	Nom et Prénom	institution	Phone	Signature
1.	Coles Hugo	MDE	38893939	
2.	Desir Joslyne	MDE	48988614	
3.	Pierre Davidson	CRNL	41247928	
4.	LAURA MOENS	UNOPS	31192792	
5.	CORVILLE Gaëry	PNUD	48912329	
6.	Henry, M ^{ie} Denise Jean-Mary	MDE	48986767	
7.	Gager Jean Bidault	MDE/DRE	48961613	
8.	Marcia Kelly	MDE/FA	37285567	
9.	Morcombe Trent Charles	MDE/PA	48790750	
10.	Philippi Th. Simon	MAE	48961734	
11.	HORAT Romy	MDE	48961606	
12.	OSTINE Lorette	MDE	48988610	
13.	Prisme Sonia	DDO/MDE	34514646	
14.	HONORE Charline	JIPHRO	3990-0248	
15.	Alexis Judevic	JIPHRO	37835646	
16.	Sann Melissa	JIPHRO	31387898	
17.	Esthèr Valencia	CRH	3797-7307	
18.				



Atelier de validation du document de projet

"Mesures d'Adaptation aux changements climatiques et réduction des risques de catastrophes dans les établissements/installations scolaires en Haïti.

Liste de présence

Date : 27 novembre 2019

Lieu : Ministère de l'Environnement

19.	Jean-Paul Harry	CRH	3800-6070	
20.	Vincent Junior Alexander	SC	3773-9630	
21.				
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APPENDIX

Appendix1: Report of the National Consultation for the adaptation fund climate change

September 2019

1. INTRODUCTORY

Particularly exposed to natural disasters caused by hurricanes and tropical storms, Haiti has a high vulnerability to weather hazards. Climate change leads to both an increase in average surface temperature of the globe but also by an increase in the frequency of extreme temperatures. If the parameter induces repeated droughts, it is primarily the increase in average temperature that has the most impact in Haiti: the atmosphere becomes more humid due to increased evaporation; hurricanes are intensifying and are more difficult to predict. This drastically increases the potential damage (NASA, 2015). As a result, the Haitian economy will become even more vulnerable to random and extreme events related to climate change. This is in a fragile and difficult economic condition. As one of the poorest countries in the world, with nearly 60% of the population living below the poverty line (World Bank, 2012), Haiti has no infrastructure to deal effectively with changes and climatic disasters to which the country is regularly confronted. To avoid compromising investment and development. Risk management is in this fundamental fact and policy makers must be able to arbitrate between the repair costs of these events and the investment needed to implement adaptation measures. With nearly 60% of the population living below the poverty line (World

Bank, 2012), Haiti has no infrastructure to deal effectively with changes and climate disasters to which the country is regularly confronted. To avoid compromising investment and development. Risk management is in this fundamental fact and policy makers must be able to arbitrate between the repair costs of these events and the investment needed to implement adaptation measures. With nearly 60% of the population living below the poverty line (World Bank, 2012), Haiti has no infrastructure to deal effectively with changes and climate disasters to which the country is regularly confronted. To avoid compromising investment and development. Risk management is in this fundamental fact and policy makers must be able to arbitrate between the repair costs of these events and the investment needed to implement adaptation measures. To avoid compromising investment and development. Risk management is in this fundamental fact and policy makers must be able to arbitrate between the repair costs of these events and the investment needed to implement adaptation measures. To avoid compromising investment and development. Risk management is in this fundamental fact and policy makers must be able to arbitrate between the repair costs of these events and the investment needed to implement adaptation measures.

Thus, the Adaptation to climate change often called Adaptation Fund or a fund fed, essentially, an international tax based on the Clean Development Mechanism established by the Kyoto Protocol to finance projects or adaptation programs to climate change in developing countries; who are often particularly affected by climate change, while there contribute less than rich countries. This comprehensive background other financial tools established under the Convention of the United Nations on climate change: the Fund for the Least Developed Countries, the Special Fund for Climate Change and the Green Climate Fund.

Moreover, in order to meet the requirements of adaptations bottom of the UNESCO office in port au prince in close collaboration with the National System of Risk and Disaster Management (SNGRD). The Ministry of Environment and MENFP plans to organize a series of national consultation in order to have the support of all stakeholders who will be involved in this project, the results this consultation and the environmental and social assessment will be used to give credibility to the request to fund adaption.

Acronyms

AR5	Fifth Assessment Report (du GIEC)
CARICOM	Caribbean Community and Common Market
CCI	Cadre de Coopération Intérimaire
CCNUCC	Convention-Cadre des Nations Unies sur les Changements Climatiques
CCRIF	Caribbean Catastrophic Risk Insurance Facility
CEPALC	Commission Économique pour l'Amérique Latine
15CIAT	Comité Interministériel d'Aménagement du Territoire
CNIGS	Centre National de l'Information Géo-Spatiale
CNSA	Coordination Nationale de la Sécurité Alimentaire
DSNCRP	Document Stratégie National pour la Croissance et la Réductionnet de la Pauvreté
GES	Gaz à effet de serre
GIEC	Groupe d'experts intergouvernemental sur l'évolution du climat
IHSI	Institut Haïtien de Statistique et d'Informatique
MDE	Ministère de l'Environnement
MEF	Ministère de l'Economie et des Finances
MPCE	Ministère de la Planification et de la Coopération Externe
MENFP	Ministère de l'Éducation Nationale et de la Formation Professionnelle
OMD	Objectifs du Millénaire pour le Développement
ONU	Organisation des Nations Unies
PAE	Plan d' Action pour l'Environnement
PAN-LCD	Plan d' Action National de Lutte Contre la Désertification
PANA	Plan d' Action National d' Adaptation
PIB	Produit Intérieur Brut
PNGRD	Plan National de Gestion des Risques et des Désastres
PNUD	Programme des Nations Unies pour le Développement
PNUE	Programme des Nations Unies pour l'Environnement
PPCR	Pilot Program for Climate Resilience

2. Objectives of the consultation

The National Consultation for adaptation to climate change background allows determining (s) risk (s) adverse consequences for the units, groups or regions with a variety of disturbances and identify factors that reduce or increase the response capacity and adaptation. As such, it requires the availability of methods and tools likely to help give credibility to the request from the background.

The objective of the methodology is to work with all stakeholders to provide actors of information gathering tools for participatory assessment of vulnerability in relation to climate change.

3. IDENTIFICATION OF STAKEHOLDERS

Participatory Vulnerability Analysis requires the involvement of all stakeholders in the development of a given locality.

Here is the list of actors we met

- a. The relevant ministries (Ministry of National Education, Ministry of Environment)
- b. Local authorities (mayors of Cap Haitien, Gonaives, Les Cayes, Jeremie)
- c. NGOs working in Haiti (Oxfam Haiti Plan, Save the Children)
- d. The United Nations system (UNDP, UN Women)
- e. The Civil Society Organizations

- f. The National Technical Services (Engineering School of Management)

4. Data collection and analysis

The information about the various risks have been collected using techniques such as:

- The focus group;
- Testimonials;
- Semi-structured interviews with local resource persons.

Ultimately, this information was crossed with expert data and research results:

- research reports;
- Other relevant publications.

M,

Following these meetings here are the results that focused on the following parameters:

5. Presentation of the project to stakeholders in the context of adaptation to climate change.

Adaptation in the context of climate change is an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects. For humans, there are two possible answers: a reactive adaptation or early adaptation.

Reactive adaptation is to wait until the effects of climate change are felt before reacting. At this time, the range of options is more limited and costly responses, at the expense of environmental and social sustainability. In this regard, Nicholas Stern (2008) concluded in its report that it would cost 1% of global GDP invested heavily now to mitigate the effects of climate change and that otherwise we could experience a recession of up to 20% global GDP.

The early adaptation, in turn, calls for the careful planning of measures to reduce long-term costs and ensure the realization of other social goals and economic growth. Adaptation efforts then complement existing activities and come to support national development goals, poverty reduction and improving resource management.

The early adaptation is essential in the context of climate change, because it arises as the appropriate way to reduce the vulnerability of a population, which expresses the level of impact of a hazard on the issues and the sensitivity of human beings and their facilities to these hazards. It will be amplified by the exposure (nature, scale, and rhythm), sensitivity (degrees assignment) and the adaptability of the population. This last point is extremely important for Haiti, particularly since 12 January 2010, since all vulnerabilities were exacerbated. These factors are population density, extent of the frame, technical factors (eg the application of standards), socioeconomic factors, cultural factors (risk culture)

Therefore, we are facing a daunting situation, because on one side, scientists indicate that exposure of Haiti to hydro meteorological hazards will most likely rise. Especially about major hurricanes - and another side, we observe that the 2010 earthquake exacerbated all vulnerabilities. Given such findings, we must quickly integrate the response to climate change in the process of "rethinking" of Haiti.

6. The vulnerability of northern populations, Artibonite, South and Grand-Anse linked to climate change.

As part of the consultation following the data the Ministry of Environment, which is the focal point of the fund in Haiti shared with us:

Assessing climate change vulnerability of water resources in Haiti for the years 2030 and 2060

It is here to monitor the water balance through the determination of the main parameters of it for different periods. Water budgets for the country has been made in the reporting period 1961-1990 and estimated for 2030 and 2060.

Impact assessment on the water balance

The working methods use on expert judgments and statistics. The calculation of water balance variables made as follow:

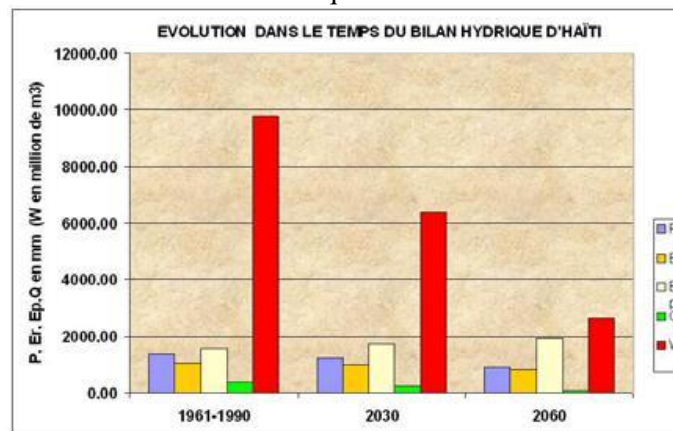
Rain: the average rain calculated using the isohyet method using a rain gauge network combined with estimated data for a gate of a half-degree resolution. The spatial distribution of this network concerns the whole country but its density is very low for high precision calculations.

Evapotranspiration: Evapotranspiration was estimated using empirical means using three methods to contrast the results.

The figure below shows the water balance for the reference period and its estimate for 2030 and 2060 for the corresponding climate scenario the model used for the projections (HadCM2). It is important to note that the potential volume of water resources (W) and the flow obtained by the water balance equation (Q), drastically reduced year by year. Placed on cards, these parameters as well as measuring the precipitation (P), actual evapotranspiration (Er) and potential (Ep) show some extension historically drier areas and a certain reduction of water in the wet area. On flow deficit of cards, it is possible to observe a decrease in the potential volume of water in the country. In 2030, there are still differences in moisture distribution at the regional level. However, for the 2060 year, the situation is more dramatic because there is no difference at national water deficit in terms of the level in the country.

The established model for the evolution of water availability index (IDEA) shows that water pressures will be strong in the future since this index will evolve from 2000, below the level considered critical (1000 million m³ per head). The state of water resources would be more dramatic with a more negative climate scenario as that adopted in this work. Assessing the impact on groundwater the impact of climate change on groundwater was not study in depth. However, we should note that one effect of increased level sea (24.4 cm by 2060) is seawater intrusion. Thus, it is important to make the following remarks:

- a) seawater intrusion cause salinization of a portion of the water table thereby reducing the potential usable groundwater.
- b) The coastal retreat and increased salinization of groundwater would have a significant impact on human settlements close to the coastline and aqueducts.



Vulnerability assessment of the agricultural sector to climate change in 2030 and 2060

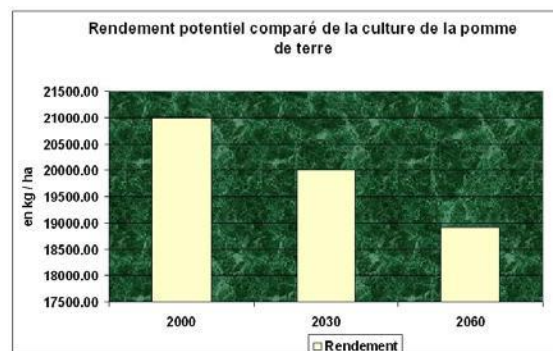
For the evaluation of the impact of climate change on annual crop, we used the biophysical model WOFOST 4.1 created by the Center of Studies for the global supply of Wageningen in the Netherlands (Diepen et al., 1988). This model includes the physiological response of crops to climate parameters and simulating edaphologies process of photosynthesis, breathing, perspiration, translocation carbohydrates and the phenological development of plants. Crops selected should be representative of the crops in Haiti. For this, three cultures were used: potato (C3 plant grown in temperate environments), rice (C3 plant grown in hot environment), and corn (C4 plant grown in warm areas irrigated conditions or not).

Vulnerability of the agricultural sector

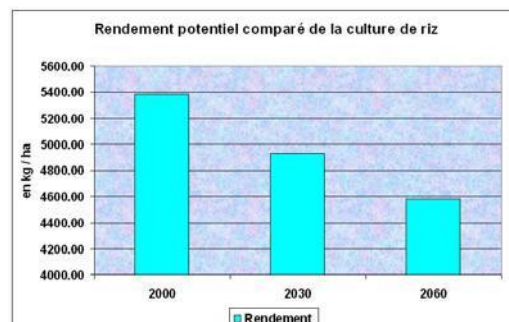
Potato. In this study, we simulated the yields provided irrigation for each of the scenarios developed. The chosen germination date was January 1st. arbitrarily, we decided that the harvest would be 120 days after planting. The results show that the yields of potatoes slightly decrease for each of the scenarios developed for the XXI century. (See chart below). However, this decrease in yields is not as great as that observed in geographically close to Haiti and countries like Cuba Dominican Republic. The difference lies in the fact that the site chosen to study the culture of the potato Kenscoff Haiti), the average temperature is around 18 ° C while (the temperature of the places studied in Cuba and the Republic

Dominican exceeds 20 ° C (Rivero, 2001).

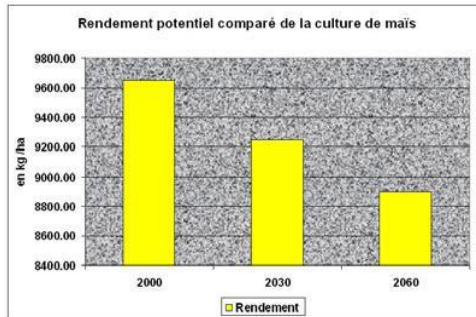
Since the optimum temperature for the cultivation of the potato is about 20 ° C, warming expected to Kenscoff until 2060 does not offer an environment hostile to the potato grown in this area. He does not lose sight of that at lower elevations than where is the community located in Kenscoff, where current temperatures are above 20 ° C, climate change will have a very negative impact on the culture of apple Earth.



Rice. For this study, the chosen dates are sprouting on 1 January and 1 March. Potential yields of rice, without taking into account the fertilization effect CO₂, decrease scenarios developed climate for future. On another side, his specific needs water decrease. This is of at a reducing its leaf development and shortening the production cycle. This should not be interpreted as a decrease in water consumption for the plant. On the contrary, consumption increases due to the increase of potential evapotranspiration in climate scenarios predicted. As can be seen a portion of the lower potential yields is due to the shortening of the filling phase of grains associated with a progressive decrease in the duration of all phrenological phases due to rising temperatures.



The corn. The sowing date chosen for the study of maize cultivation (under irrigation, which was selected arbitrarily) is the 1e March. We consider than this plant born benefits any increase of intensity photosynthetic, which could be due to an increase for CO₂ in the atmosphere. For shortening the duration of phases Phrenological, interest. The specific water consumption of corn will decrease in all cases. Efficiency in water use for corn will grow significantly in all scenarios provided.



Study conducted for Haitian municipalities

Based on a study by the Intergovernmental Panel on Climate Change for Haitian town halls he notes that Haiti is highly vulnerable to climate change. This vulnerability is partly rooted in an exceptional exposure to climate hazards, including floods, droughts, hurricanes or tropical storms, and partly in an underlying sensitivity of socio ecological system receiver of these hazards. Between 1990 and 2016, Haiti was the country most affected by natural disasters Caribbean (3 droughts, epidemics 1, 22 floods, 23 storms and hurricanes); 53 billion US dollars of damage suffered by the country during this period 39% of the damage to the entire region. In 2004, Hurricane Jeanne killed more than 3,000 dead. The four hurricanes of the 2008 season have destroyed 80% of crops and affected 800,000 people. In 2012, Isaac and Sandy hurricane, succeeding a period of drought have wiped out a third of crops and left some malnutrition threat of 450 000 people. The Matthew hurricane in 2016 devastated the southern part of the country, causing considerable damage to crops and infrastructure. Simulations for Haiti with the general circulation model of the University of East Anglia predict a temperature increase of 0.8 ° C to 1.0 ° C for the year 2030 and 1.5 ° C to 1.7 ° C for the 2060 year, and a decrease in rainfall of 5.9% to 20.0% for 2030 and 10.6% to 35.8% for 2060. It is difficult to know what the impact of climate change on the frequency of hurricanes,

7. The economic and financial impact of disasters related to climate change on the populations targeted by the project.

Intergovernmental Panel on Climate Change (IPCC) had conducted a study the Haitian state through to 2014, this difference is also likely to grow exponentially. Investing in shares for better resilience to climate change becomes all the more urgent. In addition to these macroeconomic estimates, the study takes a sectoral approach, focusing on the agricultural sector. Constituting 28% of the Gross Domestic Product (GDP) and employing one fifth of local workers (World Bank, 2013), the agricultural sector is the main source of income in Haiti's economy. Agricultural production consists of food crops for the local people supply (especially maize) and cash crops such as coffee, generating income from their export. The fragility of agricultural infrastructure and crops to climate hazards makes this sector vulnerable to cyclones and floods increasingly recurrent in the country. Analysis of the structure of the costs of climate change shows that in 2025 the cost of inaction would be between 15.7 million USD annually for the main agricultural sector production and 170 million for the entire industry. The resilience to climate hazards must pass not only through infrastructure investments - through access to microcredit for example - but also affordable and financially sustainable insurance programs - as CCRIF facility (Caribbean Catastrophic Risk Insurance Facility) . In terms of mitigation, Haiti is a very low emitter of greenhouse gases countries seeking national mitigation policy is not a major objective. If this does not exclude to make investments in the field of renewable energy, energy efficiency or reforestation, the choice made not to treat mitigation since it is not relate with the extent of impacts. Finally, climate change is a strong likelihood of becoming very expensive for Haiti, if nothing is done nationally. Deeply affected by poverty and severe natural disasters, it recommend that Haiti grapple with development issues and climate change. Everything suggests that investments in this direction will prove in the end,

8. **Low adaptability:** Haiti's resilience is currently very limited due to its low level of income. The country has few funds for appropriate public investment, although it enjoys significant support from the international community.

With a GDP per capita of 846 USD 2014, Haiti is the poorest country in the Americas and one of the poorest in the world. The GDP of 8713 billion and the growth rate estimates at 2.7% in 2014 (World Bank, 2015). In particular, the saving Haiti 28% based on the primary, 17% secondary sector and 55% of the tertiary sector. The country suffers from serious deficiencies in essential services. It estimates that 59% of Haitians live below the poverty threshold of 2.44 USD per day and even 24% live below the extreme poverty line of 1.24 USD per day. It is also one of the countries in the world, whose Gini coefficient is the highest, to 0.59 in 2013 (UNDP, 2015). The trade balance is negative with a triple import dependence on the budget, energy and foodstuffs. Indeed, 50% of the budget depends on foreign aid, all is imported hydrocarbons and 60% of food needs are met by imports (World Bank, 2015). In addition, more than half of Haiti's population lives in rural areas, representing nearly 6 million people. 85% of the rural population is engaged in agriculture (UNDP, 2015). The agricultural sector is by far the largest provider of jobs, further increasing the vulnerability of the Haitian economy when natural disasters affect crops. Beyond the gaps in the economic structure of the country, Haiti suffers from a fragile institutional framework and unprepared to exogenous shocks. This does not prevent him from being engaged in the fight against climate change at international forums.

9. **Fragility of the institutional framework on climate change Haiti**

Haiti has signed the United Nations Framework Convention on Climate Change (UNFCCC) in 1992. The Convention subsequently ratified on 25 September 1996 and entered into force on 24 December 1996. In addition, the Kyoto Protocol ratified Haiti by July 6, 2005, to enter into force on 4 October 2005. The country has made and submitted its first National Communication to the UNFCCC in August 2001 and the second in October 2013. In line with its international commitments, the country also strengthened its institutional capacity in the field of the fight against climate change, even though existing institutions remain fragile.

The Ministry of the Environment (MDE), whose mission is to develop and implement appropriate measures for the management and protection of the environment, the climate is focal point in the UNFCCC but lacks necessary means to face the challenges. It develops and coordinates projects against climate change with limited financial and human resources. Nonetheless, the MDE has integrated climate change adaptation in its main missions and has drawn up a National Adaptation Plan of Action (NAPA), published in October 2006. This PANA defines priority and urgent adaptation needs in terms of the degree of vulnerability and social groups of the country.

Another important player in the field of climate risk management is the National System for Risk Management and Disaster (SNGRD). It is an organ of the Haitian state involved in the planning and implementation of actions to risk management and an appropriate response to natural disasters. However, the organization remains undersized in the event of a major disaster.

Haiti ratified the UNFCCC in 1996, and published its second National Communication in October 2013. The Ministry of Environment of Haiti has developed a National Adaptation Action Plan (NAPA) in 2006. In addition to the bodies in charge of climate issues, we should also mention the national bodies responsible for statistics and policies that intervene between other across the national budget and that the climate of the outlook concern.

Alongside this policy paper, many plans and programs exist, such as NAPA or PNGRD. Published in 2006, the Plan of National Adaptation Action (NAPA) defines the mechanisms of adaptation to the risks and impacts of climate change. It contains a list of priority projects with budgets required for their implementation. An interesting aspect of the NAPA is to have completed an initial calculation of adaptation costs across the country. He thus describes the challenges the country must meet to strengthen its resilience. The National Action Plan to Combat Desertification (PAN-LCD) aims to identify the factors contributing

to desertification and practical measures need to take against it to mitigate the effects of drought. It dates from 2009.

- The sustainable management of natural resources,
- The restoration and rehabilitation of soils and degraded ecosystems,
- Increasing incomes and living conditions of affected populations in connection with the Local development.

Lastly, the National Plan for Management of Risks and Disasters (PNGRD) aims to strengthen national capacities for reducing disaster risks and their impacts on people and the capacity of departmental and local structures for the implementation implement risk management plans. It aims to implement actions to reduce vulnerability.

10. The gender-based vulnerability.

Women are present in almost all agricultural value chains, and perform often-difficult production functions in addition to their domestic and reproductive functions. The distribution of gender by business systems shows that women are mostly present in the agricultural and commercial activities (see, small businesses). Especially since, the number of farms managed by women only is not negligible. What that throughout South and Southeast conducting farming remains a male preserve, activities and / or livestock products contribute to complete the financial contributions of women. When a farm does not practice animal husbandry, women must spend more energy; make more sacrifices to meet all household needs. At some places, the water collection for women has become an exhausting chore. At some communities, coverage of drinking water needs remains low and below the standards recommended by the World Health Organization (WHO). In addition, compared to the centrality of women in the use and consumption of energy, it will be almost impossible to rationalize this sector without a real involvement of women in decision-making. In reality, if they are well oriented and framed, women can become -from their charisma- real change agents in communities over any attempt to innovation. These twenty (20) years, the subjects of debate focused mainly on the following three priority themes: Food insecurity in terms of availability and accessibility; reopening of classes; and the poor performance of agro-economic activity systems

11. That Impede the barriers can access to education.

The educational sector characterize a set of challenges that summarize in three main areas:

- i) Universal and free access to all Haitian children,
- ii) The quality of teaching and learning
- iii) Governance of the sector.

To this is also added a context where the public offer is inadequate on the whole territory and well below the private knowledge that only 30% of employees attending the public, and that the costs related to the children's education is an important cause of exclusion from school due to family poverty. In addition, from the standpoint of quality, 80% of teachers are not qualified, the basic education curriculum is unsuited to the needs of children and the current context, and finally the schools do not meet the standards and norms for minimum quality and safety. The budget for the sector is largely insufficient; barely 15% of the national budget and represents about 2% of GDP. The families contribute more than 60% of sector spending without the benefit of a return on their investment while about 94% of children fail to get a bachelor's degree in 13 years of study. Moreover, the education system is not able to respond to emergencies and does not have enough resources to cope. Moreover, a recent study reveals that before the passage of Matthew cyclone, more than 300,000 children 6-15 years were already outside the school system nationally.

The various hurricanes that have succeeded have had disastrous consequences both socially and in human terms. Indeed, thousands of great south and northwest have lost their homes during hurricanes and often these people were living in temporary shelters. Therefore, these victims lost at the same time the ability to meet the education expenses of their children while the educational system is highly privatized (over 80% of schools are private). The risk is great because the continuation of school activities for many of the children after a cyclone left weakened. Not only had the school supply decreased due to the destruction of many school facilities after a hurricane.