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HAITI

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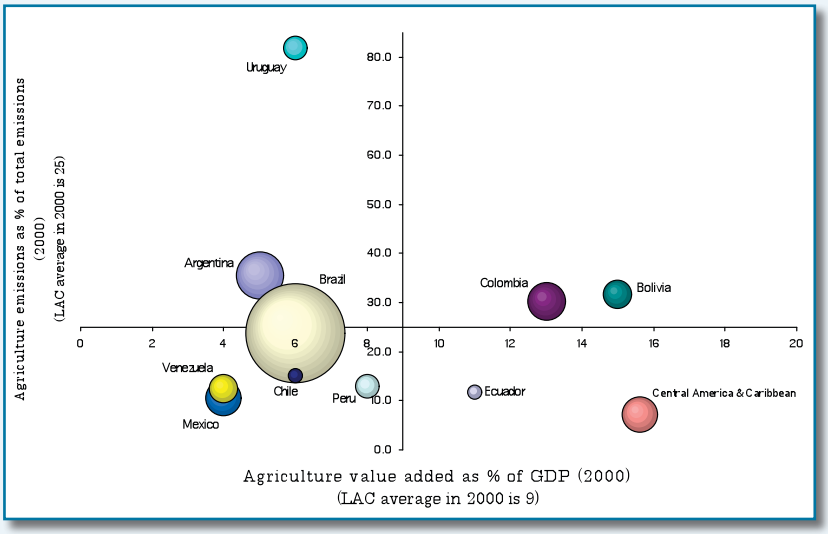
Country Note on Climate Change Aspects in Agriculture

This Country Note briefly summarizes information relevant to both climate change and agriculture in Haiti, with focus on policy developments (including action plans and programs) and institutional make-up.

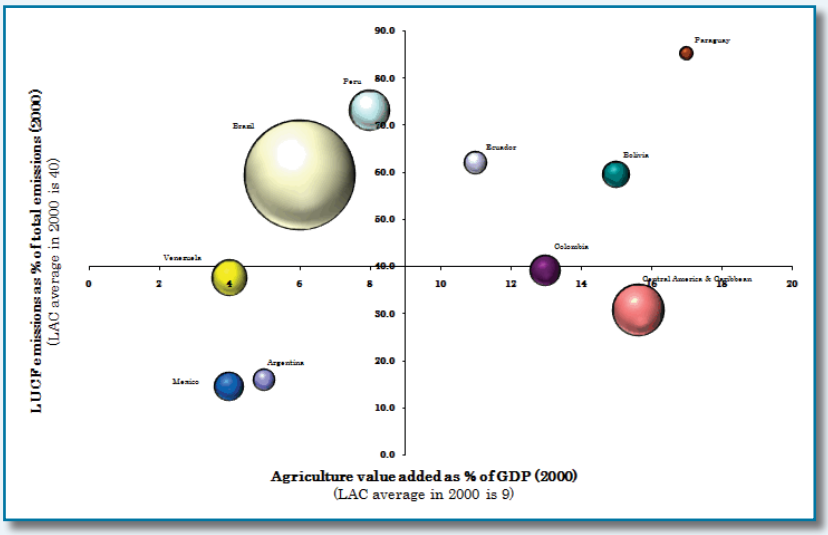
Contribution of agriculture (without LUCF) to the economy and to emissions in LAC countries

(size of bubble in $MTCO_2$ of LUCF emissions; axes cross at LAC average)



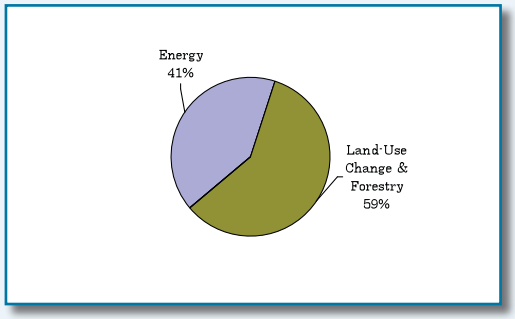
Contribution of agriculture to the economy and of LUCF to emissions in LAC countries

(size of bubble in $MTCO_2$ of LUCF emissions; axes cross at LAC average)



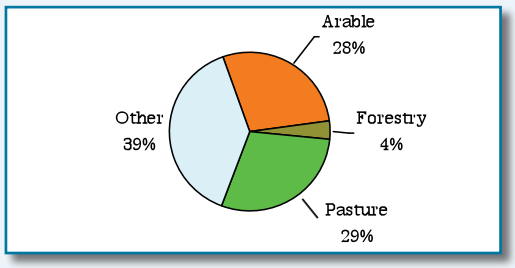
Note: In the first bubble graph, the total emissions for Uruguay do not account for the positive effects of LUCF (i.e. afforestation efforts). If they are considered, agriculture represents 222% of total emissions. Because of afforestation efforts in Uruguay and Chile, land use change and forestry (LUCF) is not a net contributor to emissions; hence the countries do not appear in the second bubble graph, but are considered in the calculation of the average in the vertical axis.

Percent of GHG emissions in CO_2 equivalent, by sector (2000)



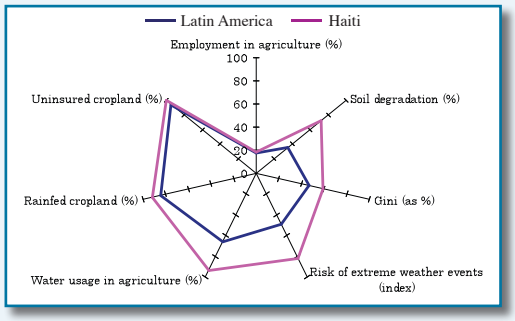
Source: World Resources Institute http://cait.wri.org

Land use (2005)



Source: World Development Indicators

Vulnerability Indicators



Note: Employment in agriculture (% of total employment)*; Rainfed cropland (% of total cropland)*; Gini*; Water usage in agriculture (% of total annual fresh water withdrawals)*; Uninsured cropland (% of total cultivated land area)**; Soil degradation (% of total land)***; Risk of extreme weather events (index; annual average 1997-2006)****

Sources: *World Development Indicators 2007, 2000-2007 average; **IADB, IICA, 2002/2003 figures; ***FAO AGL 2005[1]; ****Germanwatch

[1] http://www.fao.org/landandwater/agll/glasod/glasodmaps.jsp?country=HTI&search=Display+map+%21

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Summary

Haiti has submitted its National Adaptation Plan of Action to the United Nations Framework Convention on Climate Change (UNFCCC). Land use change and forestry are the largest contributors to GHG emissions in the country. The emission reduction potential is large and unexplored. Agriculture is highly vulnerable to extreme weather events, this coupled with problems of severe land degradation and poverty in the country. A greater emphasis on developing and applying adequate insurance mechanisms can be placed for better management of public resources in light of natural disasters in the agriculture sector.

Working definitions

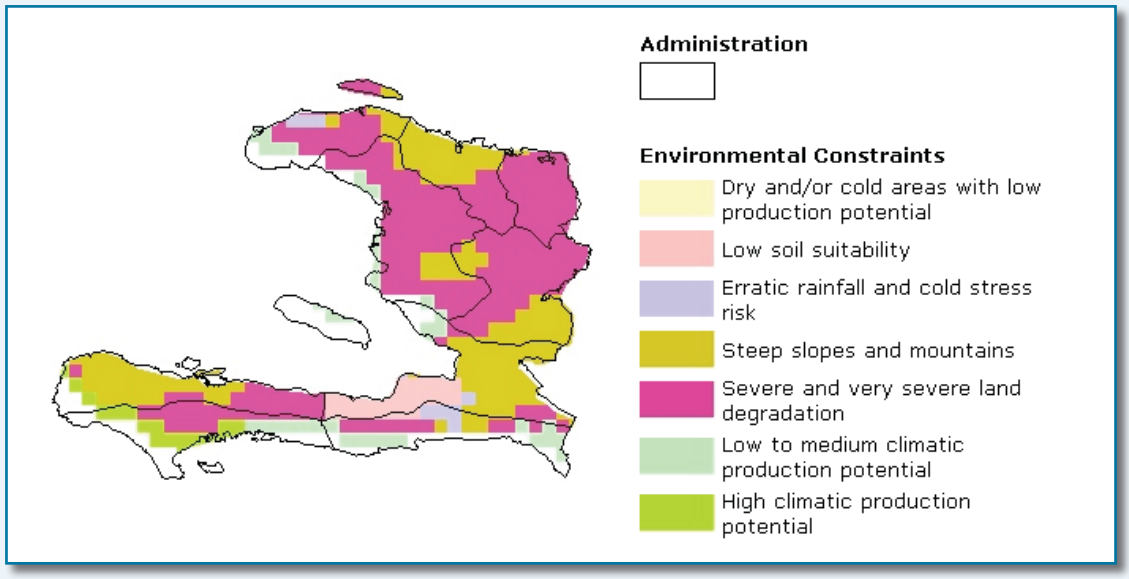
Agriculture is defined as a managed system of crops, livestock, soil management, forest resources (productive use, goods & services) and water resources (irrigation), including land use and land use change. **Climate change** encompasses both **mitigation** and adaptation activities within the agricultural sector. On the mitigation side, the focus is on the potential to reduce green house gas emissions by the different sub-sectors. On the **adaptation** side, the focus is on the potential to build resilience to climate and to increase the adaptive capacity through sustainable management of agriculture and other complementary factors (e.g. financial instruments). There is no specific **time frame** used in the country notes. An effort was made to collect the most recent available information on country indicators and policy matters.

Acknowledgments:
This *Country Note* was produced by a World Bank team of specialists (in agriculture, forestry, social development, risk and knowledge management) from the Latin America and the Caribbean region and other units of the World Bank. The team is very grateful for all the comments and suggestions received from the focal points on climate change and agriculture in many of the countries.

1. The Climate Context

The baseline map provides a visual characterization of Haiti's agricultural potential given current environmental constraints and their regional distribution. Around 57% of Haiti's land is used for agriculture (29% for pasture and 28% for cultivation), with forestry occupying 4% of the land in the country (WDI, 2005).

Baseline map: Current Major Environmental Constraints related to Agricultural Potential



Source: FAO **Note**: For more maps on Haiti and agricultural resources, go to http://www.fao.org/countryprofiles/Maps/HTI/04/ec/index.html

1.1. Country Projections

The following climatic changes with relevance to agricultural sector are expected to happen in Haiti:

a) **increases in temperatures** – it is probable that the temperature will increase by 0.8-1°C by the year 2030 and by 1.5-1.7°C by the year 2060, with the highest increases occurring during the month of June for 2030 and during the months of June-July and October for the year 2060.

b) **decreases in precipitations** – the precipitations are expected to decrease by 5.9-20% by 2030 and by 10.6-35.8% by 2060. The highest decrease will be registered during the month of July by the year 2030 and during the month of June by 2060. Given that the months of June-July are the most vulnerable in terms of peak temperature increases coupled with peak precipitation decreases, this will lead to increased evapo-transpiration resulting in serious impacts on the agricultural sector. The scarcity of water resulting from this will lead to less water for irrigation purposes.

In recent years (between 2001 and 2008), storms and floods have had the highest human and economic impact in Haiti, with losses for the period 1997-2006 averaging at 0.05% of GDP – 1.8 million people have been affected by storms (5 events) with the cost of damages reaching US$101 million and 295,569 people have been affected by floods (4 event) with the cost of damages reaching US$1 million[2]. In August and September of 2008, Haiti was hit by four major

[2] http://www.emdat.be/Database/CountryProfile/countryprofile2.php?disgroup=natural&country=hti&period=1999$2008

storms and hurricanes (Fay, Gustav, Hanna and Ike). The combined impact constitutes the largest natural disaster, in terms of damage and losses, to affect Haiti since the beginning of the 20th century. Total damages and losses are estimated at US$900 million, or around 15% of GDP.

According to the **National Adaptation Program of Action**, the most vulnerable areas in the country to the effects of climate change are the Southern, Western and North-Western departments, as well as the North and the South of the department of Artibonite.

1.2. Agriculture-Related Impacts

According to a vulnerability study for the agricultural sector, realized for the National Adaptation Plan of Action, whereby the temperature is estimated to increase by up to 1°C by 2030 and up to 1.7°C by 2060 and the precipitations to decrease by up to 20% by 2030 and up to 35.8% by 2060, the following yield decreases are expected to be observed on irrigated crops: a) corn: 4% decreases by 2030 and 7.7% decreases by 2060; b) rice: 9% decreases by 2030 and 15% decreases by 2060 and c) potato: 5% decreases by 2030 and 10% decreases by 2060.

Hurricane Mitch, which hit the country in 1998, had a damaging impact on between 15 and 20% of crops, 80% of banana plantations and 100,000 small livestock, according to FAO[3]. The storms affecting Haiti in recent years have lead to agricultural losses totaling US$ 61 million countrywide, resulting in reduced food production. According to the **Ministry of Agriculture, Natural Resources and Rural Development**, the storm resulted in the loss of approximately 3% of total livestock in the country, representing around 100,000 livestock[4].

2. The Policy Context

2.1. National Climate Change Plans, Strategies and Programs

Haiti counts with a **National Adaptation Plan of Action**[5] (**PANA**, French acronym), submitted to the UNFCCC in December 2006, whose primary objective is to identify and promote activities that address urgent and immediate needs of Haitians for adapting to the adverse impacts of climate change among communities in the country. It focused mainly on adaptation needs in the agriculture, water, fisheries, land, forestry and desertification.

2.2. Regional initiatives

Caribbean Community Climate Change Center[6] (**CCCCC**, Spanish acronym): Established in August 2005 as the official coordinating body of the Caribbean response to climate change. It is the official repository for regional climate change data, providing climate change-related policy advice to the Caribbean Community (CARICOM) member states.

Caribbean Disaster Emergency Response Agency[7] (**CDERA**, Spanish acronym): Conducts projects and builds states' capacity in comprehensive disaster management, vulnerability assessments, community disaster preparedness, and hazard mitigation among others.

Association of Caribbean States[8]: Coordinates various projects on disaster preparedness and relief with own and donor funding e.g. a **Database of Financial Mechanisms for Disasters** (a list of all organizations that provide reimbursable and non-reimbursable post-disaster funding), a **Radio Soap Opera on Natural Disasters in the Caribbean**, and assistance to member states in creating **National Post-Disaster Funds**[9].

[3] NAPA preparation document, Ch.III: Vulnerabilite at adaptation aux changements climatiques. secteur: agriculture
[4] http://www.reliefweb.int/rw/rwb.nsf/db900SID/MUMA-7KY3YM?OpenDocument
[5] http://unfccc.int/resource/docs/napa/hti01f.pdf
[6] www.caribbeanclimate.bz
[7] http://www.cdera.org/ and http://www.cdera.org/projects/
[8] http://www.acs-aec.org/
[9] http://www.acs-aec.org/projects/projects.htm

Red Cross-Caribbean[10]: Prepares training materials and coordinates training campaigns for disaster preparedness and resilience to other climate-change induced risks, including through **Community Based Disaster Risk Management**[11] (**CBDRM**, Spanish acronym).

2.3. Agricultural Sector Initiatives

3. The Institutional Context

The **Ministry of Environment**[12] (**MDE**, French acronym), created in November 1994, is the national authority on environment in the country and was created with the purpose of conserving the environment for future generations. It is also involved in various activities related to climate change. Though Haiti has ratified the Kyoto Protocol, it has not yet established a Designated National Authority (DNA) for Clean Development Mechanism (CDM) project administration. A proposal for it has been put forward and a possible institution for this would be the Ministry of Environment.

The **Ministry of Interior and Territorial Collectivities** (**MICT**, French acronym), through its **Civil Protection Directorate** (**DPC**, French acronym) has put into place a **Natural Risk and Disaster Plan** (**PUGRD**, French acronym) to pursue the diminishing of risk of natural disasters and to strengthen capacity to respond to natural disasters at the national, departmental, municipal and local level.

3.1. Inter-Sectoral Coordination

3.2. Agricultural Sector Institutions

The **Ministry of Agriculture, Natural Resources and Rural Development**[13] (**MARNDR**, French acronym), created in 1843, is responsible for the promotion of agriculture, for the conservation and utilization of natural resources, and for rural development. This includes irrigation and drainage. Regional development organizations report to this Ministry. The **Directorate of Agricultural Infrastructure** (**DIA**, French acronym) is responsible for the operation and maintenance of all public irrigation systems, while the **Directorate of Natural Resources** (**DRN**, French acronym) is responsible for soil and forest management in the country.

3.3. Fostering Capacity to Deal with Climate Change

Emissions inventory: The First National GHG Inventory was created with 1994 as its base year. It includes information on emissions from agriculture, land-use change and forestry, providing disaggregated information by type of emission and type of agricultural resource.

Studies related to climate change and agriculture: a study[14] published in 2006 by Christian Aid on the effects of Climate Change on poverty-stricken nations includes a chapter on Haiti. It describes the vulnerability of poor families to extreme weather events and their coping methods to these disasters, which further aggravate the problem.

The World Bank published a flagship document for the entire region of Latin America and the Caribbean titled "Low carbon, High Growth: Latin American Responses to Climate Change"[15], encompassing information on climate change impacts in the region, on the potential contribution of the region to mitigation efforts as well as a listing of future low carbon-high growth policies.

[10] http://www.caribbeanredcross.org/what/dm/climatechange/index.htm
[11] http://www.caribbeanredcross.org/what/dm/ccws-ppt/cbdrm.pdf
[12] http://unfccc.int/resource/ccsites/haiti/index.html
[13] http://www.agriculture.gouv.ht/
[14] http://www.christianaid.org.uk/Images/climate_of_poverty_tcm15-21613.pdf
[15] http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/02/27/000334955_20090227082022/Rendered/PDF/476040PUB0Low0101Official0Use0Only1.pdf

4. The Impact of Agriculture on Climate Change - Mitigation Measures

According to the National Adaptation Plan of Action, land-use change and forestry are responsible for around 59% of total GHG emissions. Of these, agriculture is responsible for 72% of all methane emissions in the country and land-use change and forestry is responsible for 86% of all CO_2 emissions in 1994. Haiti's carbon dioxide emissions per capita in 2004 stand at 0.2t CO_2/capita, lower than the Latin America region of 2.6t CO_2/capita and the world of 4.5t CO_2/capita[16].

4.1. Action Frameworks

4.1.1. Forestry and Land Use Change

According to the National Adaptation Plan of Action, the forestry and land-use change sector is responsible for 86% of all CO_2 emissions for 1994, resulting mainly from intense deforestation activities. The annual deforestation rate for Haiti for 2002 stands 5.7%. It is estimated that around 40 to 50 million trees are cut each year for energy needs. The use of fuel wood and the demand for charcoal are the main reasons for deforestation. It is estimated that only 1.4 -2 percent of total land is covered by forests, compared to 30 percent in 1940[17]. Furthermore, the intense deforestation has lead to severe degradation of the fertile topsoil with an annual loss of 3 cm topsoil per year.

The **National Adaptation Plan of Action** identifies the following needs for the forestry sector: i) reforestation; ii) the practice of agroforestry and iii) the existence of seed banks.

While there are no current government sponsored projects in Haiti in this sector, small agroforestry projects sponsored by development organizations do exist, such as the Canadian CIDA sponsored pilot project in **agroforestry in Nippes**[18]. This project helps improve rural living conditions in the department of Nippes by promoting agroforestry models that will ensure better management of natural resources and assist with agricultural marketing. The goal is to design, promote and implement sustainable agroforestry production models and manage micro-watersheds in the Communes of Paillant and Anse-à-Veau. The project will then focus on building on agroforestry achievements within the Commune of Petite Rivière de Nippes.

Lambi Fund of Haiti[19]: provides financial resources, training, and technical assistance to peasant-led community organizations. It supports programs focusing on sustainable development, community micro-credit, animal husbandry, restoring environmental integrity, and organizational and leadership training. A special focus is given on reforestation initiatives, such as the recent partnership of the Lambi Fund and the Green Belt Movement for the planting of 1 million trees in Haiti over the course of two to three years, where less than 1 percent of its forest remains[20].

Friends of the Earth – Haiti, Reforestation to Combat Climate Change[21]: A project involving: (i) community education on environmental risks and importance of reforestation (through radio interviews and school trainings) and (ii) reforestation of mountain regions to preclude soil degradation and generate an income source for local people.

Floresta[22]: is an NGO working to reverse deforestation and poverty in the world. They are active in Haiti where they have established a program whereby participants planted 24,318 trees in reforestation projects. Furthermore, 42 miles of anti-erosion barriers and 1036 ravines were constructed to control soil erosion on otherwise vulnerable hillsides and 674 compost piles were established, providing healthy organic soil to use as fertilizer for farms and family gardens.

[16] http://hdrstats.undp.org/countries/country_fact_sheets/cty_fs_hti.html
[17] http://www.piphaiti.org/overview_of_haiti2.html
[18] http://www.acdi-cida.gc.ca/CIDAWEB/cpo.nsf/vWebCSAZEn/0A3D9BF00484F71B85257259003C953F
[19] http://www.1888pressrelease.com/lambi-fund-of-haiti-and-the-global-gender-and-climate-allian-pr-64553.html
[20] http://www.1888pressrelease.com/lambi-fund-of-haiti-and-green-belt-movement-partner-for-refo-pr-64551.html
[21] http://www.foei.org/en/publications/annual-report/2007/what-we-achieved-in-2007/member-group-victories/america-latina-y-caribe/reforestation-to-combat-climate-change
[22] http://www.floresta.org/country_haiti.htm

Currently, FAO is also working on a risk management project and on the preparation of a mitigation plan with the help of non governmental organizations.

4.1.2. Livestock

Agriculture is responsible for almost 73% of all methane emissions in the country. Of these, 68% (62.71 Gg) are due to enteric fermentation from farm animals and 28% (26.06 Gg) are emissions from flooded rice field.

The National Adaptation Plan of Action identifies the following activities related to livestock: i) banning of free animal grazing and ii) construction of ponds used as a source of drinking water for livestock.

4.2. Carbon Trading and Agriculture

Under the Clean Development Mechanism (CDM), developed (also referred to as Annex I) countries can implement project activities that reduce emissions in developing (non-Annex I) countries. Though the CDM is expected to generate investment in developing countries, especially from the private sector, and promote the transfer of environmentally-friendly technologies in that direction, the global share of agricultural sector projects (including afforestation and reforestation) is very small (5.71% of total registered projects globally as of December 2009)[23] and the potential is country-specific. Latin America, as a region, currently holds the largest share of registered agricultural projects globally, 61% (75 projects). Haiti does not yet participate in carbon trading activities, in general, and in the agricultural sector, in particular.

The World Bank has mobilized a fund to demonstrate projects that sequester or conserve carbon in forest and agro-ecosystems. The BioCarbon Fund, a public/private initiative administered by the World Bank, aims to deliver cost-effective emission reductions, while promoting biodiversity conservation and poverty alleviation. In principle, the BioCarbon Fund can consider purchasing carbon from a variety of land use and forestry projects; its current portfolio includes Afforestation and Reforestation, Reducing Emissions from Deforestation and Degradation and the Fund is currently exploring innovative approaches to account for agricultural soil carbon.

5. Impact of Climate Change on Agriculture - Adaptation Measures

5.1. Action Frameworks

5.1.1. Land Management

Agriculture is responsible for 94% (6.97 Gg) of all nitrous oxide emissions in the country. The main source of these is the nitrogen based fertilizers used in the country, although consumption of fertilizers is much lower in Haiti (17.9kg/hectare of arable land) than the Latin America and the Caribbean average (92.3kg/hectare of arable land)[24].

Most farms in Haiti (78%) have an average size of less than two hectares, a result of a growing population farming a limited size land, leading to a very unproductive soil on these small farms[25]. The majority of the population has only access to hillside subsistence agriculture of maize, beans, cassava and fruit which leads to severe soil erosion of these hillsides. It is estimated that a third of all land is severely degraded[26]. Soil erosion is the worst in the plains of Artibonite, Cul de Sac, Cayes and the Northern and North-eastern plains.

The National Adaptation Plan of Action identified the following adaptation needs pertaining to this sector: i) development of crops adapted to areas with poor agricultural potential;

[23] http://cdm.unfccc.int/Statistics/Registration/RegisteredProjByScopePieChart.html
[24] World Development Indicators, 2006
[25] Balcet, JC., Damais G., Egset W., Herrmann S., Justesen M., Khouri N., Lamaute N., Siegel P.B., Verner D., *Werbrouck P. Diagnostic and proposals for agriculture and rural development policies and strategies*, October 5, 2005

ii) development of crop varieties resistant to appropriate technologies; iii) reduction of deforestation activities leading to soil erosion.

Some adaptation practices are already in use, such as the organic soil fertilization by stationing of animals on cropland in Parc la Visite, in the south-east, or the use of fallow techniques on hillside cropland and the use of small multi-storied gardens consisting of a mixture of shrub and trees or the use of multi-culture-livestock systems.

5.1.2. Water Use

Agriculture is responsible for 94% of total freshwater withdrawal in the country, compared to the Latin America and the Caribbean average of 71%[27]. Agriculture in Haiti relies mostly on rainfall (92 percent of total)-particularly in hillside areas, where water storage facilities are absent- and only 8 percent of total cropland is currently under irrigation. The irrigation system in Haiti is comprised of: a) one large scheme located in the Artibonite valley with 35,441 hectares of area equipped for irrigation, b) thirty eight medium-size schemes with only five of them presently working and covering an area of 39,237 hectares equipped for irrigation and c) one hundred and twenty eight small schemes with a total area equipped for irrigation of 10,854 hectares[28]. Agriculture accounts for 94% of all freshwater withdrawal in the country.

The water sector is very vulnerable to floods and droughts, periodically affecting the country. Floods and intense rainfall are mostly prevalent in the West, South, North-West, the valley of l'Artibonite and the South-East of the country leading to destruction of cropland and soil erosion. Droughts mostly affect the North-West, North-East, the South and the South-East of the country, resulting in destruction of croplands, decrease crop yields and death of livestock[29].

Some adaptation practices identified in the water sector, designed to face drought problems, are the use of water tanks for collecting rainwater, which is used as drinking water for livestock, among others, as well as the construction of water ponds to be used in agriculture.

With regard to irrigation, farmers lack the financial resources necessary to develop practices to address climate change. More often than not, this type of work has been undertaken by the state or NGOs and it consists mainly of the reinforcement of water management and the rehabilitation of small irrigation schemes.

The National Adaptation Plan of Action identifies further adaptation needs for the water sector. These are: i) the construction of new water capturing system from different sources; ii) reforestation of hillsides overlooking these water sources and iii) construction of water tanks to collect the surplus runoff water.

5.2. Social Aspects and Interventions

Many people in rural areas derive their livelihoods from agriculture and can be disproportionately affected by changes in climate.

With an HDI rank of 146 (out of 177 states) Haiti exhibits the lowest human development scores in the Western Hemisphere, which combined with its high exposure to natural disasters makes it one of most vulnerable countries to climate change the region. The national inequality rate is high, with a Gini coefficient of 0.60. About 61.2% of the population lives in rural areas[30].

[26] http://www.piphaiti.org/overview_of_haiti2.html
[27] TheWorld Bank, 2006
[28] http://www.fao.org/nr/water/aquastat/countries/haiti/index.stm
[29] http://unfccc.int/resource/docs/napa/hti01f.pdf
[30] http://hdrstats.undp.org/countries/data_sheets/cty_ds_HTI.html

Social capital and social cohesion is reportedly high in rural areas (measured between 2001 and 2005) suggesting a potential for community-based adaptation projects. Participation in local (often informal) governance structures is high - 38% of interviewed farmers reported using collective working arrangements for harvesting crops; 63% of families with relatives abroad were receiving remittances[31].

As in the rest of the Caribbean states, the most pending social issues related to climate change are the threats to family livelihoods due to adverse conditions for agriculture (especially soil erosion in hilly areas ; higher risk of vector-borne diseases due to increased heat; need for frequent evacuation or permanent resettlement due to hurricanes or coastal erosion). Assessing the vulnerability of communities through established Community Risk Assessment tools (data collection on past and current livelihood strategies and risks) would help to create both early warning channels and long-term adaptation strategies[32].

A state-provided social safety net does not exist in Haiti. Instead, social assistance is provided by the NGO sector e.g. the **Catholic Relief Services *Social Assistance Program***[33] providing food, rehabilitating damaged infrastructure, or funding small income-generating activities for children at risk, people with disabilities and elderly citizens.

Friends of the Earth – Haiti, Community Awareness on Climate Change[34]: Project launched in September 2007 aimed to increase public information on climate change (through local workshops and radio programs) and mitigate its effects through community action.

Fonkoze, Haiti[35]: Rural microfinance institution since 1994 with 36 branch offices in every department of Haiti. It offers micro-credit, savings, currency exchange and remittances transfer services as well as literacy, business and life skills trainings. 99% of its beneficiaries are women. It partners with other NGOs to provide health services and facilitate school attendance for the children of its members.

Plan Haiti[36]: International NGO providing emergency relief (food, school kits, etc.)

Community – Driven Development Project (**PRODEP**)[37] – supported by The World Bank, active since 2004 and benefitting rural and urban communities in the poorest municipalities in the country. The project gives funding for community-designed and implemented sub-projects in infrastructure, small production, services, etc. While not explicitly climate-change targeted some of the productive sub-projects have assisted poor farmers in establishing local shops for agricultural inputs, grain mills, and construction of irrigation canals and thus represent a possible channel of engaging rural communities in adaptation activities and increasing their resilience to climate risks.

5.3. Insurance Instruments

There is no agricultural insurance in Haiti and there is no public sector strategy to cope with climate risks in the agriculture sector. However, the Government does participate in **The Caribbean Catastrophe Risk Insurance Facility** (**CCRIF**) and has expressed interest in designing a more tailored, less catastrophic coverage for agriculture risks.

[31] The World Bank and Ministry of Agriculture, Natural Resources and Rural Development of Haiti. 2005. *Haiti: Diagnostics and Proposals for Agriculture and Rural Development Policies and Strategies.* http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2006/07/19/000090341_20060719153846/Rendered/PDF/367850ENGLISH0150Synthesis01PUBLIC1.pdf

[32] http://www.caribbeanredcross.org/what/dm/ccws-ppt/cbdrm.pdf

[33] http://crs.org/haiti/social-assistance/

[34] http://www.foei.org/en/publications/annual-report/2007/what-we-achieved-in-2007/member-group-victories/america-latina-y-caribe/strengthening-haitians2019-capacity-to-deal-with-climate-change

[35] http://www.fonkoze.org/ and http://www.cgap.org/p/site/c/template.rc/1.26.2605

[36] http://www.plan-international.org/wherewework/americas/haiti/

[37] http://go.worldbank.org/3A71L91KH0

Among the relevant actors on climate risk management for agriculture in Haiti are donors: a) WB and IFAD: Both donors are financing a short term technical assistance to the Ministry of Finance (MEF) and Ministry of Agriculture (MARNDR) to support the financial management strategy to cope with climate risks in the agriculture sector. Haiti was hit hard by 4 hurricanes this past season and the Government is interested in improving the public sector's response capacity to help farmers post-disaster.

In order to jump-start de use of financial instruments in the agricultural sector in Haiti, The World Bank recommends technical assistance for developing a strategy for climate risk management in the agriculture sector. The Government has a stake in the efficient use of public resources to protect small vulnerable farmers against systemic climate events and can have a large impact in the sustainable development of the agricultural insurance market. The World Bank can support the Government in developing such public policy strategy to develop agricultural insurance and facilitate the better management of public resources in support of small farmers post-natural disaster.

About *Country Notes on Climate Change Aspects in Agriculture...*

The ***Country Notes*** are a series of country briefs on climate change and agriculture for 19 countries in Latin America and the Caribbean region, with focus on policy developments (action plans and programs), institutional make-up, specific adaptation and mitigation strategies, as well as social aspects and insurance mechanisms to address risk in the sector. The ***Country Notes*** provide a snapshot of key vulnerability indicators and establish a baseline of knowledge on climate change and agriculture in each country. The ***Country Notes*** are the beginning of a process of information gathering on climate change and agriculture. The ***Country Notes*** are "live" documents and are periodically updated.

LATIN AMERICA AND THE CARIBBEAN REGION

AGRICULTURE AND RURAL DEVELOPMENT TEAM

Feedback

For comments and/or suggestions, please contact Svetlana Edmeades at sedmeades@worldbank.org