



December, 2009



www.worldbank.org/lacagcnotes



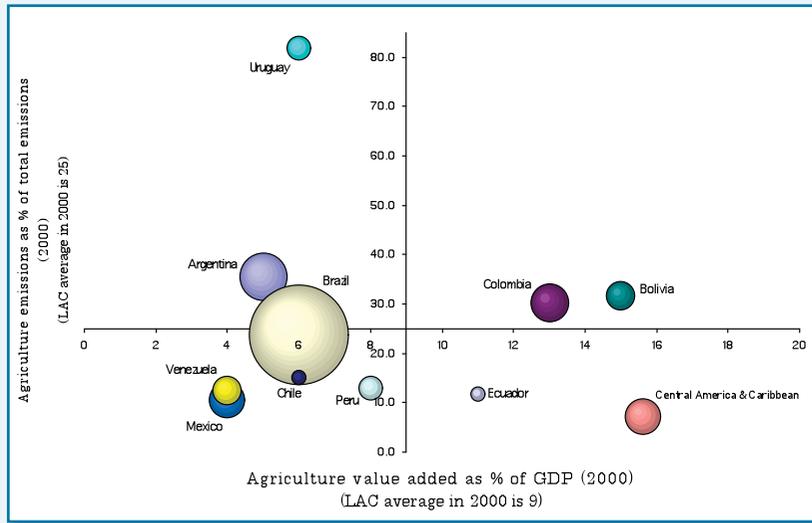
COLOMBIA

53787

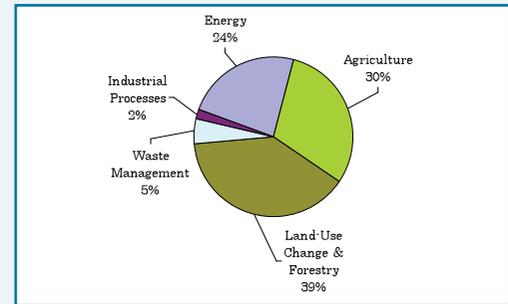
Country Note on Climate Change Aspects in Agriculture

This Country Note briefly summarizes information relevant to both climate change and agriculture in Colombia, 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 MTCO₂ of LUCF emissions; axes cross at LAC average)

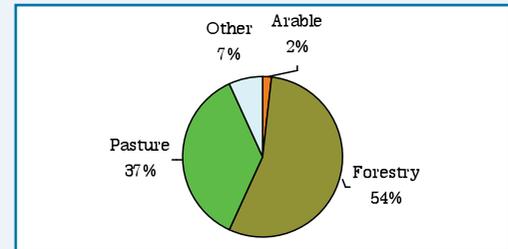


Percent of GHG emissions in CO₂ equivalent, by sector (2000)



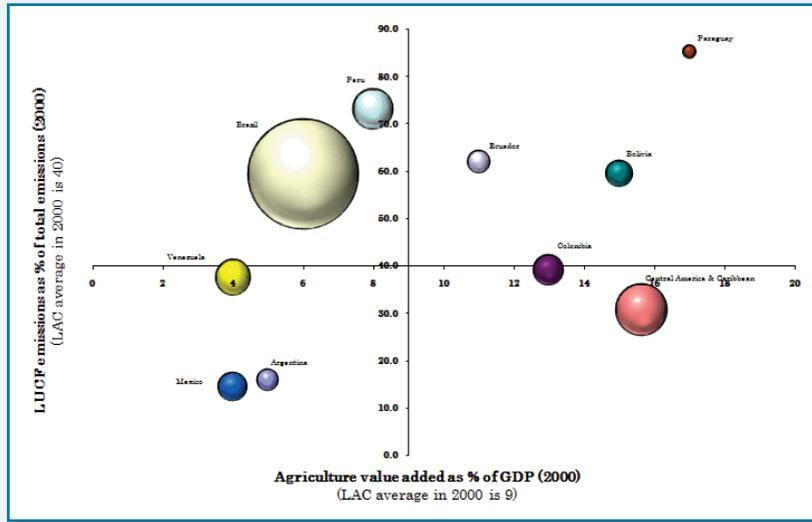
Source: World Resources Institute <http://cait.wri.org>

Land use (2005)

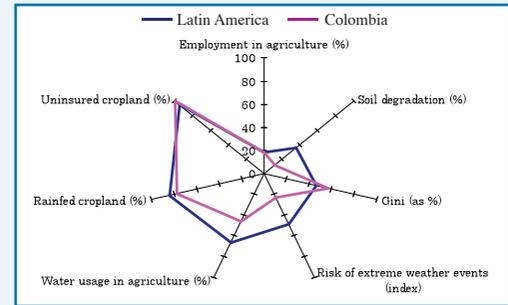


Source: World Development Indicators

Contribution of agriculture to the economy and of LUCF to emissions in LAC countries (size of bubble in MTCO₂ of LUCF emissions; axes cross at LAC average)



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 2005¹; ****Germanwatch

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 22% 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.

¹ <http://www.fao.org/landandwater/agll/glasod/glasodmaps.jsp?country=COL&search=Display+map+%21>

Table of Contents

Summary

1. The Climate Context	1
1.1. Country Projections	1
1.2. Agriculture-Related Impacts	2
2. The Policy Context	2
2.1. National Climate Change Plans, Strategies and Programs	2
2.2. Agricultural Sector Initiatives	2
3. The Institutional Context	3
3.1. Inter-Sectoral Coordination	3
3.2. Agricultural Sector Institutions	3
3.3. Fostering Capacity to Deal with Climate Change	3
4. The Impact of Agriculture on Climate Change - Mitigation Measures	4
4.1. Action Frameworks	4
4.1.1. Forestry and Land Use Change	4
4.1.2. Livestock	5
4.2. Carbon Trading and Agriculture	5
5. Impact of Climate Change on Agriculture - Adaptation Measures	6
5.1. Action Frameworks	6
5.1.1. Land Management	6
5.1.2. Water Use	6
5.2. Social Aspects and Interventions	7
5.3. Insurance Instruments	8

Summary

Like most countries in Latin America, Colombia has submitted one national communication to the United Nations Framework Convention on Climate Change (UNFCCC) with a second one under preparation. Agriculture (including land use change and forestry) significantly contributes to total GHG emissions in the country. The emission reduction potential of the agricultural sector (including land use change and forestry) is significant and not yet sufficiently explored in the country. Colombia does not count with a single CDM projects in the agricultural sector. Agriculture is highly vulnerable to weather extremes, in particular on the Caribbean Coast, where the threat of floods is prevalent. Reducing vulnerability to climate change is of utmost importance in the agricultural sector in Colombia, considering the role the sector plays in food security and livelihoods of rural populations.

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.

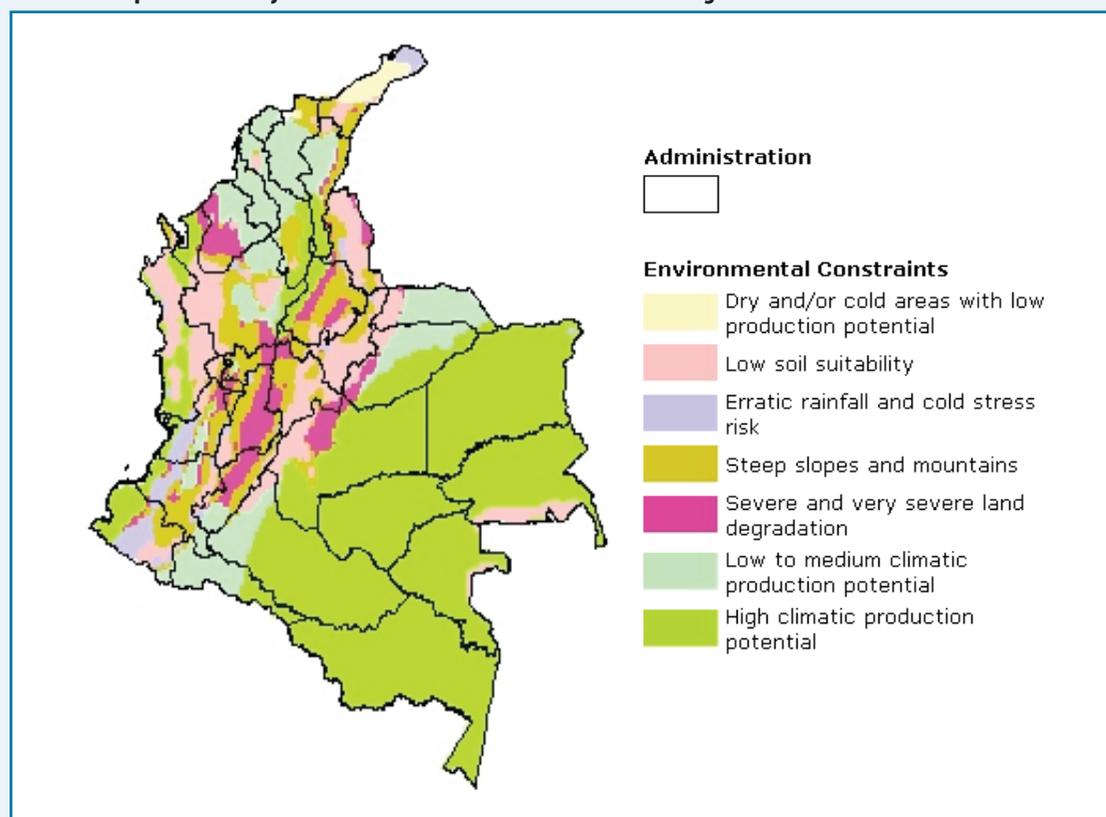
Acknowledgments:

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 Colombia's agricultural potential given current environmental constraints and their regional distribution. Around 39% of Colombia's land is used for agriculture (37% for pasture and 2% for cultivation), with forestry occupying 54% 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 Colombia and agricultural resources, go to <http://www.fao.org/countryprofiles/maps.asp?iso3=COL&lang=en>

1.1. Country Projections

Recent projections done with the assistance of the Institute of Meteorological Research of Japan indicate that temperatures will increase between 1 and 2°C in the High Mountains of Colombia, coupled with significant precipitation decreases by the year 2050. These climatic changes will lead to the complete disappearance of snow covered areas by 2030 and 56% of its moorland could disappear by 2050, resulting in a loss of natural resources, especially water with great negative impact on agriculture. Furthermore, it is possible that the duration of the rainy season in the San Andrés islands could increase by as much as 15% by 2050 and 20% by 2080, leading to an increased risk of floods². It has also been estimated that by 2050-2060, the sea level on the Caribbean and Pacific Coast could increase by 40-60cm as compared to the period 1961-1990.

In recent years (between 2002 and 2007), floods have had the highest human and economic impact in Colombia – 2.9 million people have been affected by floods (8 events) with the cost of the damages reaching US\$ 10 million³.

² <http://www.ideam.gov.co/biblio/paginaabierta/BrochureProyectoINAP.pdf>

³ [http://www.emdat.be/Database/CountryProfile/countryprofile2.php?disgroup=natural&country=col&period=1999\\$2008](http://www.emdat.be/Database/CountryProfile/countryprofile2.php?disgroup=natural&country=col&period=1999$2008)

1.2. Agriculture-Related Impacts

According to a vulnerability study for the coastal area of Colombia, realized for the First National Communication, 4.9% of the total area covered by cropland and pastures (7.2 million hectares in total) on the Caribbean Coast is threatened by floods at different degrees. Of these, 49.5% present high vulnerability to floods and consists of banana and African palm cultivations.

According to a study on the impact of climate change on agriculture in Colombia, using climate simulations with estimated temperature increases of between 2.5 and 5°C and annual precipitation variation of around 10%, it was concluded that 94% of agricultural production will be lost in the country, according to the most pessimistic scenario. A 10% increase in precipitation would lead to a 61% decrease in agricultural production, while as a 10% decrease would have a positive impact of around 14,7%. Furthermore a temperature increase of 2.5 and 5°C would lead to a decreased production value of 13% and 31.6% respectively⁴.

2. The Policy Context

Like most countries in the region, Colombia has submitted only one **National Communication**⁵ to the **United Nations Framework Convention on Climate Change**⁶ (UNFCCC) in December 2001, laying out the actions that the government has already taken and the analytical basis for its policy response to climate change and its commitment to take future actions within an official international framework. The Communication established the First National GHG Inventories for 1990 and 1994, it presented the actions done for mitigation of GHG emissions in Colombia, as well as vulnerability and adaptation studies for the coastal area, water resources, agricultural sector and land management.

Work on the **Second National Communication** has already started and it is scheduled to be completed by early 2010. It will include an update of the National GHG Inventory for 2000 and 2004, vulnerability and adaptation studies for various sectors, including water resources, and a chapter on mitigation measures. It will also include a National Strategy on education, information and awareness raising about the issue to climate change” and climate change scenarios defined by the IPCC (A2 and B2). For progress on the information for the Second National Communication, the following website is useful: <http://www.ideam.gov.co/biblio/paginaabierta/documentos.htm>

Currently, Colombia is developing a policy document on climate change including adaptation and mitigation measures by sector.

2.1. National Climate Change Plans, Strategies and Programs

The **Integrated National Adaptation Project**⁷ (INAP) was designed with the purpose of supporting Colombia’s efforts to define and implement prevention and adaptation measures to climate change. It has duration of five years and focuses mainly on highland ecosystems, the island areas and human health. One of the activities of this project is to work with local communities of the Highlands on land-use adaptation projects aimed at reducing the impact and degradation of this resource. Formulation of an Integrated Action Plan for Climate Change is a priority for Colombia and it is in the process of being elaborated.

2.2. Agricultural Sector Initiatives

⁴ http://www.procisur.org.uy/online/clim_rural/taller2007/Policy%20Notes%20Colombia%20_final%20Taller.pdf

⁵ <http://unfccc.int/resource/docs/natc/colnc1.pdf>

⁶ www.unfccc.int

⁷ <http://www.ideam.gov.co/biblio/paginaabierta/BrochureProyectoINAP.pdf>

3. The Institutional Context

The **Ministry of Environment, Housing and Territorial Development**⁸ (**MAVDT**, Spanish acronym) is the national authority on the environment, it oversees Colombia's commitments to the UNFCCC and other climate change related actions and is the Designated National Authority (DNA) on climate change in general and, in particular, on Clean Development Mechanism (CDM) in Colombia. The MAVDT houses a **Climate Change Mitigation Group**⁹, in charge of structuring and marketing of the Colombian portfolio in the GHG emission reduction market.

The **Institute of Hydrology, Meteorology and Environmental Studies**¹⁰ (**IDEAM**, Spanish acronym) is one of five research institutions created within the Ministry of Environment, Housing and Territorial Development with the role of providing scientific and technical support for the Ministry. It performs scientific studies and research on global change and its effects on Colombia, including on the agricultural sector. It also coordinated the preparation of the First National Communication.

3.1. Inter-Sectoral Coordination

The **Technical Inter-Sectoral Committee on Mitigation of Climate Change** (**CTIMCC**, Spanish acronym), was approved in August 2003 and has as a main function the elaboration of proposals related to mitigation of the National Climate Change Policy, proposing recommendations of projects for the Clean Development Mechanism for National Approval and follow-up of the implementation of the Clean Development Mechanism in the country. It consists of permanent as well as thematic members. Among the permanent members is the Coordinator of the Climate Change Mitigation Group of the Ministry of Environment, Housing and Territorial Development.

3.2. Agricultural Sector Institutions

The **Ministry of Agriculture and Rural Development**¹¹ (**MARD**, Spanish acronym) has as a main function the formulation of policies for the development of the agricultural sector, fisheries and rural development. Since 2008, MARD has financed 14 different research studies on mitigation and adaptation to climate change for the agricultural sector, in collaboration with other entities, such as the **Colombian Corporation of Agricultural Research**¹² (**CORPOICA**, Spanish acronym), The National University and a few other organizations. MADR is also involved in the design of some relief mechanisms for agricultural producers affected by climate events, such as insurance, refinancing of debts and compensation packages.

The **National Corporation on Research and Forest Promotion**¹³ (**CONIF**, Spanish acronym), created in 1974, is a research institution focused on studies related to recovery, conservation, protection and sustainable use of forests. It supports the development of policies and programs related to the forestry sector and it realizes plans related to management of natural and plantation forests.

The **Colombian Agricultural Institute**¹⁴ (**ICA**, Spanish acronym) advises the Ministry of Agriculture on the formulation of agricultural policies and research projects and on sanitary risk prevention for livestock. It also performs research on issues of climate change and its impact on the agricultural sector.

3.3. Fostering Capacity to Deal with Climate Change

Emission inventory: Columbia counts with a National GHG Inventory with 1990 as its base year and an update of this for the year 1994. The Inventories include information on emissions from agriculture, including land use change and forestry by type of emission and type of agricultural

⁸ www.minambiente.gov.co

⁹ <http://www.minambiente.gov.co/contenido/contenido.aspx?catID=135&conID=251>

¹⁰ www.ideam.gov.co

¹¹ www.minagricultura.gov.co

¹² www.corpoica.org.co

¹³ www.conif.org.co

¹⁴ www.ica.gov.co

resource. A renewed inventory will be included in the Second National Communication scheduled to be published in early 2010.

Studies related to climate change and agriculture: a series of vulnerability studies to climate change were performed in preparation of the First National Communication. They focused on coastal areas, water resources and the agricultural sector. Furthermore, a research study was done on the economic impact of climate change on agriculture in seven Latin American countries, including Colombia, with the support of The World Bank and Yale University¹⁵. Other studies: a) Baseline for soil quality indicators to monitor the effects of climate change on the agricultural production systems in the Piedmont Plains (Colombian Agricultural Research Corporation – CORPOICA); b) Irrigation with reduced water flow: an option for the Piedmont (Colombian Sugarcane Research Center – CENICANA). Further information on research studies related to climate change and agriculture can be found at <http://www.ideam.gov.co/publica/index4.htm>

At the academic level, a few universities are undertaking research studies: a) evaluation of the effects of climate change (UDENAR); b) climate modeling, change patterns and their effects on highland agricultural systems with the final aim of identifying mitigation and adaptation measures for future planning (UNICAUCA).

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

According to the First National Communication, agriculture is responsible for 96% of all nitrous oxide (N₂O) emissions and 77% of all methane (CH₄) emissions (mainly from enteric fermentation from farm animals) and land-use change and forestry is responsible for 21% of all CO₂ emissions in 1994.

4.1. Action Frameworks

4.1.1. Forestry and Land Use Change

According to the First National Communication, the forestry and land-use change sector is responsible for 21.5% (16,540 Gg CO₂) of total CO₂ emissions in 1994, which represents an increase from 1990 when this was 18.7% (11,879.8Gg CO₂). During both years, a net capturing of CO₂ was registered of 1,010.8 Gg CO₂ in 1990 and 2,034.7 Gg in 1994, due to the abandoning of cropland followed by natural regeneration of vegetation. The average annual deforestation rate for 2002 in Colombia is 0.4%.

A number of mitigation actions have been taken in the sector:

The Program for conservation, management and restoration of forestry ecosystems¹⁶ is one of the three large programs developed under the **National Forest Development Plan**¹⁷ (PNDF, Spanish acronym), approved in December 2000 by the National Environmental Council. It is aimed at conservation in situ, restoration and rehabilitation of forestry ecosystems and protection against forest fires. One of the results of this program is the reforestation of 95,400 hectares of strategic land for conservation of water resources. Various subprograms exist within this program. One of them is the program titled *Strengthening of forest management for the conservation and restoration of forestry ecosystems in water basins*¹⁸, with a duration of three years, consisting of conservation and restoration actions on 120,000 hectares of forestland, in rural and urban areas, through increasing of forest coverage and management of water basins.

¹⁵ http://www.procisur.org.uy/online/clim_rural/taller2007/Policy%20Notes%20Colombia%20_final%20Taller.pdf

¹⁶ <http://74.125.45.104/search?q=cache:u68tEVV00e8J:www.revista-mm.com/rev32/plan.htm+plan+de+accion+forestal+para+colombia&hl=en&ct=clnk&cd=3&gl=us>

¹⁷ http://www1.minambiente.gov.co/viceministerios/ambiente/dir_ecosistemas/gestion_forestal/acciones_pndf.htm

¹⁸ <http://www.embcol.or.at/Colombia/estrategia/Bosques/Fichas/Fichas%20GGF%20-%20FAltima1.doc>

The Strategic Plan for the Recovery and Establishment of Forests in Colombia, Green Plan (Plan Verde), approved in 1998, has as a main objective the inclusion of agroforestry, conservation and ecological restoration in the environmental management of the territory, the recuperation of degraded ecosystems and the promotion of protective reforestation in areas which generate basic environmental services to the population, the control of deforestation and encouraging the implementation of agroforestry. The goal of this Plan is to reach a total area of 1 million hectares of reforested or restored land.

In October 2008, Colombia was selected into the World Bank's **Forest Carbon Partnership Facility (FCPF)**¹⁹. The FCPF aims to assist Colombia in its efforts to reduce emissions from deforestation and forest degradation (REDD). The project's Global Environment Objective is to promote the adoption of environment-friendly silvopastoral production systems (SPS)²⁰ in Colombian cattle ranching, to improve natural resource management, enhance the provision of environmental services (biodiversity, land, carbon, and water), and raise the productivity in participating farms. Efforts to expand the adoption of SPS under this project have been conceived primarily as a rural development undertaking that has global environmental benefits justifying GEF support, therefore providing a genuine example of sustainable rural development. The SPS practices have demonstrated²¹ to substantially reduce total greenhouse gas emission from ranching, both directly (by sequestering carbon both in the soil and in trees) and indirectly (by reducing pesticide use and requiring fewer applications of nitrogen fertilizers and, through improved nutrition, reducing methane emissions from cattle). Carbon stocks measured in silvopastoral habitats were higher than in degraded lands, and GHG emissions were lower. Therefore, the proposed project is expected to provide enhanced carbon benefits, including for climate change adaptation and the reduction of emissions from deforestation and forest degradation. SPS were also associated with a significant reduction in the use of fire as a pasture management tool, as well as with significant carbon sequestration in the soil and in the standing tree biomass.

More details regarding Colombia's next steps under the Readiness Mechanism of the FCPF can be found in Colombia's **Readiness Plan Idea Note (R-PIN)**²².

4.1.2. Livestock

Livestock are responsible for 83.4% of total methane (CH₄) emissions in 1990 and 85.8% in 1994 from enteric fermentation from farm animals and from handling of animal manure. The emitted quantity differs according to the digestive system of the animal and to the animal diet.

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).

¹⁹ <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCARBONFINANCE/0,,contentMDK:21631703~menuPK:5216269~pagePK:64168445~piPK:64168309~theSitePK:4125853,00.html>

²⁰ 4 criteria are employed to assess the environment-friendliness of a cattle ranching production system:

- its increase of vegetative cover in farms, including trees
- its decrease of agrochemicals of fossil origin (pesticides and fertilizers)
- its contributions to decrease soil erosion
- its overall contribution to improve the quality of the landscape

²¹ GEF/IBRD *Integrated Silvopastoral Approaches to Ecosystem Management* project in Colombia, Costa Rica and Nicaragua, (Regional Project)

²² http://wbcarbonfinance.org/docs/Colombia_R-PIN_07-15-08.pdf

²³ <http://cdm.unfccc.int/Statistics/Registration/RegisteredProjByScopePieChart.html>

As of December 2009, there are 19 registered projects in Colombia. Currently, there are no registered CDM projects in agriculture, nor under the “afforestation and reforestation” category in Colombia. This is a shortcoming given the impact of the sector on GHG emissions in the country²⁴.

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

Colombia has initiated a number of studies and assessments which design local responses to climate change. To date there are 40 adaptation projects under implementation with the help of around 100 institutions: 13 projects are for the Colombian Highlands, 3 for coastal and insular areas, one project on health issues, 5 on the analyses of the relationship of risks and climate change, 2 on infrastructure and 13 of them concentrate on the research of factors related to climate change in the agricultural sector. Among the most important ones are the adaptation to climate change of the San Andrés Island and the pilot project on adaptation to climate change in the “**Macizo Colombiano**”²⁵, undertaken in cooperation with the United Nations Development Program (UNDP) and the Spanish government.

5.1. Action Frameworks

5.1.1. Land Management

The nitrous oxide emissions originated from the use of cropland, including the use of fertilizers account for 98.3% of total nitrous oxide emissions in 1990 and 98.5% in 1994. The use of fertilizers in Colombia of 137kg/hectare of cropland in 1998 is almost double in intensity as compared to the South American average of 74kg/hectare of cropland, leading to indirect emissions of nitrous oxide²⁶.

According to a study performed in preparation for the First National Communication on the vulnerability of land to desertification, it was concluded that 4.1% of Colombian soil is affected by desertification to a different degree as follows: 0.6% of soil is in critical condition, 1.9% is moderately affected while as 1.4% presents low degrees of desertification. La Guajira, followed by Santander, are the municipalities mostly affected by a serious process of desertification coupled with low sustainability. Furthermore, of the 23 irrigation districts with large scale irrigation schemes, 15 of these, corresponding to 65%, are affected by land degradation due to desertification in 32.2% of their total area. It is estimated that in a future scenario with doubling of CO₂ concentrations, these 23 districts will be affected by degradation due to desertification in 91.3% of their total area.

5.1.2. Water Use

Agriculture accounts for 37% of all water withdrawal in the country. Of the 900,000 hectares under irrigation in the country, two thirds correspond to projects developed by the private sector,

²⁴ <http://cdm.unfccc.int/Projects/projsearch.html>

²⁵ <http://sdnhq.undp.org/opas/es/proposals/suitable/256>

²⁶ http://earthtrends.wri.org/pdf_library/country_profiles/agr_cou_170.pdf

mainly small scale irrigation projects, and the rest to irrigation projects developed by the public sector²⁷. The total area equipped for irrigation represents 16.3% of the total cultivated area of the country, higher than the South America average of 8.9%²⁸. The efficiency of irrigation systems is in general fairly low in the country, contributing to soil salinization and water erosion²⁹.

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.

The Government of Colombia estimates that 52.6 per cent of the total population lives below the poverty line, while this figure reaches 69 per cent in rural areas³⁰. Severe income disparities characterize Colombia. Poor distribution of assets is an acute problem, particularly in rural areas, where the Gini coefficient of land ownership in 1990 was estimated to be 0.81. Nonetheless, agriculture continues to be the single most important driver of economic growth, generating a fifth of total value added, over a third of foreign exchange, and responsible for more than 30% of total employment in the economy³¹.

Over a year ago the Ministry of Environment and IDEAM, together with the participation of various organizations, established the **Climate Change Discussion Table** (Mesa Nacional de Cambio Climático) in order to provide a forum to coordinate and integrate humanitarian consequences of climate change into their institutional agendas. Specifically, discussion will focus on the sensitization, preparation to and reduction of risks produced by climate change in Colombia.

The Red Cross of Colombia, together with the support of the Red Cross of Holland, and the Disaster Preparedness Program of the Humanitarian Aid Department of the EU (DIPECHO), is working on a project, "Safer and better prepared communities" which aims to reduce natural disasters through education and capacity building of populations most vulnerable to disasters³².

To respond to the 1998-99 economic crisis, an emergency social safety net - the **RAS** - was created with the purpose of mitigating the impacts of the crisis over the poorest population until 2005. The RAS was composed of three programs: (i) **Familias en Acción**, which is a Conditional Cash Transfer program that provides cash to poor households in rural areas conditional on school attendance of school-aged children and visits to health facilities and participation in nutritional programs for younger children and their mothers; (ii) **Empleo en Acción**, which was a public work program; and (iii) **Jovenes en Acción**, a youth training and internship program. All three programs were originally managed by the **Fondo de Inversión para la Paz** (FIP) under the direction of the Presidency of the Republic and funded through World Bank (*Familias and Empleo*) and Inter-American Development Bank loans. The implementation of the RAS was accompanied by strong monitoring and evaluation initiatives in order to assess the relative effectiveness of each program³³.

Fund for Support of Rural Women³⁴ (**FOMMUR**, Spanish acronym) is an agreement signed by the National Service of Learning and the Inter-American Institute for Cooperation for Agriculture in order to develop capacity building activities in the areas of access to finance, project formulation and management, creation and strengthening of entrepreneurship, and capacity building for activities which allow for the development of projects and rural businesses in an efficient manner

²⁷ <http://www.fao.org/nr/water/aquastat/countries/colombia/indexesp.stm>

²⁸ http://earthtrends.wri.org/pdf_library/country_profiles/agr_cou_170.pdf

²⁹ http://en.wikipedia.org/wiki/Irrigation_in_Colombia

³⁰ http://www.ifad.org/evaluation/public_html/eksyst/doc/prj/region/pl/colombia/colombia.htm

³¹ <http://www.sciencedirect.com/science/article/B6VC6-42R6PGM-5/2/8640c86e9c2e3590fe84a50cf62a8f09#fn2#fn2>

³² <http://www.cruzroja colombiana.org/dipecho-bta/cambio.html>

³³ http://www.adb.org/Documents/Events/2002/SocialProtection/bouillon_presentation.pdf

³⁴ http://www.minagricultura.gov.co/archivos/ley_731_de_2002.pdf

Rural Opportunities³⁵: aims to contribute to poverty reduction, increase employment and income, facilitate access to new markets, elevate the competitive capacity of micro-enterprises and strengthen business capacities of rural population. The program hopes to directly benefit 32,000 rural families during the next six years.

Program for Land Recovery³⁶: aimed at land recovery for indigenous population in the Sierra Nevada area. It is financed through the Gonawindua Tayrona Organization that looks for funds aimed at facilitating the buying of these lands and returning them to the indigenous population for reforestation or other purposes.

The World Bank project for Colombia titled “Integrated National Adaptation Project”, looking at changes in mountain habitats as well as health issues, will deal with responses to the increased exposure to tropical vector-borne diseases (malaria and dengue) induced by climate change. More specifically, it will contribute to the strengthening of the institutional capabilities through the evaluation and strengthening of local (municipal) health agencies and through the strengthening the National Health (M&D) Surveillance System ultimately changing the current reactive institutional organization into a proactive public health system.

Colombia is said to benefit from the FCPF with specific benefits for forest communities and indigenous people; details on the management of forest carbon funds to be determined post-Copenhagen meetings in December 2009.

5.3. Insurance instruments

Crop insurance was first introduced in Colombia in 1993 Livestock insurance was implemented more recently in year 2000. In regards with Crop insurance it is important to note that the original program was discontinued and reintroduced in 2004. Federal Government supports crop insurance since 2006 by subsidizing part of the premiums paid by the farmers. There are a total of 30,000 ha of cropland insured, representing 0.83% of cultivated area. There are a total of four risks covered (drought, floods, moisture and MPCl) and a total of four crops (plantains, bananas, corn and cotton).

The Government of Colombia has two instruments in place that supports the agriculture sector in managing climate risks:

- a) **PREMIUM SUBSIDIES**: Since 2006 the Federal Government has been subsidizing crop insurance premiums in 60% for group policies and in 30% for individual policies. During 2007, the Government of Colombia spent US\$ 3 million in crop insurance premium subsidies. Premium subsidies do not apply for livestock insurance.
- b) **Disaster Relief**: The Government of Colombia has in place a Disaster Relief Program that brings assistance to farmers affected by flood, freeze and landslides. During 2007 this fund brought assistance to crop farmers with US\$ 27 million and to livestock farmers with US\$ 1.3 million.

In terms of government entities and donors involved in initiatives relating to climate risk management for agriculture in Colombia, the Ministry of Agriculture is in charge of supporting

³⁵ <http://www.ofertasynegocios.com/programa-opportunidades-rurales.xhtml>

³⁶ <http://www.tairona.org/programas.html>

agricultural insurance development in the country by administering the subsidy and providing R&D and technical assistance for agricultural insurance.

In order to deepen and expand the financial instruments offered currently in Colombia to the agriculture sector, an important recommendation could be formulated:

- a) Technical assistance for macro level climatic risks: The Government has applied a strategy of targeting market and disaster relief support to farmers, however there is an important opportunity for better management of public resources in light of natural disasters in the agriculture sector. It would be important for the Government to move away from ex-post measures such as bailouts and tax exemptions, and design macro-level coverage that can facilitate liquidity to the public sector in case of a catastrophe to come in support of farmers in case needed.



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

