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Action contre la Misère

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CEDRA research report

Conducted in the 6th Section Paulin La Corne in Port-de-Paix

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Part 1: Background information

General Climate

Haiti makes up the western third of the Caribbean Island of Hispaniola with the Dominican Republic located in the East. The Island experiences the year-round warm, humid conditions associated with the Tropics.

Seasonal mean temperatures range from 20-30°C in the cooler months of December to February, to 25-35°C in the warmer season during June to September. There are 2 rainy seasons, March – June and August – November, during which most regions receive 100-200mm of rain per month.

Inter-annual variability in the Caribbean climate is influenced strongly by the El Niño Southern Oscillation (ENSO). El Niño episodes bring warmer and drier than average conditions between June and August and La Niña episodes bring colder and wetter conditions at this time. Haiti also lies in the heart of the Atlantic hurricane belt, where cyclones and hurricanes occur throughout June to November. Heavy rainfall associated with cyclones and hurricanes contributes significantly to wet season rainfall totals. The occurrence of hurricanes is strongly linked to ENSO, with more frequent hurricane activity associated with La Niña events, and less frequent events in El Niño years. (UNDP 2012)¹

Temperatures

Temperatures are expected to increase by 0.8°C to 1.0 °C by 2030, and by 1.5 °C to 1.7 °C by 2060 (MDE, 2006).²

The biggest increase would be in the September to November period.(UNDP 2012)

Hot days are predicted to occur on 48 to 98% of days annually by the 2090s. Hot nights are predicted to occur on 64 to 97% of nights by the 2090s. Cold days and nights will therefore become very rare. (UNDP 2012)

Precipitation

Based on available projections, major climatic changes expected to occur in Haiti include a reduction in rainfall of 6 to 20% by 2030 and by 11 to 36% by 2060. While annual precipitation is projected to decrease, the more limited rainfall events are expected to become more intense. (MDE 2006)

The mean annual rainfall is projected to decrease mainly due to a decline in wet season rainfall in June – August of 8 to 78% by the 2090s. (UNDP 2012)

The decreased annual rainfall and intense storm events projected with climate change would decrease agricultural productivity (namely corn, rice and potatoes) and increase dependence on imported food (MDE, 2006).

In addition to compromising food security, decreased precipitation is also likely to result in water scarcity. Intense storm events could threaten water security by contributing to increased erosion and the subsequent fouling of water quality. On the other hand, intense rainfall events would also lead to flooding, landslides and significant erosion, especially considering that most of Haiti's watersheds lack protective forest cover. Erosion from the wind and rain of intense storms, coupled with iterative cycles of drought and chronic anthropogenic degradation, will also amplify desertification in Haiti,

1a: Scientific information

¹ UNDP Climate Change Profile for the Dominican Republic, Feb 2012

² Ministry of the Environment [MDE] (2006). Republic of Haiti Climate Change Program

thus further compromising agricultural productivity and food security (MDE, 2006).

Tropical Cyclones

Tropical cyclones are poorly captured by global climate models (GCM) and thus potential changes in intensity and tracks of tropical cyclones in the future are very uncertain. Whilst evidence indicates that tropical cyclones are likely to become, on the whole, more intense under a warmer climate as a result of higher sea-surface temperatures, there is great uncertainty in changes in frequency, and changes to storm tracks and their interactions with other features of climate variability (such as the El Niño Southern Oscillation) which introduces uncertainty at the regional scale (IPCC working group 2007)³

The uncertainty in potential changes in tropical cyclones contributes to uncertainties in future wet-season rainfall. Potential increases in summer rainfall associated with tropical cyclone activity, which may not be captured in the GCM projections, may counteract the projected decreases in rainfall in the region. (IPCC working group 2007)

For North Atlantic and North Pacific hurricanes, it is likely that hurricane rainfall and wind speeds will increase in response to human-caused warming. Analyses of model simulations suggest that for each 1 degree C increase in tropical sea surface temperatures, core rainfall rates will increase by 6-18% and the surface wind speeds of the strongest hurricanes will increase by about 1-8%. (US Climate Change Science Programme 2008)⁴

Sea level rise & coastal areas

The Caribbean Islands are vulnerable to sea-level rise. Sea-level in this region is projected by climate models to rise by 0.13 to 0.56m by the 2090s, relative to 1980-1999 sea-level. (UNDP 2012)

The most intense rainfalls primarily occur and will continue to occur along the coast resulting in significant runoff of water and pollution into densely populated coastal areas. Sediments and pollutants from eroded upstream lands also negatively impact marine ecosystems. In addition to runoff events, sea level rise induced by climate change will also impact Haiti's coastal population and ecosystems. Sea level rise will increase coastal erosion and salt-water intrusion and thus very likely compromise food and water security (MDE, 2006).

Priorities

According to its First National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), the adaptation needs of Haiti relate primarily to: (1) agriculture/food security; (2) coastal zones and marine ecosystems; and (3) water resources (MDE, 2002)⁵.

Similarly, the National Adaptation Program of Action (NAPA) identified the following adaptation priorities: (1) watershed management and soil conservation; (2) coastal zone management; (3) evaluation and conservation of natural resources; (4) preservation and enforcement of food security; (5) water protection and conservation; (6) infrastructure construction and rehabilitation; (7) waste management; (8) education and outreach.

³ Christensen *et al.* (2007) IPCC Working Group I Report: 'The Physical Science Basis'

⁴ Weather and Climate Extremes in a Changing Climate, North America, Hawaii, Caribbean and US Pacific Islands, US Climate Change Science Program, Synthesis and Assessment Product 3.3, June 2008

⁵ Ministry of the Environment [MDE] (2002). Republic of Haiti: First national scientific communication concerning climate change.

The NAPA also identified Haiti's most vulnerable areas to be the Southern, Western and North-Western departments, as well as the department of Artibonite (MDE, 2006).

Other Relevant documents :

Haiti : A Gathering Storm, Climate Change & Poverty, Oxfam International, A Swarup, 2009
Adaptation Learning Mechanism, Haiti Country Profile, 2009

Major disasters affecting the North-West Department for more than half a century and a description of their frequency and impact.

Certain events can be used to highlight the progressive and continuous impoverishment of the North-West and in particular the population of this Department's main population centre, the Commune of Port-de-Paix. Amongst others the following can be cited:

- The magnitude 9 earthquake of 07 May 1842, and the vibrations and after-shocks that accompanied it, caused enormous loss of human life and destroyed a great number of houses in the North West's main population centre.
- Cyclone Hazel in 1954 devastated plantations and woodland. The flooding that accompanied it destroyed houses, the main assets (animals, farms, etc.) and human life. The impact of cyclone Hazel was particularly severe in Jean Rabel, Port de Paix and Saint Louis in the North.
- Cyclone David in 1978 which devastated all the plantations and woodland. The flooding that accompanied it destroyed the main assets (animals, farms, etc.). The impact of cyclone David was particularly severe in Ile de la Tortue.
- The passing of cyclone George in 1998 devastated the plantations and destroyed the roads which were already in a bad state. The flooding that accompanied it destroyed houses, the main assets (animals, farms, etc.).
- The passing in 2004 of tropical storm Jeanne devastated the plantations in a good part of the North West.
- The more recent storms that struck the country in the months of August and September 2008 (Hanna and Ike). The situation was appalling particularly in the communes of Bombardopolis, Jean Rabel, Port de Paix (6th and 7th section) and in La Tortue.
- Regular and continuous droughts, and the 1968 famine that struck the North West Department and destabilised the farming economy of the eastern part.
- The famine that struck the North West in 1975 forced back people from the Far West.

Specific situation of Paulin La Corne, 6th section of Port-de-Paix, North West Department

- The sixth (6th) Paulin section is experiencing major fluctuations in rainfall patterns; rainfall varies enormously from one locality to the next and above all the area experiences scattered rainfall. This leads to the loss of crops in certain localities (Fonds-Ramier, Nan Gaston, Nan Kann, Morne Caillot, la saline etc.) and a considerable reduction in crop yields throughout the

	<p>section.</p> <ul style="list-style-type: none"> • The section is facing severe <u>deforestation</u> due to the production of charcoal. The hills and slopes are denuded and this leads to a high level of aridity in many areas linked to extreme climatic conditions. • The risk of <u>flooding and landslips</u> has greatly increased, above all since the section is in part bounded by the Trois-Rivières river which poses a perpetual threat to the population. • The <u>migratory flow</u> of people from the area, mainly young people, to the urban centres or to other places (Dominican Rep., Nassau Bahamas, USA, etc.) has greatly increased in recent years due to the difficult conditions experienced by the section. And this is set to become only worse in the next 5 to 10 years.
<p>1b: Community experiences</p>	<p>Focus Groups conducted in Paulin La Corne, 6th section of Port-de-Paix, North West Department</p> <ul style="list-style-type: none"> • In the past (1980 up to the 1990s) there were two main <u>wet and planting seasons</u> in the area: the first season running from August to February and the second season from April to June. Nowadays, everything has been upset. There is a short planting period (October to December) which is not certain and presents a lot of risks. • <u>The rains</u> have become extremely infrequent and when they do arrive, they are heavy, of very short duration, badly distributed and sometimes destructive. They mainly come in October and reduce progressively to the month of December. • A long time ago a lot of food was available, foodstuffs and seeds that were stored either for family consumption or for sale or for sowing during the next planting season. <u>Crop yields</u> were at a really high level. Whereas today, it's famine. The land is no longer fertile and even if a lot is sown, the little that is harvested, when that is possible, is not even sufficient for family consumption. • When the season arrives with the first rains, people sow with a great deal of hope, but the reality is always different because the crops are damaged, the harvest is lost through drought and/or floods and violent winds, or through attacks from pests and vermin/insects. • Farmers in the section have to confront extreme <u>temperatures</u> and their conditions and means of production are precarious. The long periods of severe drought lead to loss of crops, a lack of available food and also cause the springs to dry up. • All this has extremely serious consequences on our <u>health</u> and that of whole families since we work much more and are obliged to drink river water. • During the last 10 years several <u>species of plants and animals</u> have disappeared from the section due to climate and environmental conditions that are not favourable to their growth, rearing and survival. As examples we can cite: tobacco, tomatoes, carrots, beetroot, aubergines, cabbages, peppers and examples of animal species: pigs, guinea-fowl, Hispaniolan parrots, Ramiers, nightingales, swallows, bunting, turtledoves, etc. • Even worse, the people in the area no longer want to stay there and prefer to <u>migrate</u> to other places to try and escape the challenges and difficult conditions the section is experiencing.

Part 2: Provisional evaluation of project risks identified

Sig = Significance of the impact: (4= strong; 1= weak)

Lik = Likelihood of the impact: (4= strong; 1= weak)

Rsk = Risk= Significance x Likelihood (Multiply figures D and E)

A Locations or sectors	B Projects (by sector)	C Climate and environmental impacts	D Sig	E Lik	F Rsk	G Possible adaptation options to strengthen projects and communities
Livelihoods	Micro-credit project	Hurricanes, floods or landslides could cause death of people, destroy their homes and cause them to move to other regions.	4	4	16	<ul style="list-style-type: none"> ○ Reinforce and protect habitats by establishing retaining walls/build shelters against storms with strong roofing. ○ Reinforcement and training of support groups and assistance. ○ Inform the people on eventual evacuation plans when there is disaster.
		The incidence of severe diseases (cholera, for example) could result in the death of the beneficiaries.	4	3	12	<ul style="list-style-type: none"> ○ Encourage the cleanup, and the compliance and practice of hygiene measures. ○ Awareness Campaign on cholera ○ Distribution of hygiene kits.
	Credit to farmers	The scarcity of rainfall, the erosion of soils and prolonged droughts may lead to a partial or total loss of crops.	4	4	16	<ul style="list-style-type: none"> ○ Introduce drought resistant varieties. ○ Promote new techniques of fertility and soil protection. ○ Disseminate resistant varieties tested in the region.
		The change of season (early or late) could favour the emergence of new diseases or pests.	4	3	12	<ul style="list-style-type: none"> ○ Introduce seed varieties with short cycles and resistant to drought, insects and diseases ○ Promote biological control techniques against insects and diseases. ○ Establish community programs to promote agricultural inputs and also to promote techniques for grain

		The incidence of diseases Endemic epidemics and floods are a disaster that disturb the school yearly and even cause the death of the beneficiaries.	4	4	16	<ul style="list-style-type: none"> o Encourage clean up and o Compliance of hygiene o measures and practices. o Awareness Campaign on o Distribution of o Disinfectant in pyrethroid o kitsattle.
Community Health	Institutional and community mobilisation to fight against the cholera	Long drought periods could cause scarcity of water during a good part	4	4	16	<ul style="list-style-type: none"> o R&C awareness of High o impacts of climate change o and environmental o degradation on the health o of the population o Continuous work, dry o persons and with, anti- o cooperative and agro- o strategies and techniques. o reduce contamination o risks and reduction of them to o host to depend on the water o changes prevent the soil o from being washed o campaign on preventive,
		Of this year, the caused people to withdraw from the use of the water quality of the river, increasing the risk of catching diseases.	4	4	16	<ul style="list-style-type: none"> o degradation on the health o of the population o Continuous work, dry o persons and with, anti- o cooperative and agro- o strategies and techniques. o reduce contamination o risks and reduction of them to o host to depend on the water o changes prevent the soil o from being washed o campaign on preventive,
Environment and Civil Protection	epidemic in the NW Department.	Hurricanes, floods or landslides could cause death of people, destroy their homes and cause them to move to other	4	4	16	<ul style="list-style-type: none"> o participative engaged micro o and hygiene role and o also the methods and o techniques and o the Committee
	Risk Management and Natural Disasters	High temperatures and drought cause a strong presence of flies and mosquitoes. These are real threats to the health and life of the community. Protection Committees may also move.	4	3	12	<ul style="list-style-type: none"> o Disinfectant (High for o prevention) o Encourage good sanitation o Use pest management o against flies. o Implement and enforce o hygiene rules and o measures.
		The practice of intensive tilled cropping can accelerate soil erosion, reduce soil fertility levels and increase degradation.	4	3	12	<ul style="list-style-type: none"> o Encourage the use of o sustainable farming o techniques that can o reduce erosion. o Encourage crop o rotation
Community Education	Socio-educational Support : - School rehabilitation - Financial support to parents who are traders - Tuition fees - School supplies	Hurricanes, floods, and landslides could cause death of people, and destroy the schools.	4	4	16	<ul style="list-style-type: none"> o Reinforce and protect o schools by establishing o retaining walls o Construct shelters o against storms with o strong roofing o Reinforcement and o training of support o groups and assistance. o Inform the people on o eventual evacuation o plans when there is o disaster

Part 3: Decisions taken to work in new areas or with new beneficiaries

Faced with the different impacts of climate change and environmental degradation identified, the people that will be most impacted and affected are the most vulnerable peasant families whose only hope depends on the soil. In this context, a variety of types of project have been analysed and compared and it seems that the following projects may be an effective means of meeting their needs:

1. **Introduction of new varieties of maize, beans, peanuts and vegetables (shallots, garlic) that are resistant to drought, winds and pests.**
2. **Soil conservation project**

A Locations or sectors	B Projects (by sector)	C Climate and environmental impacts	D Sig	E Lik	F Rsk	G Possible adaptation options to strengthen projects and communities
Agriculture	o Introduction of new varieties of maize, beans, peanuts and vegetables (shallots, garlic) that are resistant to drought, winds and pests.	Storms/cyclones, frequent flooding and landslips may damage and destroy crops.	4	3	12	- Use and develop agro-forestry techniques (mixing crops and trees). - Encourage windbreak techniques by planting trees around the fields. This could protect the soil and crops against wind and reduce the risk of landslip. - Raise awareness concerning climate change and environmental degradation (Means and adaptation strategies).
		The problems of erosion caused mainly by run-off water may harm soil quality.	4	4	16	- Prioritise soil conservation techniques (diversion channels, dry stone thresholds, etc.), anti-erosion crops and agro-forestry techniques. - Encourage the construction of dykes to slow down the flow of run-off water and prevent the soil from being carried away.

ACTION PLAN

Proposed Activities	Where	Who is Responsible	When	Comments
Agricultural Pilot Project CEDRA for the introduction of « bese ba », a resistant variety of Phaseolus Lunatus (Lima bean) in Port-de-Paix, North-West Promote new techniques of fertility and soil	Paulin La Corne, 6 th section de la commune de Port de paix	WCH /ACLAM, Tearfund and community organisations	1 st May to 30 th October 2012	<ul style="list-style-type: none"> • Community Awareness and Training • Distribution of seeds to 100 farmers of an agricultural credit programme • Carry out follow up of fields / Calculation and analysis of comparative performance and of adaptability level in the 3 agro-

protection				<p>ecological zones.</p> <ul style="list-style-type: none"> • Presentation of the experiment results to the communities • Realisation of public awareness campaigns • At least 5 training sessions are given to 250 farmers on the techniques of composting, soil conservation, treatment and storage of grain and seeds.
Consolidated Community Actions in Disaster Risk Management in the North-West Department (A2CGRD_NO)	Les communes de Bassin-Bleu, Saint-Louis du Nord, Anse-à-Foleur, Môle-Saint-Nicolas, Bombardopolis and Baie-de-Henne.	WCH/ACLAM, Tearfund, Direction of Civil Protection (DPC), local authorities, community and religious leaders, youth and women organisations, Christian churches	1 st May to 30 th October 2012	<ul style="list-style-type: none"> • Community awareness and training on Disaster Risk Management and also on earthquake • Carry out of mitigation micro projects • Reinforcement of Communal and Local Civil Protection Committees (CCPC et CLPC) • Implementation of contingency plans • Creation and stimulation of new and viable permanent structures of Disaster Risk Management in the communities.
Training on constructions that meet anti-cyclonic standards	Jacmel town	WCH/ACLAM, Tearfund, Ministry of Public Works, Transport and Communication (MTPTC), Departmental Coordination of Disaster Risk Management Systems in the South East (CDGRD -SE)	28 May - 1 June 2012	2 training sessions were organized for the benefit of at least 3 construction technicians from each of the 10 communes in the South East Department and in the following communes of the North-West : Bassin-Bleu, Saint-Louis du Nord, Anse-à-Foleur, Môle-Saint-Nicolas, Bombardopolis et Baie-de-Henne
New approach of integrated programmes in the fight against accelerated environmental degradation in the NW.	North West Department	WCH/ACLAM and financing partner.	2013-2015	To be determined
Community level health education and family latrine projects.	Bassin Bleu, Saint-Louis du Nord, Anse-à -	WCH/ACLAM, Tearfund and DINEPA	2012-2013	This project could be implemented with an integrated approach and with a strong community involvement.

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Appendices:

Collection of community information

Focus group conducted at 6^e Section Paulin, Port-de-Paix

A. The most significant uncertainties linked to climate change and environmental degradation are as follows:

Cyclones, flooding, drought, erosion, lack of water, epidemics, water pollution, landslips, reduction in the production of maize, beans, shallots, disappearance of crops such as: tomatoes, cabbages, beetroot, carrots, tobacco and aubergines.

B.-

- The wet season extends from: October to December but it is extremely irregular and unpredictable.
- The most devastating flooding was caused by cyclone Jeanne: violent winds, heavy, devastating rain that continued for long periods. It occurred in 2004 and caused loss of property and human life, inundation and destruction of houses, destruction of plantations and crops, loss of animals and landslips. It was horrible and terrifying.

In 2008: cyclones Gustave and Ike and Hanna. But they caused less devastation than the 2004 cyclone. The areas at risk are: Audouin, Fond-coq, Ti Chansolme, Paulin, Lacorne, Décidé, nan Kann, Nan Gaston, cordieu, Gélin, Fond-Ramier, La Saline, Bois Piquant.

- The dry season almost lasts for the whole year. It starts in Mid-January and continues until September.
- There are many landslips, especially in the areas at risk and slash and burn techniques are practised in this section.
- Frequency of droughts: In the past, there were hardly ever any droughts because the section was very wooded and it rained regularly. Whereas today, the opposite is clearly true; rain is rare, unpredictable and irregular. Each year the drought has become increasingly severe with close to 8 months without rain.

- Due to erosion, soil degradation and the lack of water infiltration, the soil has become much less fertile.
- The level of deforestation is extremely high in the area. The hillsides are stripped bare.
- We are experiencing a considerable reduction in crop yields and some have disappeared or are no longer grown by farmers. Food insecurity is truly threatening. Many species of animal are in the process of disappearing: pigs, turtle-doves, ramier, bunting, guinea fowl, nightingales, etc.
- Water is not even available in the area, at least not quality water. The people drink water directly from the Trois-Rivières. The risk of pollution is extremely high because people relieve themselves on the ground itself or on the river banks and in ravines. Water points have dried up due to the long periods of drought. Well water is salty.
- Soil salination: in La Saline in particular, the soil is very salty.
- Organisms that damage crops and carry diseases: caterpillars and ants attack the maize and beans; rodents attack the shallots, garlic and peanuts; sigatoka attacks the bananas, 'logan' and 'maroca' attack sweet potatoes, yams and bananas.
- They do not use chemical fertilizers due to their high price, and also some land is on steep slopes.
- The section has also been severely struck by the cholera epidemic.
- The people are moving to other places in search of a better life because section 6 is experiencing a difficult time and the means of production are truly precarious.

In the next five years, if nothing is done and if no provision is made and help and support provided, peoples' situation in the section risks becoming worse, above all in the case of those most vulnerable to the uncertainties.

The people the most affected by the changes referred to above are above all the elderly, pregnant women, children, the handicapped and those living with HIV / AIDS.