Low Carbon Resilient Development
(LCRD)
Annual Report FY15

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1 Content

1 COMPONENT 1. NATIONAL ENABLING ENVIRONMENTS AND INSTRUMENTS FOR IMPLEMENTATION OF LOW CARBON AND CLIMATE RESILIENT INTERVENTIONS....5
1.1 SMAPS SECTORAL MITIGATION ACTION PLANS 5
1.1.1 Pilots design 6
1.1.2 Regulations, policies or programs supported 7
1.2 ENHANCING CAPACITY IN THE NATIONAL INSTITUTIONS 10
1.3 NATIONAL DEVELOPMENT PLAN 2014 – 2018 13
1.4 MRV (MONITORING, REPORTING AND VERIFICATION) 13
1.5 INDC (INTENDED NATIONALLY DETERMINED CONTRIBUTION 14
1.6 FINANCE 16
1.7 NAMA – (NATIONALLY APROPRIATE MITIGATION ACTIONS) 17
2 COMPONENT 2. LOW CARBON RESILIENT CITIES AND REGIONS: FROM DESIGN TO IMPLEMENTATION....19
2.1 PASTO 20
2.1.1 GENERAL CHARACTERISTICS OF THE CITY 20
2.1.2 PROCESS TO IDENTIFY ACTIONS AND INTERVENTIONS 21
2.1.3 KEY RESULTS 22
2.1.4 ACTIVITIES IN PROGRESS 23
2.2 RIOHACHA 24
2.2.1 GENERAL CHARACTERISTICS OF THE CITY 24
2.2.2 PROCES TO IDENTIFY ACTIONS AND INTERVENTIONS 26
2.2.3 KEY RESULTS 26
2.2.4 ACTIVITIES IN PROGRESS 27
2.3 VALLEDUPAR 27
2.3.1 GENERAL CHARACTERISTICS 27
2.3.2 APROACH OF INTERVENTION 28
2.3.3 KEY RESULTS AND ACTIVITIES IN PROGRESS 28
2.4 HUILA DEPARTMENT 30
2.5 ENHANCING CAPACITY IN THE CITIES AND HUILA FOR CLIMATE CHANGE 31
3 COMMUNICATIONS AND OUTREACH....32
4 ADMINISTRATIVE AND FINANCIAL ISSUES....35
4.1 STAFF 35
4.2 EQUIPMENT AND SUPPLIES .... **Error! Bookmark not defined.**
4.3 OFFICE SPACE .... **Error! Bookmark not defined.**
4.4 AGREEMENTS STATUS .... **Error! Bookmark not defined.**

ABBREVIATIONS

AEA	Alliance Energy and Environment in the Andean Region
AFOLU	Agriculture, Forestry and Other Land Use
BAU	Business-as-Usual
CAEM	Corporación Ambiental Empresarial
CAM	Corporación Autonoma Regional del Magdalena
CCAFS	Climate Change, Agriculture and Food Security
CDM	Clean Development Mechanism
CIAT	International Center for Tropical Agricultural
CONPES	Consejo Nacional de Política Económica y Social
CRA	Regulatory Commission of Drinking Water and Basic Sanitation
CSA	Climate Smart Agriculture
DEDENAR	Centrales Eléctricas de Nariño S.A. E.S.P.
DNP	National Planning Department
ECDBC	Estrategia Colombiana de Desarrollo Bajo en Carbono or "Colombian Low Carbon Development Strategy"
EC-LEDS	the Enhancing Capacity for Low Emission Development Strategies
EMPOPASTO S.A. E.S.P	Pasto's sanitary works company
FINDETER	Financiera del Desarrollo Territorial S.A.: Colombian second-tier bank for development
FONTAGRO	Regional Fund for Agricultural Technology
GDP	Gross domestic product
GEF	Global Environmental Found
GHG	Green House Gases
GIZ	German Agency for International Development Cooperation
GOC	Government of Colombia
IADB	Inter-American Development Bank
ICLEI	International Council for Local Environmental Initiatives
ICONTEC	Instituto Colombiano de Normas Técnicas y Certificación
IDEAM	Institute of Hydrology, Meteorology and Environmental Studies of Colombia - Instituto de Hidrología, Meteorología y Estudios Ambientales de Colombia
INDC	Intended Nationally Determined Contributions
IPSE	Inttituto de Planeación y Promoción de Soluciones Energéticas para Zonas no Interconectadas
LCRD	Low Carbon Resilient Development Program / Programa Desarrollo Resiliente Bajo en Carbono
LEDS LAC	Low Emission Development Strategies Latin America and the Caribbean Countries
MADR	Agricultural Ministry, Environmental Sustainability and Climate Change Group
MADS	Ministry of Environment and Sustainable Development
MBT	Mechanical biological treatment system
MME	Ministry of Mines and Energy
MRV	Monitoring, Reporting and Verification
MT	Ministry of Transport
MVCT	Ministerio de Vivienda, Ciudad y Territorio - Ministry of Housing
NAMAs	Nationally Appropriate Mitigation Actions
NDA	National Designated Authority
NSPP	national strategies, policies and programs
O&M costs	Operations and Maintenance costs
PGIRS	Solid Waste Management Comprehensive Plan
RDF	Resource Description Framework
RETIQ	efficiency labeling regulation in Colombia
RVA	rapid vulnerability assessment

SETP	strategic system for public transport
SISCLIMA	Sistema Nacional de Cambio Climático
SMAPS	Sectorial Mitigation Action Plans
SOW	Scope of Work
SPV	Photovoltaics Systems
TAP	Transformative Actions Program
TOD	Transit Oriented Development
ToRs	Terms of Reference
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNGRD	Unidad Nacional para la Gestión del Riesgo de Desastres
USAID	United States Agency for International Development
USFS	United States Forest Service
ZNI	Non-Interconnected Zones

COMPONENT 1. NATIONAL ENABLING ENVIRONMENTS AND INSTRUMENTS FOR IMPLEMENTATION OF LOW CARBON AND CLIMATE RESILIENT INTERVENTIONS

LOW CARBON DEVELOPMENT STRATEGY (ECDBC)

One of the main climate change priorities of the Government of Colombia (GOC) is the ECDBC (Estrategia Colombiana de Desarrollo Bajo en Carbono) or "Colombian Low Carbon Development Strategy". This strategy seeks to identify mitigation opportunities through 2040, associated economic costs and benefits, and priority actions by sector. Through a process that started in 2011 the main planning goal of the country was to develop Sectorial Mitigation Action Plans (SMAPS) and to determine its GHG contribution to the UNFCC (United Nations Framework Convention on Climate Change). USAID Colombia has been key to support this process through the Enhancing Capacity for Low Emission Development Strategies (EC-LEDS) program. EC-LEDS was launched in 2010 as a flagship program of the U.S. Global Climate Change Initiative to support partner countries in the design and implementation of low emission development strategies that promote sustainable social and economic development while slowing the growth of greenhouse gas emissions. In Colombia this program has been under implementation since 2011 and has worked through 4 main objectives:

1) To strengthen the capacity and the coordination for the design of the Colombian Low Carbon Development Strategy;
2) To support the design and the implementation of analytical tools for decision making on sectorial climate change mitigation[1;]
3) To strengthen the institutional capacity to implement the Sectorial Mitigation Action Plans (SMAPs[2]);
4) Start the Implementation and monitoring of the SMAPS.

Results

In terms of key results, the program has achieved the approval of 8 SMAPs energy, transport, mining, hydrocarbon, territorial development and housing, wastewater and solid waste. The SMAPs identify mitigation opportunities through 2040 with associated economic costs and benefits and priority actions that each sector is willing to undertake in the future with national and international financing. This program has also supported and facilitated the design of Nationally Appropriate Mitigation Actions (NAMAs) under the SMAPs; it has generated capacity in 6 ministries: environment, agriculture, energy and mining, industry, housing and transport and the National Planning Department, through the support of consultants working full time in each entity, workshops and trainings. A detailed description in each one of the topics is provided below.

1.1 SMAPS SECTORAL MITIGATION ACTION PLANS

The two remaining SMAPs were approved during FY 2015, Industry and Agriculture.

INDUSTRY SECTOR

The 11th December 2014, the Industry Sector' SMAP was approved by the Deputy Minister of Industrial Development (Ministry of Commerce, Industry and Tourism).

The work streams for the Industry sector SMAP are organized in the following areas, considering that the most important share of sector's emission are the result of energy use:

1. Integral energy management in the industrial sector
2. Association and logistics optimization

[1] Climate change mitigation "seeks to reduce the amount of greenhouse gasses released into the atmosphere and to recapture greenhouse gasses currently in the atmosphere and sequester them in ecosystems. Lowering the accumulation rate of greenhouse gasses in the atmosphere lowers the probability that the earth's temperature will rise and dangerous climate change impacts will occur" (USAID Climate Change and Development Strategy 2012).

[2] A Sectorial Mitigation Action Plans (SMAP) is a group of prioritized mitigation measures including policies, programs and actions by each sector. Currently through EC-LEDS, the GOC has approved the following SMAPs: transport, waste, mining, energy, oil and gas, housing.

3. Comprehensive waste management
4. Optimization of productive processes with high GHG emissions potential

AGRICULTURE SECTOR

On April 13, 2015, the Agriculture Sector' SMAP was approved by the Minister of Agriculture. The work streams for the Agriculture sector SMAP are organized in the following areas: 1. Sustainable Implementation and Intensification; 2. Innovation and Development, and; 3. Financial Incentives and Instruments. At the same time, the SMAP is aligned with the preliminary goals and indicators defined for the National Development Plan 2014-2018 supported also by EC-LEDS as:

- Define planted areas for prioritized crops without land use conflict
- Increase the livestock carrying capacity to be measure as Cattle Inventory per Ha.
- Land intervened by the policy of social and productive territory planning with a focus on green growth.
- Number of agricultural production systems implementing climate change adaptation and mitigation measures

1.1.1 Pilots Design

WATER TREATMENT SYSTEMS EFFICIENCY

The EC-LEDS in the sanitation sector, supported the institutional and technical assessment of the first pilot projects in Puerto Estrella and Nazareth, Guajira under the agreement signed between the Ministry of Housing, cities and Territory (MVCT) and the IPSE (Instituto de Planeacion de Soluciones Energeticas) .

The aim of the pilot projects is to provide energy solutions for the drinkable water treatment system by using a solar plant already installed in this area. The technical support is given to redesign both, the capacity of the solar plant, which actually runs only for the provision of electricity for the community, and the drinkable water treatment system. The aim of the pilot project is to couple both existing systems, optimizing their performance. The institutional assistance is given to coordinate the MVCT, the IPSE and the municipality.

A diagnosis was performed of the three existing drinkable water treatment facilities, in terms of hydraulic and energy requirements regarding two possible solutions: (1) to evaluate the feasibility to connect the facilities to Puerto Estrella's photovoltaic energy existing system and (2) to replace the actual gas consumption at the water treatment facilities by photovoltaic supply. At the same time, it was evaluated Puerto Estrella's existing photovoltaic energy system built by IPSE, regarding its capacity and the community acceptance of it.

The systems' technological upgrading and coupling is feasible, benefiting approximately more than 800 Wayuús (indigenous communities), the majority of them being children and women. Following steps are to define the operation and maintenance of the systems, regarding local management and financial issues. This has to be defined with the local authorities and the national government, in means of responsibilities, administrative roles and tariffs.

PROJECT ON RENEWABLE ENERGY USE IN THE COLD CHAIN OF MILK PRODUCTION

Following the SMAPs implementation of the industry and agriculture sector, the EC-LEDS consultants for these two sectors, supported the formulation of a project to use renewable energy in the cold chain of milk production in the Cesar state.

This effort was worked together with the ministries of industry and agriculture, the local government, the regional competitiveness agency and the agro-industry representatives of Cesar, in order to present the project to the AEA-Alliance Energy and Environment in the Andean Region- project calling, closed past January the 29th, 2015.

The project aims to implement SPV systems to power the refrigerators used in the cold chain of the milk production process. This will reduce operation costs and therefore, improving the productivity of local small farmers. 13 storage tanks will be coupled with SPV, impacting 85 producers, and has the potential to expand to 42

collection centers and providers, impacting 7.900 local producers. It is expected 15 months of project implementation.

In mitigation, the technological upgrade would avoid the electricity consumption of 12775 kWh/year, equivalent to 1.1 ton CO2eq/year. In the case of tanks located in non-interconnected areas where they operate with diesel powered generators, will reduce emissions up to 10.21 ton CO2eq/year.
The total cost of the project is of US$394.000, and US$198.000 are given as a counterpart by the government of Cesar and the private sector. The secretariat of Agriculture and Environment, aims to contribute US$20,000 to the project. Private local-producers are planning to contribute to a trust-fund for the duration of the project, in order to finance the SPV installing. The project owners are still completing the funds for this initiative.
After successfully passing the first round of the AEA call for proposals, the LCRD continued supporting the process in the region looking for funding. Thanks to funding from AEA, a team of technical and government consultants were hired to support the process and strengthen the project proposal.
A final technical proposal was prepared for which the LCRD gave its technical support through the program renewable energies specialist, with a final design contemplating the installation of solar hybrid systems (supported with batteries) for four grid-connected refrigeration tanks of 2000L capacity and one standalone system for a 6000L Tank. Producers would have to invest around US$100.000.
After proposing different options for financing to continue with the initiative, and getting a rejection from the DPA (Nestlé Group) to give extra founding to the project, the local producers considered that these conditions were not affordable and decided to withdraw from the project. They stated having no interest in the technologies at the current costs (due to a very high USD price at the time).

1.1.2 Regulations, policies or programs supported

SUPPORT THE NATIONAL TECHNICAL REGULATION FOR ENERGY EFFICIENCY LABELING OF ELECTRONIC AND HOME APPLIANCES - RETIQ

Since September 2014, the LEDS consultant for the Industry sector has been supporting the negotiations among the national government and the electronics appliances producers to finally issue the efficiency labeling regulation in Colombia (called RETIQ). This process has been taking place for the last 10 years, due to the differences at the technical level and expected requirements between private and the regulatory sector. The support given to the negotiations was to help producers and national government to restart negotiations. It was also given support to the Ministry of Mines and Energy during the discussions and construction of the baselines for the locally produced refrigerators. The last proposal of the regulation was issued during the week of January 2015, ready to be sent to the World Commerce Organization for its final approval. The latest version was approved in the second semester of 2015.

SUPPORT TO ISSUE THE TECHNICAL REGULATION ON THE NEW TARIFF FRAMEWORK FOR THE SANITATION SECTOR

Since 2013, the LCRD consultant for the sanitary sector has been supporting the review process of the tariff framework regulation for the solid waste sector. This update process rises due to the previous issue of the Decree 2981 of 2013 that stipulated the waste recycling activity as a complementary of the public sanitary service. The latest meaning that the waste recycling activity must be recognized with a service tariff.
The consultant supported the Ministry (MVCT) in reviewing and structuring technical documents of the contents of the regulation. The consultant also participated in negotiating sessions with the Regulatory Commission of Drinking Water and Basic Sanitation (CRA), who is the entity responsible to issue the tariff regulations in the sector.
During first semester of 2015, the LCRD consultant additionally led the Ministry team to perform a technical review to feed on a database with different elements that affects the waste recycling tariff as: O&M costs, inventory of equipment, execution times, personnel costs, sizing infrastructure, among others. This review also consisted on revising the recycling routing and performing interviews to recyclers with the purpose of validating the elements listed above. All this information served to the Ministry to run official model used to calculate the new tariff, and provide real and robust information to the regulatory commission (CRA) experts to complete the regulation.

Further comments were submitted through LCRD program during the last public consultation, specifically regarding the criteria to set distances to locate the transfer stations and the criteria to provide the recycling incentive.
The new tariff framework was finally approved on June 23 of 2015 as CRA Resolution 716 after three public consultations. This policy facilitates the implementation of the Line 3 of the Waste SMAP: Promoting solid waste recycling. Recognizing a tariff for recycling promotes the reduction of disposed solid waste in landfills, as it encourages the implementation of medium and large scale recycling projects.

ENHANCING CAPACITY AND VERTICAL INTEGRATION OF THE RECENT REGULATION ON SOLID WASTE MANAGEMENT

The Resolution 754 of 2014, dictates a new methodology to consolidate the Solid Waste Management Comprehensive Plan (PGIRS), methodology developed by the Minister of Housing, Cities and Territory. According to this Resolution, all municipalities in Colombia must submit by December 2015 the new PGIRS.
Given this situation, the EC-LEDS consultant of the sanitation sector is supporting the Deputy Ministry of Water to develop a guide on how to consolidate the PGIRS, to be launched soon. At the same time, the consultant is supporting the Deputy Ministry of Water, FEDEDEPARTAMENTOS and FEDEMUNICIPIOS in giving virtual trainings to municipalities on the new solid waste regulation and methodology. These virtual trainings bring together mayors and their technical teams. Up to date, more than 500 municipalities, most of them categories 5 and 6, have attended the training.

SHARED SPACE AND INCLUSIVE CYCLING

The EC-LEDS consultant for the transportation sector, developed and provided a document on two concepts, Shared Space and Inclusive Cycling, this has been requested inside the Sustainable Urban Mobility Unit of the Ministry of Transportation. The document was developed following a request from the Ministry, and it intends to help and give support to the discussion on how the government should support these kind of developments in the Colombian cities and what should be the National Government´s roll. The document presents a general view of how these two concepts have been implemented in different cities, it clarifies their definitions and it provides few specific recommendations for the Colombian case.

ADAPTATION

VULNERABILITY AND CLIMATE CHANGE ASSESMENT IN THE TERRITORIAL DEVELOPMENT AND HOUSING SECTOR

Due to the interest and needs shown by the Ministry of Housing, Cities and Territories on climate change adaptation and the importance to address this issue in the territory, the LCRD project is supporting the development of a study that assess vulnerability and climate change in the territorial development and housing sector.

The aim of the study is to develop an historical analysis of the exposure and vulnerability of the territorial development and housing sector, associated with events that relate climate change threats and variability. With the previous information, identify and evaluate territorial planning tools and contents related to climate change, and make recommendations to tackle climate change and variability in the territories to the risks in study, seen from the territorial planning instruments. The risks in evaluation are: coastal erosion, droughts, flooding, storms and landslides.

To come up with solutions on territorial development, 5 regions are identified and selected as case studies. The selection will come from the historical analysis and will represent hotspots of each of the risk mentioned. The study will deliver 4 products as follows:

1. Historical analysis and selection of case studies
2. Analysis of causes and effects in the case studies
3. Vulnerability assessment in the territorial planning and housing sector
4. Regulatory and technical analysis

The first product already delivered and approved refers to the historical analysis and present hotspots of each of the risk studied along the consultancy. The main result of this product is the historical analysis of the exposure and vulnerability of the territorial development and housing sector, associated with events that relate climate change threats and variability. This information is contained in a very complete data base that groups historical data from 1984-2013 of the 5 risks evaluated in the consultancy: coastal erosion, droughts, flooding, storms and landslides. The data base registers 32.006 events which were recuperated from different sources as Desinventar, the UNGRD and principal national newspapers.

With the information of the data base, the consultancy group evaluated hotspots of each of the risk studied, to select the case studies that represent the 5 risks that are scope of the consultancy. The case studies were selected evaluating different variables as: number of events in the period evaluated, number of affected people, number of affected housing, number of affected urban amenities, among others. These variables fed 2 index calculated to have a priority list of Colombian municipalities which have underwent the most in each variable and for each risk. The final selection of the case studies was also oriented by the System of Cities, which prioritize the municipalities in Colombia that would have a rapid development in the coming years. The final selection of the case studies is:

RISK	CASE STUDY
Coastal erosion	Cartagena
Droughts	Santa Marta; Neiva
Flooding	Cali, Yumbo, Candelaria
Storms	Barranquilla, Soledad, Galapa
Landslides	Pereira, Dosquebradas, Santa Rosa

SUSTAINABLE URBAN DRAINAGE SYSTEMS POLICY

The DNP and the MVCT are carrying out a consultancy funded by the IADB, to structure the national policy on Sustainable Urban Drainage Systems. The LCRD consultant for the sanitary sector have accompanied and provided feedback to the design of the terms of reference and the development of the consultancy. The policy is a shared measure of the territorial development and housing SMAP and the water SMAP as well as a key element of the adaptation agenda in both sectors. The EC-LEDS consultant has provided a multisectorial coordination, liaising with the territorial development Directorate within the Ministry of Housing and other stakeholders interested.

The consultant has also incorporated climate change criteria to develop the policy. Aspects supported by the LCRD consultant in the development of the study, among others are:

- Requested to involve an expert in urban planning to the technical team of consultants.
- Requested the consultant's team to include an overview of climate change, with special emphasis on adaptation
- Specify to the consultant's team differences between risk management and adaptation, which were mixed in the initial proposal
- Intervene in the selection criteria for the pilot city, including IDEAM's climate change scenarios.

The consultancy is pointing out three products:

1. Formulation of proposed policy or legislation on sustainable urban drainage systems
2. Development of Guidelines for the development of an urban drainage master plan
3. Develop a pilot Master Plan in a selected city

SMAPS' INCLUSION IN COLOMBIA'S CITIES SYSTEM PUBLIC POLICY

The recently policy adopted to promote the consolidation of a cities system in Colombia, identifies Climate Change as one of the key challenges for cities to tackle and to promote their resilience. To take action in this subject, the SMAPs of transport, industry, territorial development and housing where included in the action plan of the policy

supported by EC-LEDS consultants. The follow-up of the actions is related to monitoring the number of actions implemented and it is also identified a specific budget for the entities for its implementation up to 2018.

1.2 ENHANCING CAPACITY IN THE NATIONAL INSTITUTIONS

MINISTRY OF TRANSPORTATION

One of the main achievements during the year 2014 made by the Ministry of Transportation was to set a team of 5 environmental specialists fully financed by the public entity to support the roll and engagement of this Ministry in environmental and climate change issues. Since 2012, the transport EC-LEDS team led the formulation of the SMAP and TOD NAMA, gave other technical support and encouraged the Ministry in the creation of this unit, which relies on the need of having environmental specialists working together to support the creation and conformation of the Environmental Unit inside the Ministry.

Since November 2014, the LCRD program of USAID/USFS is supporting the delivery and socialization of the different achievements made since 2012 with the USAID/USFS Technical Cooperation in the Transport Sector, emphasizing on the work done under the Colombian LEDS.

MINISTRY OF HOUSING, CITIES AND TERRITORIES

During 2015, EC-LEDS negotiated with the Ministry support to several areas regarding climate change only if the Ministry hired people to address all the incoming needs with several areas of support. As a result, the Urban and territorial space Division hired 2 consultants to work in climate change A team of 3 consultants is supporting the climate change agenda, developing the sectorial adaptation plan, the implementation strategy of the SMAP and the sustainable habitat NAMA. In the Viceministry of Water and Sanitation, some permanent staff now performs climate change related tasks thanks to the EC-LEDS cooperation.

MINISTRY OF MINES AND ENERGY

As a result of the EC-LEDS cooperation during 2013, 2014 the Ministry dedicates budget to climate change activities in their annual planning activities. For Colombian FY 2015 it was estimated in 500 Million pesos.

An analysis was made by the EC-LEDS consultants of the housing, sanitation, industry and agriculture sector in order to identify the enabling cross-cutting measures from the Energy SMAP with each sectoral SMAPs. The objective of the analysis is to give a priorization approach to the MME to implement the Energy SMAP. The document also presents the current initiatives implemented or in formulation by other National entities that are related with the cross-cutting measures identified. As well as an overview of the MRV measures or systems that can be of help to the MME to monitor and report the Law 1715 on Renewable Energies, as requested by the Ministry. The document was shared with the MME and it is taking into account to design their implementation plan of the energy SMAP.

SUPPORTING THE SUBNATIONAL STRATEGY IMPLEMENTATION OF THE ECDBC

During 2015 the ECDBC is working out the subnational strategy implementation of the SMAPs. In line with this work and reflecting on the interest shown by the Direction of Urban Development of the DNP on climate change aspects, the LCRD project started in May 2015 supporting the Direction with a consultant on regional development and Climate Change. The principal objective of the consultancy is to support the implementation of the sub national strategy of the ECDBC aligned with the implementation of CONPES 3819 of 2014 which aims to consolidate the system of cities in Colombia concerning climate change adaptation and mitigation actions. The consultant is also supporting other climate change activities including National Appropriate Mitigation Actions (NAMAs) and monitoring and reporting schemes of climate change measures that are related with regional development.

The LCRD consultant has identified from all approved SMAPs, the measures that have direct relation with the objectives and measures of the CONPES 3819 and other projects of the Directorate of Urban Development:

sustainable construction policy, sustainable urban drainage systems policy and sustainable urban planning policy. This is a first step for the regionalization of SMAPs and NAMAs supported by LCRD.

WORKSHOPS

During FY 2015 several workshops were carried out by LCRD in different areas to cover SMAPs, Finance, Implementation and policy development. LCRD also participated in international events to showcase the progress in ECLEDS implementation.

Year	**Month**	**Activity**	**Description**	**Number of Attendees**
2014	October	Participation on "LEDS in Latin America and the Caribbean: From planning to implementation"	The LCRD program through the support given from consultants at national level, participated in the session "Policy Coherence for LEDS" specifically at the "Articulating transport measures" working panel.	N.A.
2014	October	Workshop on design and specification of a voluntary emissions report system in Colombia:	The EC-LEDS consultant for the industry sector, organized and support a workshop, to explain the bases of emission's monitoring and reporting systems at a national level. The objective of this activity was to identify the interest and need regarding these systems in Colombia, as well as to define the design specifications that such program should have in accordance to the actual national circumstances.	35
2015	February	Housing Nama Workshop	The NAMA Habitat Workshop enabled to discuss issues between Eco-Districts protocol, submitted by Rob Bennett, and the mitigation measures of the SMAP.	36
2015	February	BUILDING NATIONAL POLICIES FOR NON-MOTORIZED TRANSPORT IN COLOMBIA	EC-LEDs consultants of the transport sector supported a workshop organized by the Ministry of Transport of Colombia on "Building Public Policy" as part of the 4° World Bike Forum, held in Medellín. The transport team facilitated the discussion about financial barriers and opportunities to implement Non-Motorized Transport projects.	80
2015	March	BUILDING CAPACITY IN THE SANITATION SECTOR ON ENERGY EFICIENCY FOR WATER TREATMENT FACILITIES	The training was delivered to public officials and contractors of the Deputy Ministry of Water of the Ministry of Housing, Cities and Territory in order to empower them on the use and distribution of the Energy Efficiency in Water Treatment Systems guide.	28
2015	March	BUILDING CAPACITY ON GREENHOUSE GASES INVENTORY AND REPORTING IN THE INDUSTRY SECTOR	The EC-LEDS consultant of the industry sector coordinated training for trainers' course in greenhouse gases inventory and reporting, delivered the 25th, 26th and 27th of March, 2015. The training was based on the guidelines of the GHG PROTOCOL of the World Resources Institute.	56

2015	April	Transit Oriented Development Workshop Bogotá	Training space for national authorities and local on the TOD initiative, looking to generate greater understanding and interest, promoting transport systems in Colombian cities, in coordination with non-motorized options (walking and bicycle) to turn these components in structuring axes of urban development in Colombia.	30
2015	April	Transit Oriented Development Workshop Cali		24
2015	April	Transit Oriented Development Workshop Medellín		28
2015	April	Adaptation Workshop	The objective was to enhance capacity in adaptation issues to LCRD members and also on public employees from the Ministry of Housing and the Ministry of Environment that were invited to the event.	21
2015	April	Measuring, Reporting and Verification Workshop, Bogotá	Workshop on Monitoring, Reporting and Verification (MRV) contextualization was performed to enhance capacity on LCRD members. This activity involved people from the Ministry of Environment and Sustainable Development, who presented the Climate Change MRV strategy that is being considered by the national government. ICONTEC was also invited to participate, they presented some case of studies on monitoring and verification of CDM projects.	17
2015	July	LEDS LAC Workshop	The LCRD program support the Workshop of Experts: Strengthening the integration of resilience in LEDS in Latin America and the Caribbean, held in the framework of the LEDS LAC Platform. One of the thematic prioritized by the Platform this year, is to initiate discussions on the following: How can increasing resilience to climate change be integrated into strategies for low carbon development?	23
2015	August	Adaptation Workshop II	One key objective of LCRD at the national level is to build technical capacity in terms of climate change, especially climate change adaptation topics. This objective looks for the technical enhancement of the Program's consultants and public entities at the national level involved in the development of the National Adaptation Plan. Following this purpose, the LCRD program organized the second workshop on August 5th 2015, as part of the workshop series on climate change adaptation.	20
2014	August	LAUNCH EVENT: FINANCIAL INNOVATION PILOT PROGRAM	The Director of the National Planning Department (DNP by its acronym in Spanish) carried out the installation of six working groups composed by representatives of the financial sector, government and private sector. This initiative is led by DNP and Asobancaria with the support of the Climate Finance Readiness Program, Frankfurt School and LCRD Program.	

2015 **2015**	August	Energy Efficiency Workshop	The LCRD program organized the workshop on Energy Efficiency and Renewable Energy for the Water Sector. The workshop was conceived together with the Deputy Ministry of Water of the Ministry of Housing, in order to support the implementation strategy of the water SMAP.	66
				Total 464 Attendees

1.3 NATIONAL DEVELOPMENT PLAN 2014 – 2018

EC-LEDS supported the inclusion of Climate Change Priorities in the National Development Plan 2014 – 2018. The Plan was approved by Law 1753 of June 2015. The Plan indicates that all sectors should work in the implementation plans of the SMAPs and includes several low carbon goals under the green growth chapter. The Plan is of mandatory nature for all sectors covered and national level institutions. A document describing the inputs from LCRD to the Plan is presented as the final NDP document in the database.

1.4 MRV (MONITORING, REPORTING AND VERIFICATION)

TECHNICAL CONCEPTUALIZATION FOR THE MONITORING OF PASSENGER URBAN TRANSPORT RELATED NAMAS
With the purpose of supporting both the national discussion on MRV systems for urban transport related mitigation actions and the discussion on a national monitoring system for the assessment of urban transport policies, a report containing the above mentioned conceptualization was prepared. This report focuses on formulating an ideal urban transport emissions national monitoring system.

This report includes 1) a revision of previous works made in the country, 2) the identification of national strategies, policies and programs (NSPP) related to passenger urban transport systems, 3) the mathematical formulation of ideal variables to monitor the effects of the identified NSPP on transport emissions and the identification of existing sources of information that may feed those variables, 4) a visualization of potential co-benefits and unintended effects, and 5) a list of recommended “next steps”.

This report was distributed among national and international institutions, namely the DNP, MT, MADS; the German Agency for International Development Cooperation -GIZ, and FINDETER -a Colombian second-tier bank for development. MADS have used the report as an input for their approach to the MRV national system in the transport sector. Although the system is not ready, and a conceptualization process is taking place, during 2016 MADS expects to start the detailed design of the system.

PROGRESS ON PROMOTING THE CORPORATIVE INVENTORY AND REPORTING OF GHG EMISSIONS IN THE INDUSTRY SECTOR
The LCRD consultant in the Industry sector is supporting the development of the corporative inventory and reporting of GHG emissions. After the training of trainer’s course delivered by WRI for Colombian companies on March 2015, the final results of the tests done during the training were received on June. In general, the test was approved by 25 out of the 60 participants which correspond to 42% of success. The results were communicated to each one of the professionals involved. The LCRD consultant together with MADS, are currently designing a strategy to replicate the training and improve it, in order to overcome the poor results of the last training. During 2016 at least 2 additional trainings will take place.

In the same area, the LCRD consultant in the Industry sector is supporting the process to define and update the Colombian emissions factors. During June the process to hire the research group was finalized and it is expected that the assignment and contract starts on July. At the same time the planning process together with MADS also

finalized in order to design and implement reporting of the corporative inventory and reporting of GHG emissions platform, which would be financed by UNDP. The results of the emissions factors update will be incorporated in the design and implementation of the platform. During 2016 the platform design will start and the emission factors will be ready to update the platform.

LCRD DEVELOPED AN INDC MITIGATION PROPOSAL TO THE WASTE AND TRANSPORT SECTOR

As part of the national component work with the support of the MRV Coordination, the LCRD Program presented to the MADS, the results of the approach to the Intended Nationally Determined Contributions (INDC) in the solid waste sector. This document contains a proposal of sectorial actions that aim to reduce GHG emissions by 2050, as a complementary exercise to INDC process the MADS is leading. The GHG emissions reduction projections were based on the targets for recycling and reuse of solid waste, and for the burning of biogas, produced in landfills. The targets were defined after the interaction with different sector actors as the MVCT, service operators, industry trade associations, and academia. It is expected that in 2016 after COP21, those proposals will serve the internal discussions to allocate and distribute goals in each sector.

THE RECYCLING AND REUSE OBSERVATORY

During July, the LCRD Program also formalized the support to the Recycling and Reuse Observatory, a body that is part of the Inclusive Recycling Alliance led by the National Government. The main objective of the Program's support is the definition of environmental and climate change mitigation guidelines that should be included in the Waste Observatory. The Observatory will become a tool to monitor the impact of the sectorial actions on GHG emissions reduction.

1.5 INTENDED NATIONALLY DETERMINED CONTRIBUTION (INDC)

APG - INDICATOR

Colombia – INDC Support – Government of Colombia developed and submitted their Post-2020 Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change, with USG assistance

RESULTS:

Under the framework of the Low Carbon Development Strategy process, Colombia already submitted its Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change. In such contribution Colombia committed to reduce its greenhouse gas emissions (GHG) by 20% with respect to the projected Business-as-Usual (BAU) scenario by 2030.

EC-LEDS, through the Low Carbon Resilient Program (LCRD), supported the technical process since 2012 with feedback and inputs to the general baseline, abatement curves and during 2013, 2014 and 2015 with specific studies in transport, waste and AFOLU sectors. These studies aimed to understand each sector's dynamics and real potential to engage GHG emissions strategies and to provide a range of possible GHG emission reduction goals. These inputs to the INDC process were based on a bottom-up approach with the sectoral ministries and in accordance with mitigation approved Sectoral Mitigation Action Plans. In the agriculture sector, EC-LEDS through LCRD provided the tool and the model to produce scenarios linking the ECDBC and REDD strategy and developed for the first time an AFOLU baseline and mitigation scenarios feeding the economy-wide INDC target. The supported sectors together represent about 75% of the 2010 (baseline year) total GHG emissions (224 $MtCO_2eq$) and will represent about 65% of the BAU scenario GHG emissions in 2030 (333 $MtCO_2eq$).

	Indicator 1	**Indicator 2**
Priority Goal	Number of sectors supported	Projected greenhouse gas emissions reduced or avoided through 2030 (by sector supported - According to published INDC)*

Colombia – INDC Support – Government of Colombia developed and submitted their Post-2020 Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change, with USG assistance	3 Sectors (AFOLU, Waste, Transport)	Sector	Actual emissions (2010) (Mt CO2eq)	Actual emissions (2010) (%)	Projected Business-as-Usual (BAU) scenario emissions (2030) (Mt CO2eq)	Projected Business-as-Usual (BAU) scenario (2030) (%)	Projected Emissions under mitigation scenario (2030) (Mt CO2eq)	Cumulative emissions reduction (2030) (Mt CO2eq)
		Transport	23	10%	49	15%	~41	54
		Waste	14	6%	23	7%	~12	45
		AFOLU	131	59%	144	43%	~112	449
		All sectors (total)	224	100%	333	100%	267	~668

SUPPORT TO THE MINISTRY OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT, TO DEFINE THE COLOMBIAN INDC ON CLIMATE CHANGE ADAPTATION

The LCRD consultant on Adaptation has been supporting the Ministry of Environment and Sustainable Development in the construction of the adaptation INDC since middle May/2015. During the first stage of the consultancy, the consultant undertook a research on the state of the art of adaptation plans, programs and projects that have taken place both at a sectorial and territorial level in Colombia. By doing so, the consultant was able to identify the preparedness of the country to address its post-2020 actions. In this context, substantial information and progress was found and achieved in the last 4 years. Additionally, the current (2014-2018) and former (2010-2014) National Development Plans show a clear guideline to prioritize Adaptation to Climate Change within territorial agendas. These are relevant inputs that have been articulated with the actions that Colombia is foreseeing in a post 2020 timeline.

After revising relevant documents and discussing with different actors in workgroups, meetings, and workshops, the adaptation component of the Colombian INDC has been designed, based in what has been built during the last 4 years. Six strategic lines have been proposed:

1. Adaptation based on the mitigation co-benefits
2. Adaptation based on socio-ecosystems
3. Adaptation to climate change and risk management articulation
4. Adaptation based on infrastructure and development sectors
5. Strengthen institutional capacity
6. Promotion of education towards behavioral changes
7.

Taken into account the progress of the current policies regarding climate change in the current National Development Plan (2014-2018), and the continuity other associated processes, the following actions have been projected:

By 2030 the country will count with:

i. Formulated and implemented Climate Change Adaptation Plans
ii. National Indicators System (output and outcome indicators)
iii. Water resource management instruments with climate change and variability considerations
iv. Strengthen Climate Change Sensitization, Training and Education National Strategy
v. Increased coverage of protected areas, conservation and ecosystem restoration (terrestrial, coastal and marine)
vi. Increased Paramo Ecosystem protection

Sectors and private sector implementing innovative adaptation actions

1.6 FINANCE

A total of U$2.4 million were leveraged as a result of the support from EC-LEDS consultants in several areas. Other leveraged in-kind resources were also indirectly supported through technical assistance or experts support from different entities for workshops, advisory services among others.

SUPPORTING THE TECHNICAL EVALUATION OF THE NATIONAL ENTITIES PARTICIPATING FOR THE NATIONAL DESIGNATED AUTHORITY OF THE GREEN CLIMATE FUND

The EC-LEDS consultant in the DNP supported the selection of the National Designated Authority (NDA) of Colombia to the Green Climate Fund. The evaluation process was based on a survey and an analysis document regarding the criteria required by the GCF, developed by the EC-LEDS consultant. The evaluation was performed for each of the four entities candidates: the Ministry of Finance, the Presidential Agency for Cooperation, the DNP and the MADS. The evaluation results were consolidated and presented to the Committee of Finance Management of the SISCLIMA, which resulted in the selection of DNP as NDA, at a meeting held on March 5 and which also involved the other three entities candidates for this position.

RESOURCES LEVERAGED FOR THE AGRICULTURE SMAP IMPLEMENTATION AND LOW CARBON DEVELOPMENT IN THE INDUSTRY SECTOR.

The EC-LEDS consultant in the agriculture sector, provided technical support to formulate the project proposal for an innovation platform for improving farmers' adoption of Climate Smart Agriculture (CSA) technologies: piloting in Honduras and Colombia. The project is articulated with the proposed SMAP objectives.

The project proposal was approved by FONTAGRO (Regional Fund for Agricultural Technology) and leveraged funds for its implementation. The institutions leading the project are CIAT (International Center for Tropical Agricultural), CCAFS (Climate Change, Agriculture and Food Security), and MADR (Agricultural Ministry, Environmental Sustainability and Climate Change Group). The main expected results are a prospective evaluation of the role of different CSA alternatives in adapting and mitigating climatic impacts and improving productivity. The duration of the project will be of 24 months. The estimated funding of the project is US$400,285 with an amount requested to FONTAGRO of US$200,000.

RESOURCES LEVERAGED FOR THE INDUSTRY SMAP IMPLEMENTATION AND LOW CARBON DEVELOPMENT IN THE INDUSTRY SECTOR.

Since the approval of the Sectoral Mitigation Action (SMAP) for the industry sector in Colombia on December 2014 by the deputy Ministry of Business Development, giving the general policy and program guidelines for the low carbon development of Colombian companies, the role of the LCRD team, specifically from the consultant working as sector specialist has been to procure the SMAP implementation.

Part of this work consists in getting the technical and financial resources necessary to design and execute the plan, which are summarized in the following table.

Action / Project	SMAP Connection	LCRD Role	Level of Implementation	Source	Financial Resources Leveraged
Update of the national emissions factors database (FECOC).	In order to promote the implementation of emissions management systems in business, all the strategic lines of the SMAP state the need to promote relevant inventories in the companies. The main complaint by the private sector was the lack of reliable emission factors.	-Main Promoter, as a result of the work done in capacity building and GHG emissions inventory training. -Technical assistance and definition of terms of reference.	Currently the study to update the emission factors as well as to include 10 new relevant fuels (bio-diesel, bio-ethanol among others) is being done by the University of Antioquia. -Agreement signed August 2015. -Expected finalization	-GEF 4 Implementation entity IADB. -Ministry of environment Part of the project MVC by Fundacion Natura and CAEM.	**US$45.000.**

			date: Jan 2016.		
GHG Protocol trainer of trainers (March 2015)	During a 4 days training we trained 55 professionals from private and public companies in the principles of the GHG protocol. These professionals would be the base to create capacity in the country in a program we are looking to design along with the private sector for corporative voluntary emissions report.	-Design, organization and implementation.	-Training done on March of 2015 with the support of WRI. -55 professionals trained -23 professionals certified as GHG protocol trainers. -Looking for an agreement with UNDP to build a national voluntary reporting platform (additional 60.000 USD are expected).	-UNDP: 10.000 USD. Venue. -National Industry Association and Cement Producers Association: 10.000 USD. Logistics and venue. -WRI's technical support and materials was estimated by them in 45.000 USD	**US$65.000**
NAMA Pilot for the Industry sector in the Bogotá and Cundinamarca Region.	Project design to carry technological extension and production infrastructure renewal for low carbon development for some industry subsectors located in Bogotá and Cundinamarca region. Project presented and approved by the GEF-5. Note: There is currently another project supported by the GEF-5 call in Colombia to promote energy efficiency, but with not active involvement from part of the LCRD.	-Technical assistance to design the project and align it with the principles and methodologies of the SMAP. -The final project follows the methodology for NAMAS in development by the LCRD as well as the different strategic lines of the SMAP.	-Approved by the GEF. -Project structure submitted to GEF for final authorization. -Implementation entity: UNDP. -Project Leader: Bogota Chamber of Commerce. Execution: Nov 2015 – Dec. 2017.	-GEF 5.	**US$2.000.000**
TOTAL					**US$2.110.000**

In addition to these initiatives a budget of US$100.000 was included in the Ministry of Commerce investment plan to develop sustainable value chains in program which was approved initially by the National Planning Department DNP, but is expected to be cut due to the current fiscal policy.

1.7 NAMA – (NATIONALLY APROPRIATE MITIGATION ACTIONS)

NAMA HABITAT STARTS DESIGN PHASE

The need to identify and further explore which concepts should be integrated into the NAMA structure, led to organize a workshop led by the MVCT, fully supported by ECLEDS both in logistics and experts, with the participation of national stakeholders, contributing to giving shape and structuring the purpose and objectives of this NAMA. The workshop took place on February 19th, 2015 with the participation of Rob Bennet as main speaker.

As a result, 4 mitigation actions were identified as the most relevant to be included in the NAMA structure as follows:

- To include climate-change and sustainability criteria in the creation and execution of comprehensive enhancement projects in local neighborhoods (Mejoramiento integral de Barrios).
- To develop projects that included structural and/or passive measures in new housing.
- To regulate the management and financing mechanisms to support sustainable territorial development.
- To consolidate financing instruments that encourage sustainable and energy-efficient construction of the buildings Financial, Policy and technical actions were proposed to each prioritized measure.

These measures are to be included in the structure of the NAMA Habitat. There were a total of 36 attendees from Public Sector. Habitat NAMA is shaping its structure towards the formulation and consolidation of criteria that enables GHG reductions and sustainability in city areas that are facing high rates of informality. Thanks to the participation of different stakeholders in the workshop done by LCRD on February 2015 and the given results, it was possible to build the core and concept of the Habitat NAMA.

REDIFING THE SCOPE OF THE SOLID WASTE NAMA

The solid waste NAMA presented on 2013 to the NAMA facility had an emphasis on MBT (Mechanical Biological treatment) and co-processing of waste. It was again submitted to the NAMA facility on 2014, with some modifications from the former proposal due to the new format and to regulatory developments, but resulting in no selection. Since then, the LCRD consultant for the sanitary sector, facilitated different meetings to promote the implementation of the NAMA. Some problems for its implementation were pointed out from different stakeholders during this process as:

- Few regulatory guidelines
- No financial closure
- It does not provide selective routing, or source separation
- Lack of technical capacity
- Lack of feasibility studies
- No specific market studies

Regarding the latest, the LCRD consultant for the sanitary sector is redefining the scope of the solid waste NAMA in line with the priorities of the Deputy Ministry of Water of the MVCT, in order to facilitate and solve its implementation. The scope is also being redefined with inputs from the MADS. In that sense, the LCRD consultant presented in June to the Climate Change Directorate of the MADS, the new scope proposed by the MVCTY, which consists on strengthening the implementation of guidelines on source separation in at least two streams, bin storage space and the consistency of collection of segregated waste. These activities will ease the implementation of RDF infrastructure, waste to energy, MBT and other technologies. Next steps are to continue supporting the regulatory development, support 3 municipalities in the development of their solid waste management plan which have to include source separation, community training and segregated collection.

HELPING OUT TO DEFINE THE APPROACH OF THE NAMA OF RENEWABLE ENERGY FOR NON-INTERCONNECTED ZONES (ZNI)

Continuing with the preliminary approach of the NAMA for Non-Interconnected Zones (ZNI) developed in 2014 by the latest LCRD consultant in the energy sector, the MADS, along with the Colombian Strategy for Low Carbon Development (ECDBC), hired an international expert in Renewable Energy to define the new approach and feasibility of the NAMA. The LCRD program through its renewable energy expert, will support to analyze the feasibility to incorporate projects in the NAMA that couple renewable energy with drinking water pumping in treatment plants. In this way, the NAMA of Renewable Energy for the ZNI will include the component of water pumping for rural communities, facilitating the implementation of the Energy SMAP and the Water SMAP.

MARKET RESEARCH PERFORMED FOR THE INDUSTRY AND HABITAT NAMAs

During September, LCRD launched two study markets to define the cost of each of the consultancies that would give the emissions baseline and reduction projections of the NAMAs. The objective of the NAMA Habitat

consultancy is to identify and estimate the baseline according to the guidelines defined by the National Government. From this definition, validate the mitigation measures to be included in the NAMA, quantify their potential for reducing greenhouse gas emissions and develop a proposal for monitoring and reporting the impacts of the implementation of such actions. The evaluation must be conducted in an integrated way, which means that the measures are not seen as individual components, but as a set of integrated actions that are part of a proposed intervention.

On the other hand, the objective of the consultancy for the Industry NAMA is to define the baseline, the improvement in productivity potential, GHG mitigation, in order to define the scope of a NAMA for optimizing transport and logistics processes in the industry sector. Both consultancies are intended to help to complete the NAMAs formulation and be able to prioritize actions that are going to be implemented afterwards. These NAMA projects should be seen as a generator of change in both sectors, complementing actions, policies and initiatives currently underway and other mitigation efforts in the industry and housing sector.

2 COMPONENT 2. LOW CARBON RESILIENT CITIES AND REGIONS: FROM DESIGN TO IMPLEMENTATION

The main objective of this component is to assist local authorities and stakeholders in three cities and one region to identify how their development priorities could incorporate low carbon and climate resilient measures/alternatives, and support their detailed design enhancing/enabling conditions for their implementation. According to the National Planning Department, 85% of Colombia's GDP is generated in cities, and they also will hold more than 85% the country's population in 2050.
Starting in 2014 the previous EC-LEDS initiative started a scoping mission to some cities in the country to select the areas of intervention.

Three cities were selected in August 2014, Pasto, Valledupar, and Riohacha according to the following criteria:

- Institutional support for climate change interventions;
- Mitigation potential (in all sectors);
- Existing climate change mitigation and/or adaptation priorities identified or in the process of being identified;
- Clear climate stressors affecting the city today;
- Climate stressors fully or partially identified for the city or part of the city;
- Some level of technical capacity to design, implement, and monitor projects; and
- Contain at least 100,000 habitants and less than 1,000,000.

The selected region to work was the Department of Huila which USAID previously supported to achieve a climate change Plan during 2012, 2013, and 2014. The launch and approval of the plan was in June 2014 through the authority of the Climate Change Council of the Department. Inputs for the Plan with USAID support included assessments of deforestation and land cover evolution, greenhouse gas emissions and vulnerability to climate change by municipality. The Plan adopted prioritizes 5 areas: intelligent management of water resources, biodiversity and ecosystem services, agricultural production and food security, energy resources and resilient surroundings.

It is important to clarify that the budget for cities and Huila was available to use in early 2015. Meaning that the budget and activities in cities started officially in January for a total of 10 months in FY 2015. However, some resources from the previous EC-LEDS activities were dedicated for scoping tasks in the cities and some workshops in the cities.

2.1 PASTO

2.1.1 GENERAL CHARACTERISTICS OF THE CITY

San Juan de Pasto Municipality is located in south-west Colombia, near the southern border with Ecuador, and on strategic development axis that connect the amazon region and the southern pacific coast to the rest of the country.

According to DANE estimates, for the year 2013, the Municipality of Pasto had a total population of 428.890 people; of which 354.808 live in the urban area and 74.082 in the rural area of the Municipality. The total extension of Pasto is 1.112.17 km^2, of which 24.16 are urban (2.2% of the total extension).

Public perception in Colombia is that the poorest cities in the country are in the pacific region, but in reality Pasto is one of the poorest cities with 40% of its inhabitants currently under the poverty line. This is partially due to the high number of immigration of displaced families, victims of the armed conflict.

In the same way, a 2008 study on quality of life in Colombian cities that considered economic environment, mobility and transport, health and education, indicated that Pasto presented atypically poor results compared to cities such as Manizales, Bucaramanga, Pereira and Barranquilla. These results reflected, for example, that the indicator for basic unsatisfied needs in Pasto, according to the 2005 census, is very high, with 10.9% urban population and 41.4%. The largest segment of the population (34%) is “estrato” II, followed by 28% estrato III, 13% estrato I, 11% estrato IV, 6% estrato VI, and 3% estrato V.

In 2005, quality of life of people from the Department of Nariño (measured through the life-conditions index)[3], had an indicator of 69.3, while the Atlantico Dept. had a level of 83, Bogota of 87, and a national average of 78.8[4]. Historically, Nariño’s economy has only contributed 1.5% of the national GDP, however, during the last few years, the Dept. economy has presented a different dynamism related to the national economy, with a growth rate of 4.5%, similar and even higher to the national average of 4.3%. The GDP of Pasto itself (US $4,838,154 in 2011) contributes 0.8% of the national GDP, and 38.8% of the Dept.’s. These statistics show the lag that the regional economy suffers, in particular with regards to generating added value (other Depts. Contribute up to 13% of the national GDP, Bogota 25%). In terms of sector participation in Pastos’s GDP (2011), commerce and hotels have the highest participation with 25%, service industry contributes 19%, construction 15%, and industry 9%. Unemployment was at 12.3% in 2012, lowering 1.2% from 2011 numbers.

<u>Housing</u>
From 2012 to 2014, 1,940 housing solutions have been built in the urban part of Pasto, and 400 in rural areas.

<u>Water</u>
Pasto’s sanitary works company, EMPOPASTO S.A. E.S.P. is the leading entity in the provision of aqueduct and sewage services in the city’s urban area. It currently has three water treatment plans, but does not have any wastewater treatment facilities. After a study indicated that the city needs two such facilities, the Mayor’s office,

[3]The life-conditions index is an indicator of life quality that involves variables related to physical asset acumulation (measured by housing characteristics and access to public utilities), as well as other variables that measure current and potential human capital through reporting the level of education of the head of the household, children above 12 years old, and access to school services for children and youth.
[4] DNP, 2005.

with EMPOPASTO, are working to secure a loan from the IDB to complete the necessary studies and finance their construction.

Electricity

SEPAL S.A., is a mixed economy entity. Its main stockholders are the Municipality of Pasto, CEDENAR, and 160 organized communities represented by their communal action boards, and a group of private citizens, as small investors.

Transport

The city's road system is 147 Km, of which 68% is local roads, 16% is intermediate or secondary, and 16% main roadways. 25% of the roadways have walkways that are too small (less than 2 mts) or inexistent.

Although the city has a large pro-bike group, there are few bikeways. The current goal in the development plan is to develop 5.4 Km of new ones. There are 112,200 vehicles in total, representing an increase of 243% compared to 2003. The highest increase has been in motorcycles, with 407% increase in the same period. They now represent 70% of the city's vehicles (0.18 motorcycle/inhabitant); with about 80,000 bikes. Average speed during rush hour is 12km/hour. In 2006, 600,000 trips were made per day in the city, with 312 thousand people. In 2013, population had grown to 429,000, which could generate approximately 730,000 trips.

Some significant sector statistics:

- Modal partition: on foot 38%, public transport 31%, private vehicles (cars) 14%, motorcycles 8%, taxi 5%, and bicycles 1%.
- Average travel time is approximately 20min
- The strategic system for public transport (SETP for its Spanish acronym), is under implementation and will accommodate 100% of public transport

Development Plan

Pasto aimed to improve its productive capacity through economic and urban planning through; 1) supporting and developing productive chains that have had little intervention, and with a focus on the widely recognized ones such as the "Carnalvales de negros y blancos", 2) promoting productivity and employment, 3) labor and business formalization, and 4) promotion of science, technology, research and innovation to generate knowledge.

The development plan centers on overcoming poverty, improving labor conditions, safety, and social equity. It has three policies, each with several key objectives. The following section underlines the policies and key objectives:

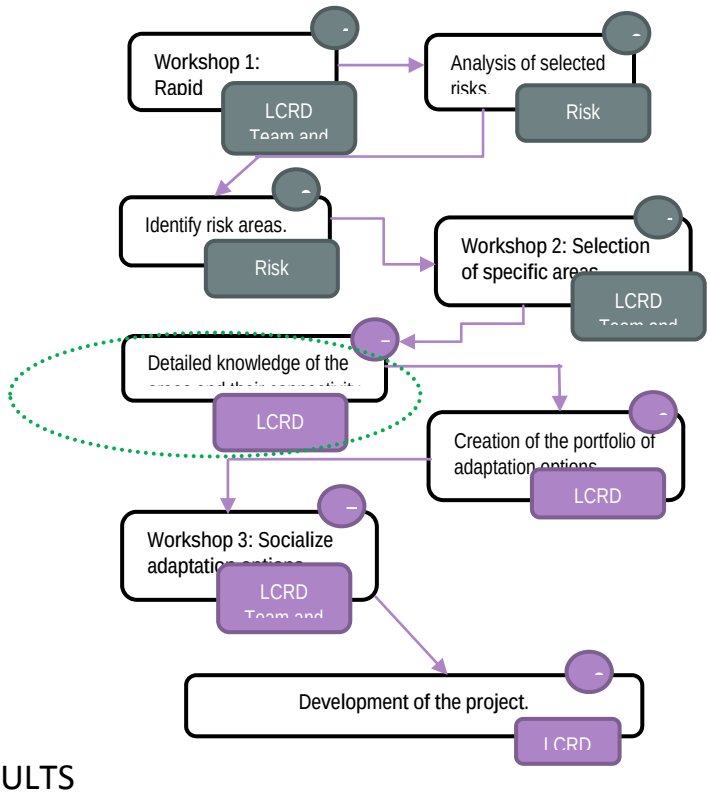
1. Sustainable human development policy
a. Eradicate extreme poverty and hunger
b. Achieve universal coverage in primary school
c. Promote gender equality and female autonomy
d. Reduce child mortality
e. Improve maternal health
f. Combat HIV, "paludismo" and other diseases
g. Guarantee the subsistence of the environment
h. Promote a global association for development
2. Good service policy
3. Competitiveness and productivity policy

2.1.2 PROCESS TO IDENTIFY ACTIONS AND INTERVENTIONS

In Pasto during 2014 several opportunities were identified with the local authorities related to climate change to receive support from LCRD. In mitigation, actions were selected taking into account the SMAPs approved at the national level and how those actions could be replicated in the city.

In adaptation, during FY 2014 a RVA (Rapid Vulnerability Assessment) process was carried out to get to specific areas of interventions and consequently to possible solutions and specific projects. The process in adaptation is outlined below in the graph. The process is now in step 5 LCRD is developing a detailed knowledge of the areas

selected and their connectivity with the municipality. It is expected that in FY 2016 the process could get at list to step 6 and when more available information is ready to step 8.



2.1.3 KEY RESULTS

- Complete rapid vulnerability assessment (RVA) in Pasto including maps of vulnerable areas to climate change in floods, storms and freezing in rural areas. The RVA included an analysis of recurrent events by threat, critical evaluation points and damage curves for critical locations according to each threat.
- With the RVA as a starting point, LCRD developed a participatory methodology with local stakeholders to select: climate stressor to address and priority area to intervene on such stressor. In Pasto the selected areas and stressors were: La Cocha for floods and Cuenca Alta del Rio Pasto for rural freezing and its impact in agriculture.

- With the support of LCRD program, the city of Pasto now has the design specifications to prepare the bidding process for building the green corridor on Carrera 27 - Paseo Ullaguanga - that will be a model of sustainable mobility for future works in the city, prioritizing the public transportation system and alternative modes (walking and cycling). The construction process will be the responsibility of the future mayor, in 2016. The designs include all the main engineering elements for the construction of the project supporting mitigation and adaptation approaches including bike lanes, pedestrian lanes, public space and recommendations of permeable surfaces for flood events.
- The LCRD program, in cooperation with the Corporación Ambiental Empresarial (CAEM), are performing a technical and economic feasibility study, for the reconversion of the handcraft brick makers of the city. Up to date, CAEM developed the base line of the brickmaker population, they performed a study of the potential market, and the associativity between brickmakers families. Currently, this study is in the last stage, in which they are developing two technical models to reconvert the furnaces and the strategies to leave a roadmap for the formalization of the brick maker community. That includes: the legality of their operations, strategy to open new markets, technology conversion to improve process efficiency, improvements in product quality and a development of new skills of the producers.
- LCRD supported the city of Pasto in formulating the draft of its urban renewal pilot project called "Superblocks". This is an initiative of great relevance in the city since it involves actions of territorial and urban planning, integrating principles of transport-oriented development and promoting non-motorized transit, giving a long-term vision of the whole city and aiming to improve the quality of life of every citizen in Pasto while reducing GHG emissions. With the help of the LCRD Program, Pasto submitted this project to the ICLEI's[5] Transformative Actions Program (TAP). The City already passed the first filter and ICLEI requested additional information to be sent by the end of October.

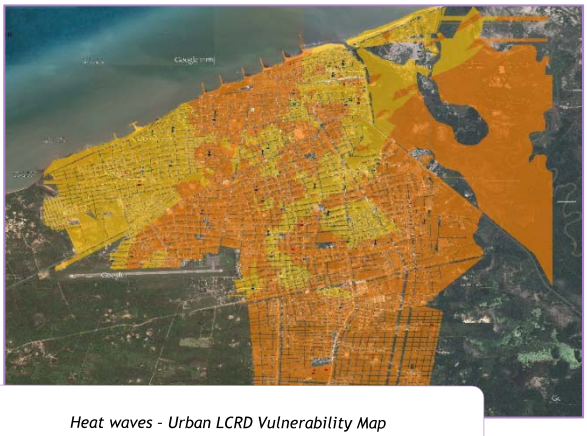
2.1.4 ACTIVITIES IN PROGRESS

- Pasto Agriculture Secretariat Technicians Survey. In order to have a detailed description of the high risk areas in rural Pasto, a survey about frost damages, agriculture risks, agricultural technics and ongoing projects was designed and sent to the technicians of the local Secretariat of Agriculture. The answers provided were systematized. These results need now to be compared with the ones obtained in the risk and vulnerability analysis made a few months ago by the LCRD.
- In order to seek for continuity in the work with new incoming Mayors, LCRD developed a two way strategy: 1. With candidates a strategy to provide information about climate change in public debates and ask questions of the challenges in the cities and 2. Work in the local development plan with new Mayors elected. The first task was accomplished by October 2015, and LCRD provided inputs and questions to the debates in Pasto and communications materials about climate change and their relevance in the city sent to the campaigns.
- As a result of the RVA and participatory selection process in which La Cocha was prioritized for floods in the rural area, LCRD is assisting the Municipality team in designing a step-by-step guide to implement an early alerts system for floods in La Cocha Lake. This guide should also be included in the Action Plan that the current local government has to hand over to the new Mayor after October`s elections.
- In the coming months the main task will be to start the dialogue with the new administration to give continuity to the actions already started, in particular the support to Carrera 27 redesign process and work with the Mayor`s office and the community to identify options to face the frost stressor selected to act on. One general task in all cities is to provide support in incorporating climate change considerations in the development plan for the next 4 years.

[5] ICLEI-Local Governments for Sustainability is the world's leading network of over 1,000 cities, towns and metropolises committed to build a sustainable future.

2.2 RIOHACHA

2.2.1 GENERAL CHARACTERISTICS OF THE CITY



Heat waves - Urban LCRD Vulnerability Map

Riohacha is located in the Caribbean region of Colombia, in the Departamento of la Guajira, the most northern Departamento in the country. It is 3,087 Km^2, but only 1% of that area is urban. It has 14 corregimientos and a population of 231,635 (2012), making it the most populated municipality if the Guajira region (26% of the Department's population). 37% of the urban area is protected land, including reserves, wetlands, beaches, buffer zones and land that is sacred to indigenous communities.

In 2013, Riohacha had eight of the 26 indigenous community resguardos of the Department. Seven of these are of Wayúu communities, and one is part of the Sierra Nevada de Santa Marta. Together they make up 43.4% of Riohacha's territory (1,340 Km^2).

The capital of La Guajira has the lowest amount of inhabitants per kilometre square (75/Km^2) of the Caribbean region, but has the greatest average population growth rate (5% per year). Around 85% of the municipality's population lives in 1% of the territory, the urban area (2012). According to the DANE, in 2005 19% of Riohacha's population were Wayúu indigenous people. 66.7% of them lived in the Municipality's resguardos. There are also people belonging to the Wiwa and Kogui indigenous communities, with almost 10,000 people living in the Sierra Nevada area that is part of Riohacha's jurisdiction.

In terms of poverty and inequality, Riohacha has the highest levels of unsatisfied basic needs of all the capital cities of the region (49%), and a higher level than the national average (27.8%). The highest levels of unsatisfied basic needs occur in the rural areas of the Municipality, where they are at an alarming level of 91.9%. The proportion of people living in misery is 26%, in inadequate housing 29%, and in overcrowded conditions 28%. Not surprisingly, inequality levels in the Departamento are above the national average.

Riohacha is a very uncompetitive Municipality; it has some tourism income, but lacks the proper infrastructure and services to achieve is full potential, and there are only two industrial establishments in the Municipality with more than 10 employees. Agriculture in the Municipality makes for almost 34% of the Department's cultivated land, but in relative terms it is not very significant. The only significant crops are banana (1,860 ha), oil palm (594 ha), and corn (102 ha), based on 2011 data. The drought that the region has suffered for two consecutive years has probably decreased these areas drastically.

<u>Climate and its Impacts</u>

According to the national victim's registry, La Guajira suffered 84 deaths and 88 disappearances during the 2010 and 2011 floods. Being a predominantly dessert area, the soil has little capacity to hold water, becoming saturated quickly. Indigenous communities such as the Wayúu people, originally semi-nomadic, had a resilience system to face dry months and droughts based on "Jaguey", which were severely affected by the floods. Jaguey are basically natural water reservoirs that filed up with the few rains that occurred in the year, and then maintained water that the Wayúu people relied on for animal and even human consumption in dry months or drought times.

With the severe rains of 2010 and 2011, the Jaguey suffered sedimentation, which made them shallower and contributed to them drying up when the drought started. Indigenous communities are reporting that Jaguey that even their elders had not seen dry in their lives are now completely dry.

Image 1. Jaguey in la Guajira in 2009

Image 2. Jaguey in Riohacha visited by team (2014).

In addition, Riohacha being a coastal city is at risk from sea level rise and is already experimenting strong beach erosion that led the city and Corpocesar to build infrastructure to protect the city's beaches. Unfortunately, these "Jarillones" or "Espolones" only migrate the problem to other areas of the coastline. Almost all Departmental and Municipality administration buildings are dangerously close to the coast, as are important public space and tourism investments.

Housing

Riohacha had 33,601 housing units in 2012, which is approximately 200 housing units for every 1,000 people. 42% of these have qualitative deficits and the quantitative deficit is estimated to be 63% (12,143 housing units).

Water

The Tapias River is the main source of water for Riohacha, but it does not cover 100% of the demand. In 2011, 71.7% of housing in the Municipality had aqueduct service. Unfortunately, the water is for the most part not apt for human consumption, with an intermediate risk in urban areas and a high risk of occurrence of water borne diseases in rural areas.

Basic sanitation is also a challenge in Riohacha. The sewer system was built for sanitary purposes, but currently serves as rainwater drainage as well. The Municipality has four intermediate pumping stations and a final station that discharges wastewater into the sea.

Electricity

Elictrificadora del Caribe is the Company in charge of electricity distribution and marketing in Riohacha since 1998. Coverage in 2012 was the lowest of the region's capital cities, with 95.22% of housing units with access to electricity. The issue with electrification is the disparity in coverage between the urban (1%) and rural (99%) of the Municipality; in the rural area (36,378 people) of Riohacha 28.7% of homes lack coverage.

Transport

Riohacha has particular characteristics related with its mobility. First, the wide territory implies long distances between agglomerations (10 to 30km), making the access to goods and services very difficult. In the urban area, formal public transport does not exist. The system went to bankruptcy due to the informal transport as mototaxi (24% of trips) and collective taxi (19% of trips). Walking represents 31% of trips, but the sidewalks and public space are very deficient.

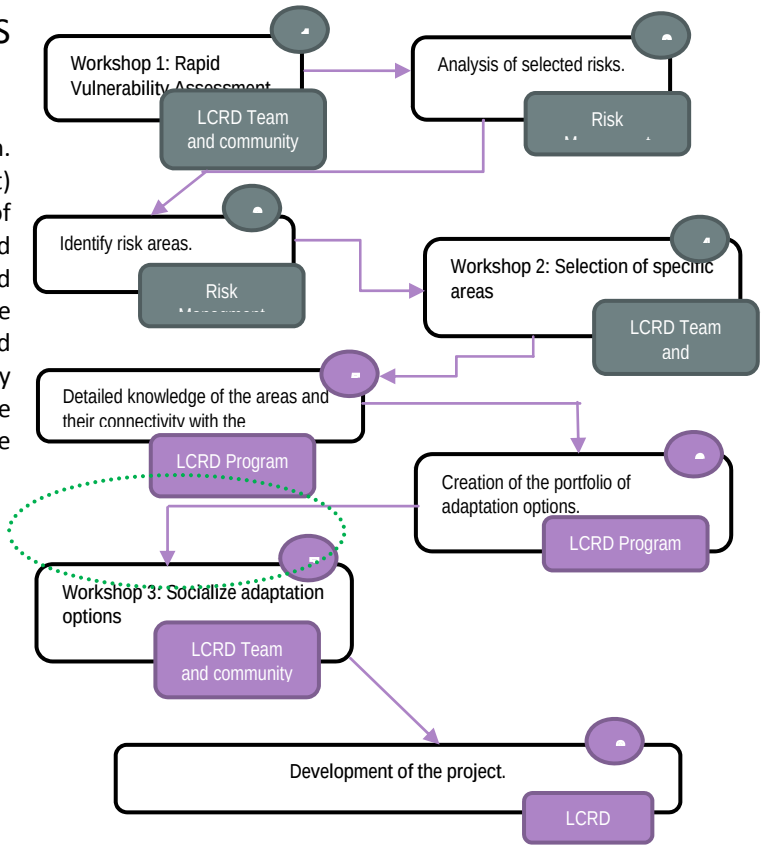
Development Plan

Riohacha's development plan 2012-2015 has the objective to "Generate welfare conditions for all of Riohacha's inhabitants, through the implementation of public policies that generate social inclusion, equity and opportunities, and which guarantee citizenship rights, improvement of life quality indicators, rescue moral values and prosperity for its inhabitants". It has five strategic axes, good governance for competitiveness, dignified Riohacha, prosperous Riohacha, safe Riohacha, and environmentally sustainable Riohacha.

In the Strategic Plan for Riohacha 2025, climate change is mentioned as part of the Municipality's vision: "…the management model for climate change needs to make urban development sustainable in the region…"

2.2.2 PROCES TO IDENTIFY ACTIONS AND INTERVENTIONS

Most of the work in the city has been in adaptation. During FY 2014 a RVA (Rapid Vulnerability Assessment) process was carried out to get to specific areas of interventions and consequently to possible solutions and specific projects. The process in adaptation is outlined below in the graph and was the same as in Pasto. The process is now in step 5, LCRD is developing a detailed knowledge of the areas selected and their connectivity with the municipality. It is expected that in FY 2016 the process could get at list to step 6 and when more available information is ready to step 8.



2.2.3 KEY RESULTS

- Complete rapid vulnerability assessment (RVA) in Riohacha including maps of vulnerable areas to climate change in floods, storms and freezing in rural areas. The RVA included an analysis of recurrent events by threat, critical evaluation points and damage curves for critical locations according to each threat.
- With the RVA as a starting point, LCRD developed a participatory methodology with local stakeholders to select: climate stressor to address and priority area to intervene on such stressor. In Riohacha the selected areas and stressors were: Laguna Salada for floods and Cuenca Media Rio Tapias for Droughts.
- LCRD conducted a very detailed assessment of the available information for the two areas that could be used in the alternatives selection. Both for Laguna Salada and This assessment serves as the basis for any

action any stakeholder would like to take in the areas providing information on what has be done and tested, and also what is proposed by different studies. Several site visits were carried out to deliver this product.

- An analysis of how the new climate change scenarios produced by IDEAM could affect the decisions and selections was undertaken. The result in Riohacha is that although the magnitude is a bit different, increases in temperature and decreases in rain patterns would occur so not major changes would be required.
- Research on energy efficiency guidelines for hotels in Riohacha and Colombia. The LCRD team presented the energy efficiency guidelines project to hotels in Riohacha in coordination with Asotelca, an association of hotels that works in the region. The presentation took place on September 17th, when previously contacted hotels had the opportunity to understand the object and scope of this initiative and ask questions they had about It. All the hotels showed interest in the energy efficiency guidelines and committed to participate in the project by giving the information required to continue the technical analysis by LCRD.

2.2.4 ACTIVITIES IN PROGRESS

- Adaptation: Urban Hydrology and Hydric Demand-Offer in Riohacha Study.
  After the visit to the city made by the USFS in August and the eventual technical assistance for the Tapias river basin, the LCRD Program decided to structure the ToRs of a hydrological study only for urban Riohacha focusing on urban floods and historical and future water availability and consumption. By covering these topics the study on the relationship between climate change and water consumption/demand was also included in this expanded urban study and to provide inputs for decision makers such as the water service provider. With this study the Program expects to contribute in the area of water resources management and climate change adaptation, by providing local stakeholders essential information about their hydrological and climatological systems.
- Adaptation: Certification Course in Climate Change program revision. As one of the measures proposed for Riohacha given the lack of knowledge about Climate Change and adaptation to Climate Change, LCRD is planning to have an introductory Certification Course in Climate Change. Different certification courses in Climate Change have been studied, among them, one developed by UNDP in Pasto. LCRD is currently reviewing the course program. University allies are also being searched among them Universidad de La Guajira.
  - In the coming months the main task will be to start the dialogue with the new administration to give continuity to the actions already started, in particular the droughts and floods analysis and enhancing capacity to generate information in the city to be able to prepare better adaptation options.
  - In all cities, support will be provided in incorporating climate change considerations in the development plan for the next 4 years.

2.3 VALLEDUPAR

2.3.1 GENERAL CHARACTERISTICS

<u>Location</u>

Valledupar is in the Dept. of Cesar, in the northern part of Colombia, between the “Serranía de Perijá”, the Cesar River, and the “Sierra Nevada de Santa Marta”. It is 4,264 Km2 of which 0.9% is urban and 99.10% is rural. It has a population of 413,341 people, 85% of which live in the urban area. Valledupar is one of Colombia’s cultural capitals, home of “Vallenato” music and culture. The current administration seeks to rescue and capitalize on this cultural richness.

Unfortunately, the city also has suffered from violence due to guerrilla, paramilitary and criminal group’s activity nearby, and a string of corrupt administrations. The Municipality’s multidimensional poverty index is 52.7, with 40,203 poor people (10% of population) according to the 2012-2015 Development Plan.

Commerce is the dominating economic activity, with 50.8% of the municipality's GDP, followed by the service industry with 37.8%, industry with 10,4%, and others with 1%.

Housing

Valledupar has taken great advantage of the national government's free housing and priority housing for savers programs, putting forward enough local financing to secure more than 9,000 housing solutions. This goes a long way in responding to the Municipality's severe housing deficit, brought about in part by significant immigration into the city due to the violence in surrounding municipalities and rural areas.

Development Plan

The current mayor of Valledupar has a commitment to "generate the conditions necessary to achieve economic growth with social equity and environmental sustainability, based on; the strengthening and modernization of its institutions, social inclusion and reduction of poverty, the integral development of its human resources, the improvement of its infrastructure and services, harmonizing urban and rural planning, and guaranteeing governability and peace in all the municipal territory."

The development plan has four axes: 1. Social transformation (socio-cultural dimension), 2. Transformation of the Municipality's environment (natural environment and developed environment dimensions), 3. Citizen transformation (political dimension), and 4. Economic transformation (economic dimension).

Water

Coverage for sewerage is 84%, rainwater sewerage 32%, and aqueduct 92%.

Electricity

Coverage for electricity is 93%. Telecaribe is the main electricity provider.

Transport

Valledupar has a sustainable modal participation, with high percent of walking and cycling trips (31% and 11% respectively). Nevertheless, this distribution is changing dramatically due to the increase of motorcycle and mototaxi use. According to the local authorities, the modal participation of public transport is 9.2% (falling to half in seven years). Containing the increase of private vehicles use and the fall of public transport use, along with the protection (and eventually increase) of the participation of cycling, must be the priorities for this city.

2.3.2 APROACH OF INTERVENTION

In Valledupar it was decided to take a different approach from the resto of the cities as it seems to be a more prepared city to implement actions. Also because the city has already been implementing the IADB (Interamerican Development Bank) sustainable and competitive cities methodology addressing a vulnerability analysis which will not be necessary to undertake by LCRD. Tree major intervention areas combining mitigation and adaptation have been prioritized:

1. Sustainable transport
2. Sustainable social housing – resilient urban settlements
3. Urban Forestry to allow GHG mitigation through carbon sequestration and adaptation to heat waves with green infrastructure

2.3.3 KEY RESULTS AND ACTIVITIES IN PROGRESS

Transport:

- An analysis of active transportation including non- motorized transport was developed for the city and presented to the local transport authorities. This study provided recommendations based on field

observations on advantages and disadvantages of non- motorized transport. In Valledupar a big difficulty was the lack of infrastructure for bikes but on the other hand the benefit of a high number of trees providing shade for pedestrians and bike users.

- A LCRD consultant has supported the Sustainable and Competitive Cities Program, which aims to create long-term Action Plans for medium size cities. Each plan prioritizes city resources in order to achieve sustainable development and competitive economies. The consultant´s work has been related to the city of Valledupar, in the urban mobility area. The process to build Valledupar Action Plan has involved the following phases: i) Diagnosis and prioritization of areas, ii) Environmental and economic studies, iii) Socialization of results with city stakeholders (both private and public) and iv) Structuring of the Action Plan. The consultant has been involved with phases i, iii and, currently in iv.

  The results of the consultant´s support include:
  1. Generation of two reports in urban mobility, which will feed the action plan document.
  2. Participation in Findeter`s mission for the socialization of the draft assessment with city stakeholders (public and private). Presentation of results to the City Mayor, Secretary of Planning and Secretary of Transport.
  3. List of potential projects to address the areas prioritized (draft version, currently being developed)
  4. Definition of Vision and Strategic Lines of Work for the Action Plan, through several interdisciplinary workshops with Findeter team (draft version, currently being developed).

A first version of the complete Action Plan is expected on December 2015.

- Sustainable social housing – resilient urban settlements

During 2014 and early 2015 LCRD has structured a solar system to generate electricity in one of the urbanization of social housing projects in Valledupar called Lorenzo Morales. The project design included a survey to a random sample among the 500 families living in the housing project to determine their electricity needs. However, after carefully looking at the design features and the structural characteristics of the buildings, it was decided to design a project serving only the common areas of the urbanization including: water pump for each tower, laundry services, administration office. This has a benefit to the community due to the several problems in the northern cost of Colombia with tariffs and expensive services of electricity providers. At the end, this will demonstrate that social housing projects in such areas could be included financed partly by the Government partly by the private sector and will help avoid more social conflicts that the ones currently occurring in those projects.

In addition, LCRD has identified several opportunities in this community to undertake efforts to increase community resilience to climate associated impacts such as increasing heat waves and strong winds with green infrastructure. Nevertheless, there will be a prioritization process with the community to identify with them those opportunities in a participatory process.

- Urban Forestry to allow GHG mitigation through carbon sequestration and adaptation to heat waves with green infrastructure (trees mainly). This activity was identified with the current Mayor´s office as one of the main climate change adaptation measures in the city as a whole. A USFS technical assistance visit took place during October to start analyzing the option to develop a project in this area.
- In the coming months the main task will be to start the dialogue with the new administration to give continuity to the actions already started, in particular the solar panels project in Lorenzo Morales,
- In all cities, support will be provided in incorporating climate change considerations in the development plan for the next 4 years.

2.4 HUILA DEPARTMENT

A first meeting with CAM and Pitalito Mayor was held in October 2014 to identify the first actions to be supported by LCRD in 2015. The preliminary actions suggested were: Banco2 initiative, POMCA climático Guarapas River and an action to be identified in Pitalito. During the first semester of 2015 when the work in Huila was initiated under LCRD, Various activities were carried out to star working towards the implementation of Plan Huila 2050. Meetings with the Mayor of Pitalito have been held during the previous months to identify which actions can be proposed from the Municipality to help implement Plan Huila 2050. Several ideas came out of the first exploratory meetings including supporting coffee producers to adapt and mitigate climate change, public lighting, adequate basin management in Guarapas River, and environmental leader's program support.

With CAM (Corporación Autonoma Regional del Magdalena) a first visit from a delegate from Terraglobal Capital took place to identify possibilities of financing projects with green bonds. Additionally a visit from two experts from the USFS in vulnerability assessments and payment for environmental services also took place during the month.

- During April to June, 1.The writing stage of "Pitalito's Route to Change" Booklet with the support of several institutions of Pitalito and the contribution of two young environmental leaders of the city who are writing parts of the text took place. In September 2015 the route of change in Pitalito was adopted in the city with strategic lines of action in climate change to be undertaken by the next administrations.
- Work with coffee farmers in Pitalito started the design stage. The Federación Nacional de Cafeteros (National Coffee Farmers Federation) looks to become a strategic ally for implementation of climate smart agriculture practices. The LCRD team will work on a pilot project for the Coffee NAMA and also on the design and if possible implementation of adaptation measures in farms with the objective of developing a Climate-smart Agriculture project that could, in the end, be replicated to other areas in the country. The project Terms of Reference are being written at this moment.
- Support was provided to draft the initial content of the web Page of the Plan Huila 2050.
- A group of officers from CAM were supported to travel to CORNARE to learn about the Banco2 experience in Antioquia. After this visit, the CAM is analyzing the best approaches for such scheme in the Department of Huila. A scheme for Plan Huila 2050 webpage was presented and the web developer is soon to be contracted.
- It has been evident the need to work with different stakeholders beyond CAM in order to support the implementation of Plan Huila 2050. With this idea in mind, the LCRD Team is working on a new

agreement to support the governance of Plan Huila 2050 in the department, in particular, with the Climate Change Departmental Council and the private sector. The ToRs for this agreement are ready and a first market research study was carried out.

- In the coming months, an agreement will be signed with a partner to support the Plan Huila 2050 governance and its relationship with the private sector.

2.5 ENHANCING CAPACITY IN THE CITIES AND HUILA FOR CLIMATE CHANGE

Several workshops took place during FY2015 addressing several topics at the subnational level.

Year	Month	Activity	Description	Number of Attendees
2014	December	Rapid Vulnerability Assessment Workshop in Riohacha	LCRD developed a workshop with different actors as representatives of governmental and private entities, community leaders from rural and urban areas and consultants of the municipality in order to be able to identify risks associated with climate change that according to participants require greater attention.	14
2015	January	Rapid Vulnerability Assessment Workshop in Pasto	LCRD developed a workshop with different actors as representatives of governmental and private entities, community leaders from rural and urban areas and consultants of the municipality in order to be able to identify risks associated with climate change that according to participants require greater attention.	20
2015	February	Selection of specific areas Workshop in Riohacha	LCRD develop a workshop to disseminate the results of the analysis of risks associated with climate change in Riohacha, specifically for defined climatic stressors as flooding in urban areas and rural drought. In this socialization were invited academic and government institutions in order to identify areas that require further attention by the LCRD Program.	11
2015	February	Identifying climate change actions Workshop in Pitalito, Huila	The workshop was organized to begin the design of a work proposal for Pitalito to be the first municipality to become climate-smart.	35
2015	March	Cycling for everyone, Montería	The workshop was organized to sensitize different stakeholders in the community on the desirability and importance of extending the bicycle as urban transport option. Attendees created a group dynamic in which the views of each sector of the public were exposed discussing the role of the bicycle in society.	20

2015	April	Cycling for everyone, Valledupar	The workshop was organized to sensitize different stakeholders in the community on the desirability and importance of extending the bicycle as urban transport option. Attendees created a group dynamic in which the views of each sector of the public were exposed discussing the role of the bicycle in society.	17
2015	April	Selection of specific areas Workshop in Pasto	LCRD develop a workshop to disseminate the results of the analysis of risks associated with climate change in Pasto, specifically for defined climatic stressors as flooding and frosts in urban areas. In this socialization were invited academic and government institutions in order to identify areas that require further attention by the LCRD Program.	14
2015	April	Cycling for everyone, Pasto	The workshop was organized to sensitize different stakeholders in the community on the desirability and importance of extending the bicycle as urban transport option. Attendees created a group dynamic in which the views of each sector of the public were exposed discussing the role of the bicycle in society.	21
2015	April	Identifying climate change actions Workshop II in Pitalito, Huila	During this second meeting in Pitalito we shared and discussed with stakeholders the consolidated version of the Route to Change's short, medium and long term objectives that had been developed during the first meeting	59
2015	October	Launching: Ruta de Cambio Pitalito	In early October, the Municipality of Pitalito, with the Autonomous Regional Corporation CAM, and other stakeholders launched Pitalito's Route to Change 2030. The event was intended to present Pitalito's Route to Change as a climate change plan that transcends administrative periods given that it was constructed by many agencies and groups within the municipality.	75

3 COMMUNICATIONS AND OUTREACH

Up to October 2015, the Communications Area of the LCRD Program has advanced, among other activities, in the development of its logo with its corresponding image manual for proper use in different publications. The logo has been used in national and subnational workshops, printed on banners, posters and event agendas which has positioned the program.

To further establish unity in the Program's image, the Communications Area created formats and templates for different communication channels, such as contractor reports, public documents for external and internal communications.

The Communications Strategy was presented in mid-2015. Its main objective was to showcase the LCRD Program's work using a clear and flexible language for various audiences. The Communications Areas has produced two Fact Sheets that have been handed out in various events, and has developed its website design which is in the content-

generation process. The Communications Area has also created posters presented in climate change expert events, and information sheet of the importance of climate change and the LCRD Program's work within that context for city mayor candidates in the cities selected by the program.

Below a list of publications developed by the program in all components is presented.

No	Sector/Topic	Title	Document Type	Status
	National component	**National enabling environments and instruments for implementation of low carbon and climate resilient interventions** 1.1 Support the design of the SMAPs implementation strategy including NAMAs		
1	**Transport**	Diagnosis for the transportation sector- Implementation of Sectorial Action Plan	Public	Final
2	**Transport**	Technical conceptualization of Measuring Reporting and Verification of the Urban Passenger Transport NAMA (National Appropriate Mitigation Actions)	Public	Final
3	**Transport**	Quantification of the effects on emissions caused by interurban cargo transportation policies in Colombia	Public	Final
4	**Transport**	Review of international experiences of shared space and bicycle inclusiveness	Public	Final
5	**Transport**	Discussion document: List of indicators and potential companies for the improvement of the Information and Evaluation of Urban Transportation System. (SISETU for the acronym in Spanish)	Public	Final
6	**Transport**	Study and previous document for hiring the improvement of the Information and Evaluation of Urban Transportation System. (SISETU for the acronym in Spanish)	Public	Final
7	**MRV**	General considerations regarding the link between the Ministry of Environment and Los Andes University Study Results and the Sectorial Action Plan: Transport Sector	Public	Final
8	**MRV**	General considerations regarding the link between the Ministry of Environment and Los Andes University Study Results and the Sectorial Action Plan: Sanitation Sector	Public	Final
9	**Housing**	Habitat NAMA (National Appropriate Mitigation Actions) Conceptualization	Public	Final
10	**Housing**	Sectorial Acton Plan: Housing and Development	Public	Final
11	**Agriculture**	Sectorial Action Plan: Agriculture	Public	Final
12	**Energy**	Sectorial Action Plan: Electric Energy	Public	Final
13	**Hydrocarbons**	Sectorial Action Plan: Hydrocarbon	Public	Final
14	**Industry**	Sectorial Action Plan: Industry	Public	Final
15	**Industry**	Industry NAMA (National Appropriate Mitigation Actions) Formulation	Public	Partial
16	**Mines**	Sectorial Action Plan: Mining	Public	Final
17	**Waste**	Sectorial Action Plan: Waste and wastewater	Public	Final
18	**Transport**	Sectorial Action Plan: Transportation	Public	Final
19	**Waste**	Solid Waste NAMA	Public	Final
20	**MRV**	Recommendations to identify and estimate the national contributions for the United Nations Framework Convention on Climate Change (UNFCCC): Case Study: Transportation Sector	Public	Final

21	**MRV**	Recommendations to identify and estimate the national contributions for the United Nations Framework Convention on Climate Change (UNFCCC): Case Study: Solid Waste Sector	Public	Final
22	**Waste**	Decree 2981 of 2013: provisioning of public sanitation service	Public	Final
23	**Waste**	Resolution 712 of 2015: drinking water and sanitation	Public	Final
24	**Waste**	Energy efficiency in water treatment systems guide	Public	Final
25	**Waste**	Integrated waste management plan Guide	Public	Final
26	**Waste**	Questions for the Integrated waste management plan Guide formulation	Public	Final
		1.2 Strengthen understanding and capacity at the sectorial national level to promote resilient development through sectorial policies, instruments and programs addressing the subnational level implementation		
1	**Energy**	Electricity generation in climate change scenario study	Public	Final
		1.3 Improve the capacity of national level entities to address climate finance opportunities and private sector engagement for subnational implementation		
1	**Financing**	Colombia's access to Green Climate Fund resources	Public	Final
2	**Financing**	Operational design of viability of the Climate Change Fund in Colombia	Public	Final
3	**Financing**	Diagnosis phase: climate change mitigation in the National Development Plan 2014	Public	Final
4	**Financing**	Classification mechanisms of public investment in climate change	Public	Final
5	**Financing**	Inputs of the Colombian Strategy for Low Carbon Development in the National Development Plan	Public	Final
6	**Financing**	Recommendations for the design of projects portfolio for the Green Fund	Public	Final
7	**Financing**	Climate Technology Fund resources in Colombia	Public	Final
8	**Financing**	Review of the funding plan for the Waste NAMA	Public	Final

No	**Sector/Topic**	**Title**	**Document Type**	**Status**
	Subnational Component	**Low carbon resilient cities and regions: from design to implementation**		
		2.1 Enhanced capacity in cities to identify mitigation opportunities and adaptation alternatives creating conditions for their implementation		
1	**Transport**	Diamante del Caribe Active Transportation: Bicycle as urban transportation	Public	Partial
2	**Transport**	Green Connection Project in Monteria: Technical advice for the bike lane implementation	Public	Final
3	**Adaptation**	Selection of adaptation options in Riohacha, Flooding in urban areas-Laguna Salada	Public	Final
4	**Adaptation**	Selection of adaptation options in Riohacha, Drought in rural areas-Tigreras, Choles y Matitas	Public	Final

5	**Adaptation**	Conclusions of the Rapid Vulnerability assessment workshop in Pasto	Public	Final
6	**Adaptation**	Conclusions of the Rapid Vulnerability assessment workshop in Riohacha	Public	Final
7	**Energy**	Solar Panel Project in Valledupar Structure- Common Areas	Public	Final
8	**Adaptation**	Document for mayoral candidates of Pasto: influence of Climate Change in Pasto	Public	Final
9	**Adaptation**	Document for mayoral candidates of Valledupar: influence of Climate Change in Valledupar	Public	Final
10	**Adaptation**	Document for mayoral candidates of Riohacha: influence of Climate Change in Riohacha	Public	Final
		2.2 Huila Department starts implementation of Plan Huila 2050		
1	**Huila**	Huila 2050 Plan: preparing us for future climate	Public	Final
2	**Huila**	Departmental resources: Huila 2050 Plan: preparing us for future climate	Public	Final
3	**Huila**	Evaluation of the third national communication on climate change scenarios in the context of LCRD program in Huila.	Public	Final
4	**Huila**	Pitalito's 2030 Change Route: Aware and Committed to Climate Change	Public	Final

4 ADMINISTRATIVE AND FINANCIAL ISSUES

A technical and administrative team was consolidated during the Fiscal Year to attend the needs of the new LCRD program requirements. As follows (People indicated in gray are no longer part of the team):

4.1 STAFF

Consultant	Position
Cesar Andres Cortes Bello	Climate Change consultant
Ana Maria Mogollon	General Technical Advisor / National Coordinator
Claudia Andrea Diaz Acosta	Transport Technical Advisor
Sandra B. Garavito Rojas	Chief of Party
Andres Felipe Martinez	Climate Change consultant
Juan Felipe Franco	Coordinator MRV
Miguel Sebastian Lema	Climate Change consultant / Climate Financial Advisor
Javier Velasquez Gomez	Consultor
Andrea Maldonado	Climate Change consultant
Sebastián Velázquez Gallon	Transport coordinator
Marisol Carter	Administrative and Financial Specialist
Andres Javier Peña Cabra	Transport Specialist
Oscar Ivan Galvis	Risk Management Expert
Jose Alonso Pacheco Molano	MRV Consultant
Lina M. Rueda	Communications Specialist
Juan Pablo Borda	Renewable Energy and Energy Efficiency Specialist
Claudia Martinez	Huila Senior Advisor
Carolina Hernandez	Climate Change consultant

Patricia Davila	Monitoring Database professional / MRV junior advisor
Carmen Lacambra	Adaptation Senior Thematic Advisor
Robert Bennett	Housing NAMA
Yair Movil	Riohacha Climate Change Professional
Sonia Borja	Hydrology and Climatology Advisor
Paula Rodriguez Vargas	Low Emissions Transport Sector Adviser
Beatriz Mogollon	Integration Consultant
Ernesto Betancourt	Subnational Implementation Coordinator
Ivonne Ayala Lara	Administrative and Financial Professional Support
Laura Escobar	Climate Change Adaptation Analyst
Felipe del Busto	Climate Change and Regional Development Specialist
Cesar Cuervo García	Contracts and Agreements Specialist

Enhancing Capacity for Low Emission Development Strategies (EC-LEDS) to Low Carbon Resilient Development (LCRD)
Annual Report FY14

LCRD team: Ana Maria Mogollon, Andrea Guerrero, Sebastian Velasquez, Juan Felipe Franco, Andres Peña, Marisol Carter, Sandra Garavito

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1. BACKGROUND

In 2010, the Government of Colombia (GOC) began developing a low emission development strategy (LEDS), called Estrategía Colombiana de Desarrollo Bajo en Carbono (ECDBC). The ECDBC identifies climate change mitigation opportunities, and their associated economic costs and benefits through 2040. At the same time, the Global Climate Change Initiative, one of three Presidential Initiatives under the Obama Administration, launched the Enhancing Capacity for Low Emission Development Strategies (EC-LEDS) initiative. In late 2010, Colombia was chosen as one of the first five countries to participate in the USG-EC-LEDS initiative. Through the EC-LEDS program, Colombia, with support from the USG, is working to implement the country's ECDBC.

During FY14, the EC-LEDS Program transitioned to the LCRD Program. The transition was based on a request from the Colombian Government to integrate mitigation and adaptation initiatives, and the analysis of the results of each Sectorial Mitigation Action Plan (SMAP[1]), which indicated that many of the actions needed to accomplish tangible mitigation results, needed to be undertaken at the subnational level with local/regional budgets and decision makers. Therefore, the work was divided in concrete EC-LEDS activities still to be accomplished, and planning the future LCRD Program through scoping missions in the Department of Huila and various cities.

In 2012, USAID launched a pilot climate change laboratory in the Department of Huila through the Forest Carbon Markets and Communities (FCMC) Program. FCMC partnered with local Colombian partners like E3, the Corporación Autónoma Regional del Alto Magdalena (CAM), Stockholm Environmental Institute (SEI), ONF, and other stakeholders. The work culminated in the establishment of a departmental climate change council and a five-year climate change action plan that was adopted in 2014. The plan prioritized five areas: intelligent management of water resources, biodiversity and ecosystem services, agricultural production and food security, energy resources, and resilient surroundings.

In the scoping missions with the national level entities, the scoping team recommended working in cities where mitigation and adaptation activities could be piloted and implemented with tangible, local results looking with the national level planning. Around 75% of the population in Colombia lives in cities, and it is expected that by 2050 it will increase to 85%. Additionally, around 85% of the national GDP is generated in cities. It is probable that climate change will increase the challenges faced by a growing city with vulnerable populations, usually displaced people due to armed conflict, living in high risk areas. However, there is an opportunity to make that growth more resilient to climate related impacts and oriented towards a low carbon vision. Colombian cities will also face new challenges in a possible post-conflict scenario, such as increasing urbanization and demands for public services, water, food, and energy.

At the national level, during 2013 and 2014, Sectoral Ministries developed and adopted six Sectoral Mitigation Action Plans (SMAPs) identifying prioritized policies, programs, and actions each sector was willing to undertake in the short, medium, and long term with national and international funding. The eight SMAPS include Electricity (Energy), Mines and Hydrocarbons, Industry, Agriculture, Territorial Development and Housing, Waste Water, and Transportation.

[1] In the framework of the Colombian low Carbon Development Strategy – all sectors designed and worked in a mitigation plan with EC-LEDS support.

LCRD also supported the integration of low carbon development strategies in the National Development Plan 2014-2018. The Plan indicates that all sectors should work in the implementation plans of the SMAPs and includes several low carbon goals under the green growth chapter. Regarding the finance agenda, EC-LEDS supported part of the readiness process to create a climate finance agenda in the country.

Between March 2014 and August 2014, the LCRD technical team started a process of selecting the cities with which to work. Three intermediate-sized cities were selected: Valledupar, Pasto, and Riohacha. LCRD engaged with the Mayor's offices, regional environmental authorities, and communities to start identifying opportunities to work in the coming fiscal year. For mitigation, several actions were identified in each city to support various designs. For example, in Pasto, LCRD partially financed the design of a low carbon and resilient avenue. For adaptation, a climate rapid vulnerability assessment was developed for Pasto and Riohacha. Stakeholders selected a climate stressor and an area to work based on a climate risk assessment. In all the cities, workshops for non-motorized transportation took place.

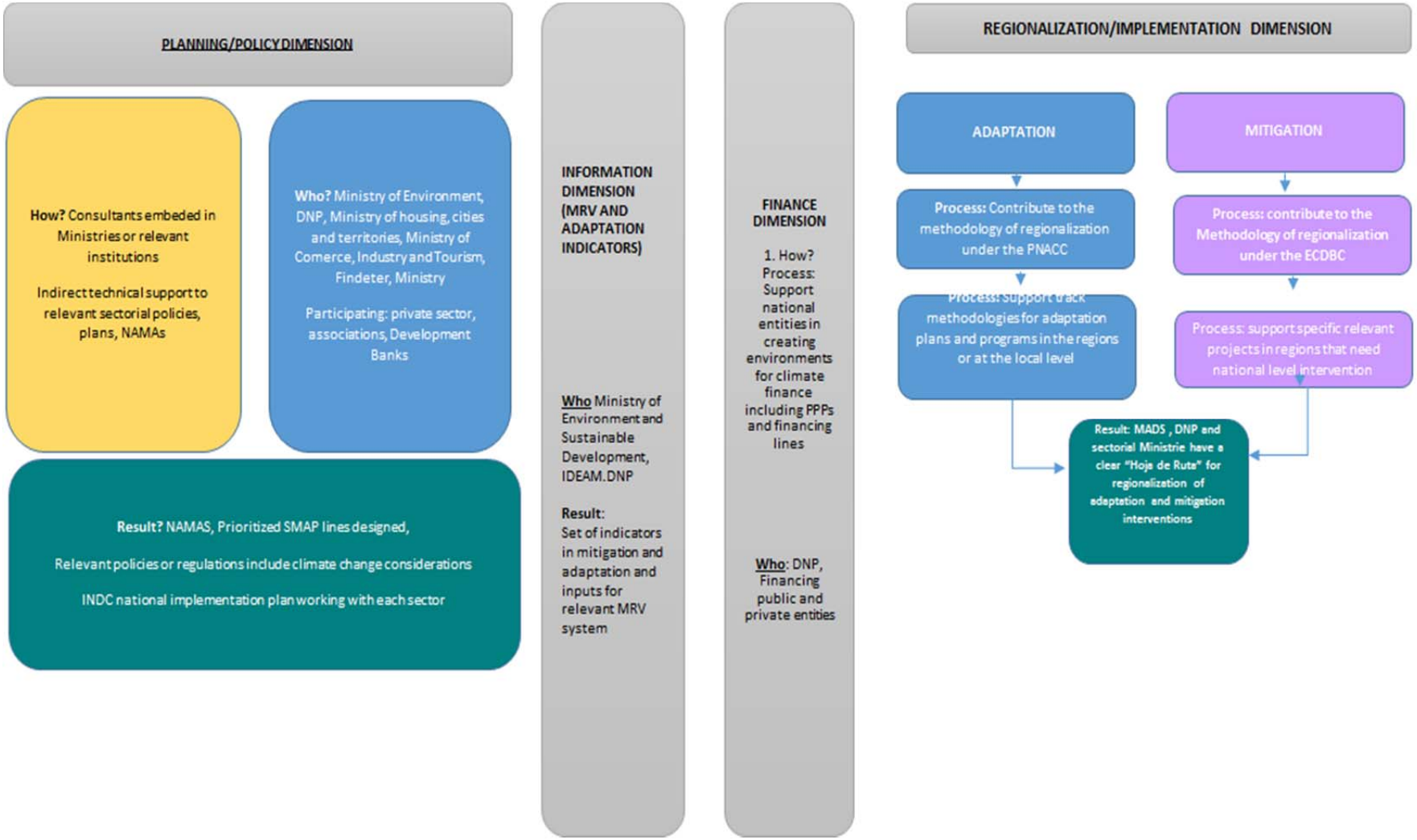
2. OVERVIEW OF LCRD

LCRD aims address the linkage of national planning with subnational, territorial, or local-level implementation of climate change actions. The program works simultaneously in two fronts: the national level in the policy and programmatic country climate change framework, and the subnational level in three cities and one department.

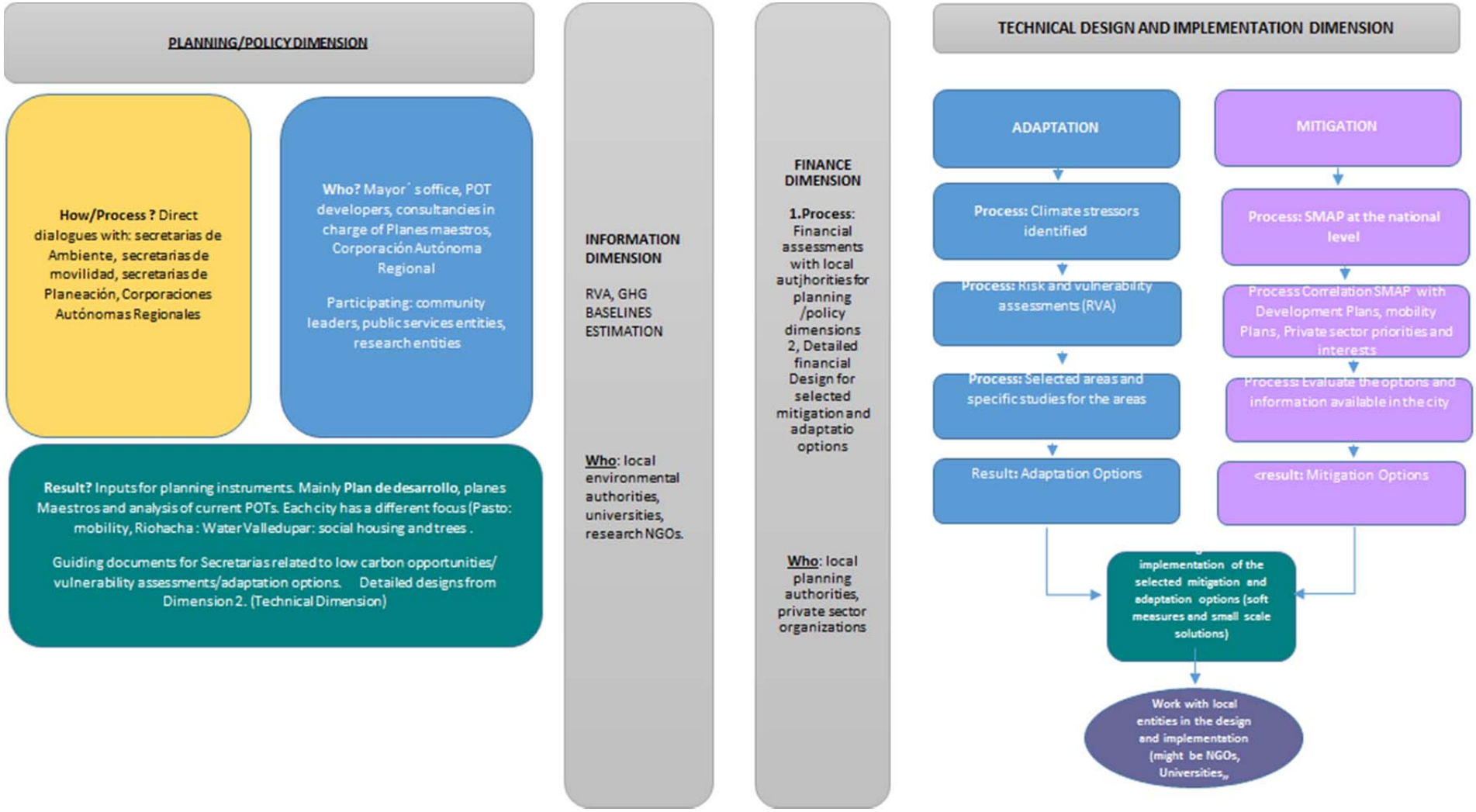
LCRD identified and supported the design and to some extent the implementation of small-scale mitigation and adaptation solutions that have demonstrable effects. Additionally, the Program aims at identifying and proposing ways to monitor progress and impacts at all levels in terms of greenhouse gas (GHG) emission reductions/avoidance, and increasing climate resilience for infrastructure and communities. LCRD worke with the Ministry of Environment and Sustainable Development, Ministry of Housing, Cities, and Territories, finance institutions such as Bancoldex and Findeter, and the National Department of Planning on the national framework level. Additionally, the Program worked with municipalities, environmental authorities, planning offices, transport offices, risk management divisions, and private stakeholders to develop the Program at the subnational level. The Program focused its efforts at all levels in the following sectors and services provided to communities: transport and mobility, drinking water availability, waste water and drainage systems for urban communities, public spaces and housing in urban environments with consideration to relevant ecosystems or environmental services.

The LCRD Program worked in cities with prioritized and selected systems (avenues, rivers, public spaces, housing projects, small scale industries, vulnerable neighborhoods/areas, services such as drinking water or electricity) to design and implement actions. It did not address the whole city with all the complex synergies and interactions. These individual actions are expected to have results-based demonstrable initiatives to be replicated in other cities and scalable to other similar systems. In terms of planning processes, unless the selected systems are necessary for the planning process or the opposite when the action cannot be undertaken without the planning process developed in a specific component, LCRD Program only provided recommendations for future incorporation of climate change considerations in existing local planning instruments such as Territorial Ordinance Plans (POTs) or development plans. See diagrams below with the vision of implementation.

NATIONAL LEVEL DIMENSIONS, RELATIONS, AND EXPECTED RESULTS



SUBNATIONAL LEVEL DIMENSIONS, RELATIONS, AND EXPECTED RESULTS



3. LCRD PROGRAM IMPLEMENTATION

Component 1. National enabling environments and instruments for implementation of low carbon and climate resilient interventions

1. ***Low Carbon Development Strategy (ECDBC) - SMAPS***
   The ECDBC finalized its design phase with the approval of one sectoral mitigation plan in the Housing and Territorial Planning sectors and one socialized in the industry sector. These SMAPs include policies, programs, and actions that helped the sector reduce GHG emissions in the future.

2. The agriculture SMAP was under construction waiting for the high-level approval. There was an initial draft version from the agriculture consultant which needed to be approved by directors and decision makers in the Ministry. Approval meeting was expected to take place in September.

3. The National Development Plan 2014-2018 final draft version of the inputs from the EC-LEDS consultants was ready with objectives and strategies, baselines, goals, and budget for each sector. This was submitted to the centralized National Department of Planning. One transport consultant and the energy consultant (both supported by EC-LEDS) worked in the National Department of Planning in drafting the final low carbon components in the transport and energy sectors. This was arranged and approved by the Infrastructure and Environment Divisions Directors.

4. The Sustainable Housing NAMA, a new initiative led by the EC-LEDS consultant, was getting support from the Ministry of Housing and other relevant national institutions. It was launched during the SMAP outreach meeting and several internal meetings later took place to define the scope and boundaries.

5. Discussions on next steps for the implementation strategies of SMAPs and regionalization were still occurring with MADS. LCRD recommended starting the detailed designs of one or two specific actions in each sector. A full proposal of an implementation plan for the transportation SMAP was presented to the Ministry of Transportation.

6. As a further step in implementing the SMAPs, EC-LEDS also facilitated and supported the design and development of an agreement between the Ministry of Housing and Institution for Planning Electrification in Off-grid Zones (IPSE), aiming to formulate and implement joint energy projects proposing solutions for drinking water treatment systems by using alternative energy sources, and improving the provision of water service in rural areas of non-interconnected areas (ZNI) in Colombia. The first pilot projects were implemented in Puerto Estrella and Nazareth, Guajira, a region highly affected by climate change in Colombia. These alternatives significantly reduced energy costs associated with water purification systems that require pumping plants, and which the costs often exceed the capacity of providers in particular in rural areas.

7. A Memorandum of Understanding (MoU) between Findeter and USAID was negotiated and signed in 2014. This was facilitated by the LCRD Program. The MoU created the framework to facilitate joint work at the national and subnational level in climate change and urban infrastructure. The technical work was performed between Findeter and the LCRD Program in

the selected cities. The MoU also strengthened guidelines and supported Findeter in national priorities, such as non-motorized transport and transit oriented development.

8. All EC-LEDS consultants provided inputs to the Ministries and the LCRD Program in identifying potential actions in urban environments addressing both development and mitigation potential.

9. EC-LEDS supported Findeter with one consultant providing technical support to: 1. Public lighting NAMA initiative and 2. Energy efficiency and renewable energy financing lines for private and public stakeholders. The financing line was approved and the consultant was hired with Findeter resources after EC-LEDS finalized its support to evaluate project proposals applying for financing.

10. Monitoring and reporting mechanisms for low carbon resilient national achievements: Electricity sector and transport sector consultants produced the first proposal of indicators to track SMAP progress. This served the purposes of the MRV system and the possible work to be done in the Intended Nationally Determined Contribution(INDC).

11. The INDC official process and support started with the consultants analysing potential short-term measures up to 2020 and beyond. This feed into the information to calculate the real potential of the action based on political feasibility and timing in implementation. Several coordination meetings with MADS took place during 2014 to initiate the strategic discussions about the INDC.

12. Leveraged Funding: 14M Euros were awarded to the Colombian Government for the Transit Oriented Development NAMA with the technical support and leadership of the EC-LEDS consultants in the Ministry of Transportation. $3M USD were awarded to the transport sector as well under the partnership for market readiness for initiatives that include the transport sector.

Component 2. Low carbon resilient cities and regions: from design to implementation

During 2014, LCRD conducted several scoping missions to various cities in Colombia to identify mitigation and adaptation opportunities, and interest from local authorities and stakeholders. After presenting the results of the scoping missions, the LCRD Program and USAID selected the cities in which to work.

Three cities (Riohacha, Valledupar, and Pasto) and one Department (Huila) were selected in September 2014 according to the following criteria:

- Institutional support for climate change interventions;
- Mitigation potential (in all sectors);
- Existing climate change mitigation and/or adaptation priorities identified or in the process of being identified;
- Clear climate stressors affecting the city today;
- Climate stressors fully or partially identified for the city or part of the city;
- Some level of technical capacity to design, implement, and monitor projects; and
- Contain at least 100,000 habitants and less than 1,000,000.

Examples of the chosen locales are listed below.

Pasto

In Pasto, the first selected city, LCRD supported the design of Avenue 27, a central transit artery. Plans for its modernization have been on the local government's agenda since the last administration. The new plans focused on improving public space, including a public transit exclusive lane, comfortable bike and walkways, and a linear green corridor along the avenue. In addition, it included specialized design to avoid flooding and water capture in underground reservoirs that could be used to irrigate the green corridor in the dry months.

Huila

After completing a combined participatory and technical process that started in 2012, The Climate Change Plan Huila 2050 was launched in June 2014. The Plan Huila has 5 key strategic axes with water resources as the main element to link climate action in the Department. The main axes and support were:

1. **Smart water management**: During 2013 and 2014, USAID, through SEI environmental supported capacity building efforts through the WEAP hydrology models that incorporated climate change scenarios into water management and planning in Huila. This initiative delivered specific results for selected basins.
2. **Agriculture and food security**: Coffee is one of the main crops in Huila. LCRD supported the sharing of good "climate smart" practices in the region surrounding Pitalito through a climate analysis, production analysis, and resource use.
3. **Resilient surroundings**: According to the Vision of the Plan 2050, all municipalities in Huila will incorporate climate change considerations in their development plans. LCRD supportd the municipality of Pitalito in identifying actions through a route of change process to gradually respond to this goal.
4. **Governance**: During 2012 and 2013, USAID supported the creation of the climate change council in Huila. LCRD supported the process of consolidating the climate change council through: 1. Supporting engagement from the private sector, 2. Strengthening the link between the CAM and Gobernación, and 3. Providing technical inputs to the climate change council through trainings and presentations from national level entities.
5. **Finance**: USAID supported an analysis of possible financial sources to implement Plan Huila 2050

EC-LEDS Indicators

	Major Milestones	
	2014	**Results Fiscal Year 2014**
Subcategory		
National and subnational low emission plans (including sectorial)	1. Three SMAPs approved by sectorial Ministries as a result of USG assistance, completing the LEDS prioritization process at national level	Three SMAPs were approved as a result of USG assistance - electricity, oil and gas, housing. These added to the ones approved in 2013 solid waste, transport, and waste water.

	2. One city designs a mitigation measure prioritized in the SMAPS for implementation or incorporates it in their planning instruments, contracts, or programs. As a result of USG assistance, mitigation measures prioritized at national level are successfully transferred to the regional/local level through planning instruments or project design for implementation.	In the city of Pasto, the Design of Avenue 27 was awarded. This design included a bike lane in a main road in the city and public transportation infrastructure.
	3. Two NAMAs with a mitigation potential of approximately 13 MtCO2 in 10 years are designed in transport and energy sectors as a result of USG assistance	Off -grid Renewable Energy NAMA first draft completed. Support also provided for the design of public lighting NAMA from Findeter.
	4. Number of institutions (public and private) with improved capacity to address climate change as a result of USG assistance. (target 29)	FINDETER, Alcaldia de Monteria, Alcaldia de Pasto, ANDI, Ministry of Mines and Energy, Ministry of Housing, Ministry of Agriculture, Ministry of Industry, commerce and Tourism, Ministry of Transport, Ministry of Environment
MRV systems (including GHG inventories)	1. One sector with a set of key SMAP tracking indicators designed as an input and incorporated in a pilot centralized system as a result of USG assistance	Two sectors, electricity and transport, have the first set of key indicators to track the SMAP, working on the link with the centralized system
Enabling laws policies and regulations	1. One sectorial policy or regulation prioritized in the approved SMAPs will be proposed to the Consejo Nacional de Politica Económica y Social (CONPES) for approval as a result of USG assistance	Draft policy under review by DNP and Ministry of Transport integrating all consultancies
Finance	Investment leveraged in U.S. dollars, from private and public sources for climate change as a result of USG assistance. (target 14,000,000)	$23M USD: $10M USD were awarded as a credit through the NAMA facility to the Colombian Government for the Transit Oriented Development NAMA with the technical support and leadership of the ECLEDS consultants. $3M USD was awarded to the transport sector as well under the Partnership for Market Readiness.

Enhancing Capacity for Low Emission Development Strategies (EC-LEDS)
Annual Report FY13

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1. BACKGROUND

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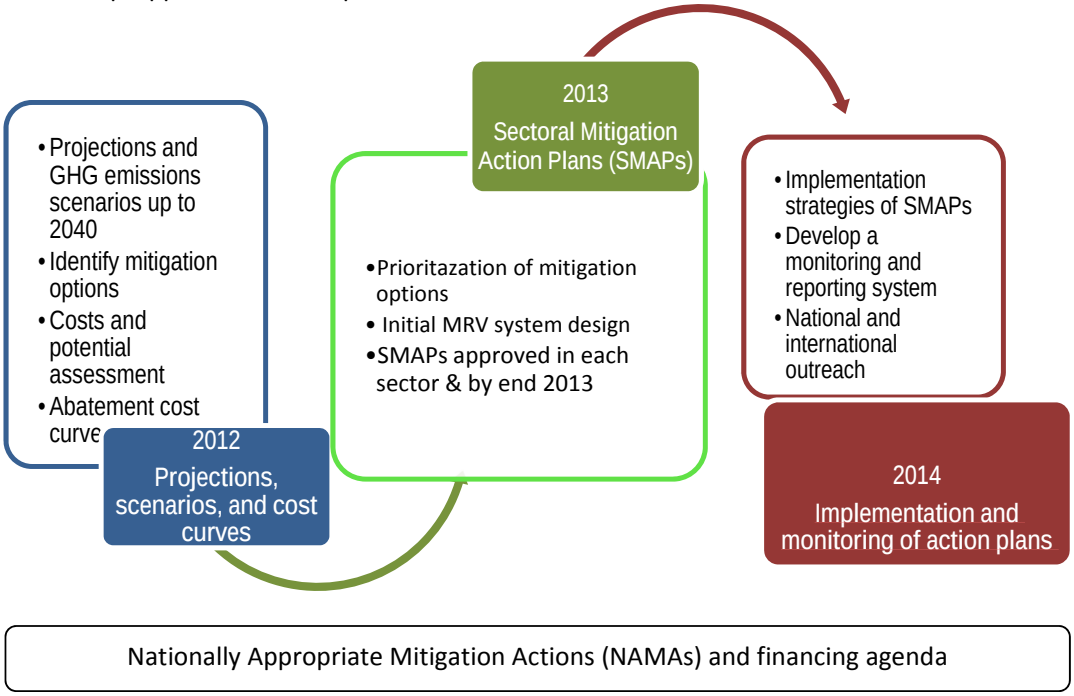
The strategy seeks to: 1) identify and evaluate actions to prevent the rapid growth of GHG emissions as sectors grow, 2) develop sectoral action plans for climate change mitigation as set out in the National Development Plan 2010-2014, and 3) create or promote implementation tools for these plans.

In 2010, a high level meeting took place with Ministers and Viceministers from the different sectors engaging in the process as a first step to guarantee political involvement. The strategy was set up/approved in three phases as follows:



The process goes along with the formulation of early Nationally Appropriate Mitigation Actions (NAMAs), which are identified by sectors before having a complete overview of the whole mitigation potential in the sector or those that initiated before the ECDBC started. The three phases are then based on the following components:

1. Analytical and research
2. MRV
3. Socialization and outreach
4. Implementation

<u>Sectoral Mitigation Action Plans (SMAPs)</u>

Each Ministry, supported by the MADS and CLCDS technical team, is in the process of defining its SMAP by prioritizing different policies, programs, and mitigation actions that will help reduces emissions. To facilitate the process, working groups were crated with different experts in each field that analyzed the identified options' alignment with sectoral and national development priorities, and delivered a first version of the prioritized policies, programs, and mitigation actions that comprised the SMAPs.

A SMAP is defined as a set of NAMAs, programs, and policies that aim to reduce greenhouse gas emissions against a projected emission baseline in the short, medium, and long term. SMAPs are an opportunity for matching the identified mitigation actions to Colombia's development goals and generating well-structured sectoral plans that not only prioritize the sector's efforts in mitigation, but also envision the roadmap needed to follow through up to implementation.

SMAP Implementation Strategies

SMAPs require the design or modification of policies and programs/enabling actions and fiscal tools, financing plans, changes in regulations, funding, and institutional arrangements for implementation. Although these additional actions will be worked into the SMAPs, it is important to clarify that their early design phase, which took place during 2013 aren´t intended to develop these actions in detail, but focus on the prioritization of mitigation options. During 2014, the CLCDS will focus its work on the design of these implementation strategies.

The aim of the SMAPs is to clearly identify sectorial mitigation priorities and their means of implementation, in order to facilitate their integration into sectorial planning and the National Development Plan for the next government.

2. PHASE 1. PROJECTIONS, SCENARIOS, AND COST CURVES/2012

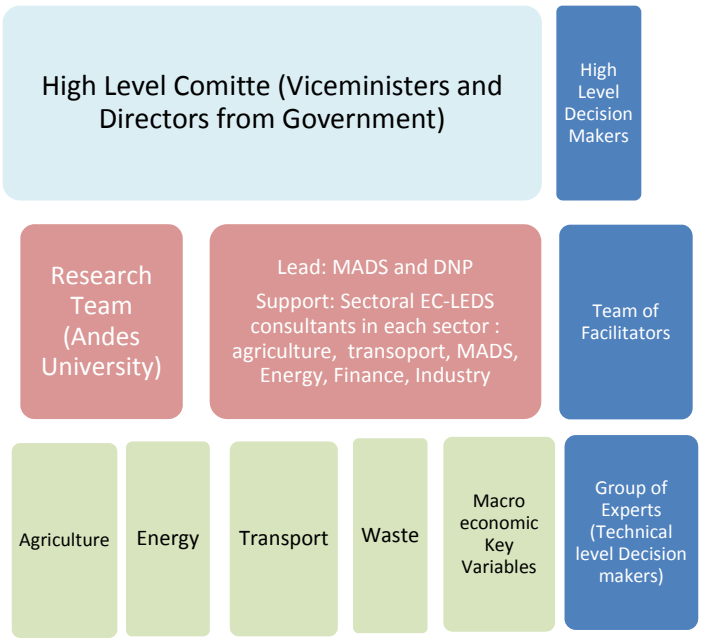
Institutional Arrangements for the Process In Phase 1

The process was designed based on a consultative approach. The first step was to present and consult high level stakeholders including Ministers, Viceministers, and CEOs from relevant companies, Directors from sectoral associations to get their approval and start the process. This first meeting was fairly open to relevant stakeholders, but by 2014 decisions on the SMAPs and priorities will be a smaller group of Ministers and Viceministers and a few private stakeholders. This is what has been called the high level committee.

The team of facilitators was integrated by Andes University, acting as the research unit, the climate change division from the MADS and the environmental division from DNP. Their tasks included all the arrangements to get contracts, planning the methodology, facilitate information gathering, plan all meetings, select experts for each group and guide and register all discussions during the meetings. EC-LEDS (USAID financed) sectoral consultants embedded in the Ministries were support facilitators but were also part of the expert groups.

A group of experts per sector was conformed according to their expertise, knowledge and influence in the issues to be discussed in each sector. Public and private experts were invited to contribute in their personal capacity and expertise rather than representing an institution. Four meetings or SBT (scenarios building teams) took place in 2012. Some sectors required separate smaller meetings such as agriculture to address specific issues or needs.

In terms of institutional arrangements, the project was organized in the first phase as can be seen in the chart below.



Process In Phase 1

The process was based on the South African experience through the methodology and guidance from the MAPS project (Mitigation Actions Plans and scenarios) supported by CIFF through South North. This phase started with the research unit making assumptions and projections of GDP and population for each year until 2040. This process was coordinated with the DNP and with information from National Statistics Department (DANE). Sectoral growth rates were also estimated. This was presented during the first SBT to receive feedback from stakeholders. In SBT 2, GHG emissions projections were presented to the group of experts. During SBT 3, a preselected group of mitigation options were presented and feedback on other measures not considered was requested. During this meeting, a qualitative assessment exercise related to each measure on possible benefits was carried out. Finally, in SBT4, all adjustments to the abatement curves, mitigation measures, and costs were presented and agreed as final outcomes.

Results from Phase 1

Through the process described above, researchers and sectoral experts, agreed on GHG growth projections and baselines, mitigation options, and abatement cost curves for those options in the energy, transport, agriculture, waste, and some preliminary results in the industry sector. At the same time, a study from the DNP with the World Bank and USAID EC-LEDS support analyzed selected options for the agriculture, forestry, energy, and transport sectors in terms of their costs and benefits, and where possible, the impact on macroeconomic variables.

Macroeconomic

A conservative scenario was used for GDP and population growth. Those two variables were used to build the emissions scenarios projections in each sector.

Scenario 2. Conservative Scenario. GDP Growth used in projections.

Year	Average Annual GDP Growth	Per capita annual GDP Growth
2010-2015	4,22%	3,1%
2015-2020	4,17%	3,1%
2020-2025	4,05%	3,1%
2025-2030	3,98%	3,1%
2030-2035	3,90%	3,1%
2035-2040	3,72%	3,1%

Source: ECDBC first report for SBTs

EC-LEDS financed an input study developed by the World Bank, which led to the first attempt to link emissions reductions with the general equilibrium model of the country. The study first estimated costs and valued benefits of implementing selected measures in the transport, agriculture, energy sectors.

Agriculture - LULUCF

Supported by one EC-LEDS consultant.

The sector represents the highest emissions share in the country through 2004 as a result of cattle and land use change. The sector expressed some concerns about using international emission factors. The impact of using possible national emission factors is yet unknown. In fact, a preliminary exercise carried out by Andes University showed an increase rather than decrease in projections in some cases. The ECDBC took note of such concern and tried to respond to it. But at the same time, it was important to show co-benefits of the measures rather than focusing the discussion on mitigation potentials. One step forward to show such cost-benefit analysis was the World Bank study which analyzed costs and benefits of some measures in the sector. The sector needs to realize that the number in projections is relatively important when compared to others, but at the same time has one of the most promising mitigation potentials and implies many co-benefits through implementation of measures. There was also a need to work on how to include regional land use analysis in the mitigation options.

Transport

Supported by four EC-LEDS consultants.

The most active sector in the ECDBC and one with fastest growing emissions. As expected, the most challenging issue for the sector is information for the mitigation measures. Many measures are related to local planning and behavioral changes (assumptions about increase of public transport use for instance). From the process, it was evident that the sector must analyze and work on:

1. Linking the sub-national and national efforts and planning agendas. How to link local cities planning for transport infrastructure? It involves POTs (territorial planning instruments) and local authorities.
2. Possible information improvements from the local to the national level to address those challenges and guarantee an effective monitoring and reporting system. Eventually, this will result in measuring the effect in GHG emission reductions and benefits monitoring.

3. On the institutional side, there needs to be a thorough assessment of institutional capacity to address all NAMAs and implementation of the SMAP and how to distribute that among national and local stakeholders.

Energy

Supported by two EC-LEDS consultants. One working for the Ministry of Mines and Energy (MME) and one working for Mining and Energy Planning Unit (UPME).

The sector has been involved both from the public and private perspective. The sector wants definitely to focus on energy efficiency rather than renewable energy options. However, the sector agreed on the possibility of having an increase in thermal generation by 2020.

The World Bank study and the Andes Study were developed by the same consultant so there are strong recommendations to include energy efficiency measures and renewable energy options from the point of view of stakeholders and the cost/benefit analysis. Under this scenario, there needs to be an analysis on how the sector is planning to achieve its National Program for Rational and Efficient Use of Energy (PROURE) goals in energy efficiency and renewable energy. With regards to energy efficiency, institutional configurations should be carried for each measure. The potential was shown to be relatively good, but institutional implementation would be challenging. An additional EC-LEDS analysis was performed by one of the consultants, which addressed the question of how climate change and variability has affected the hydroelectricity generation in the past, and how, according to the country`s climate change scenarios, GHG emissions would be affected (increased or decreased) if hydro generation changes due to climate change.

Housing

Supported by one EC-LEDS coordinator in strategic and analytical approach

This sector was analyzed in a separate study from the one in Andes. The main results showed that the information to build the MAC curves was poor and inconsistent. Energy efficiency measures were identified and quantified, but materials and design options have very poor information to try to build an abatement cost curve. There is a definitive problem related to information, which makes it difficult to make a case for the public sector. However, the private sector has been working actively in low carbon related research, which makes a case for possible private investments. Building codes and planning housing projects are disconnected from what the private sector and the public sector priorities. As in transport, local authorities have a say in planning so this coordination of local and national measures or strategies is relevant. Therefore, the sector needs to work on:

1. Information flows to establish potential and impact of mitigation measures.
2. Unifying interest from private and public stakeholders for low carbon development.
3. Coordination between national and regional or local planning and building codes. Not necessarily should be national but there needs to be further work.

Commercial Buildings

An abatement cost curved will be developed for this sector with support from ABT through the AILEG USAID initiative. This study will be performed in coordination with Andes University.

Industry

Supported by one EC-LEDS consultant.

Information availability was the challenge in this sector. Energy consumption public entities reporting differed from the private representatives reporting. This participatory process helped to understand that what was thought to be official data is not always accepted by private stakeholders. The sector wants to work on low carbon analysis, but they will not

commit to a mitigation plan unless the information and analysis for their sector is very robust and clear. So there needs to be a work on:

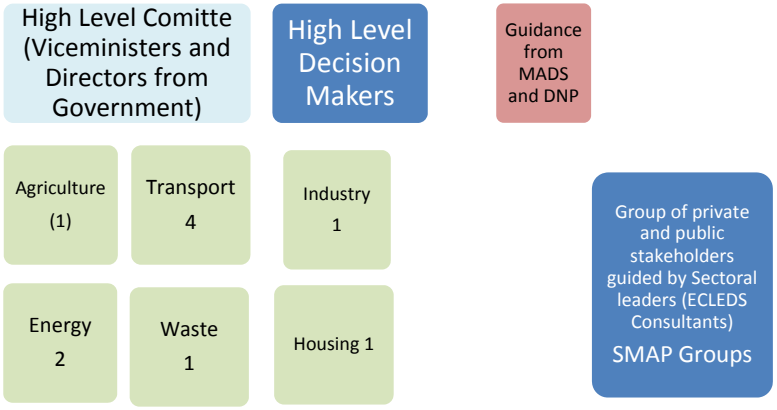
1. Engaging stakeholders to address concerns from the sector regarding information and ways to solve it.
2. Mitigation potential analysis with information agreed from the private and public stakeholders.
3. Meetings to agree on that information, projections and mitigation measures.

Macroeconomic

Linking sectoral bottom up information used for the abatement cost curves, which is at different levels of disaggregation with the general equilibrium model, and understanding the aggregate national potential is the key challenge in this macroeconomic process. The World Bank (USAID financed) study started this approach analyzing possible impacts of implementing selected mitigation measures in GDP and employment. The Clima Cap/LAMP initiative from the USG supported this exercise.

3. PHASE 2. SECTORAL MITIGATION PLANS, FINANCIAL AGENDA, AND NATIONAL CLIMATE CHANGE SYSTEM (SISCLIMA)

Phase two, as outlined in the first graph of this report, focused on developing the SMAPS. It started in mid-January 2013. The process of developing the plans was a responsibility of the EC-LEDS consultants in each Ministry. They worked together with the MADS through the UNDP projects MAPS/LECB and USAID EC-LEDS Coordinator. Sectoral plans were sector specific, but in general terms included policies, programs (framed or not as NAMAs), and enabling instruments for low carbon development. In terms of institutional arrangements, the project was organized in the second phase as can be seen in the chart below.



- **The numbers indicate the consultants supported by EC-LEDS in each sector**

MRV

Phase two also started analyzing how to establish a robust monitoring and report system for the actions or measures established in the SMAPs. The first part analyzed institutional arrangements and current barriers on information flows between institutions in each sector. The second part, based on results from part 1, involved the implementation of improvements to information systems relevant to the ECDBC and the SMAPs. All EC-LEDS sectoral consultants supported the analysis and made comments to the consultancies performed for a centralized MRV system carried out by MADS.

Financing Agenda

Supported by one EC-LEDS consultant based in the DNP.
A financial agenda was developed during 2013. This was based on the preliminary needs that the SMAPs will identify but at the end tried to address the national budget planning process to guide investments towards low carbon interventions. This helps also identifying what is needed in terms of international finance support.

Industry
Supported by EC-LEDS coordinator in advising the technical modelling team
A more detailed abatement cost curve for selected industry sectors was developed in phase two with Andes University. The selected sectors include: cement, iron and steel industry, pulp and paper and food industry. Those curves were finalized by October 2013.

SISCLIMA
Supported by EC-LEDS coordinator in MADS
The Colombian Government approved in 2011 the SISCLIMA through a policy document as the institutional arrangement for all climate change related issues. The System Organization in terms of its members, functions, rules, and regulations needed to be adopted through a Decree to be developed by the MADS.

Process to Develop the SMAPS
Each Ministry, supported by the MADS and the ECDBC team, defined its SMAP. The ECDBC team agreed to prioritize the actions taking into account the following criteria. Each prioritization criteria would have its own weight in the SMAPs design process. The ECBDC team proposed the weight showed below; however, each Ministry has the decision to maintain or modify them.

1. **Contribution of the mitigation actions to the sectoral development priorities:** This criteria was analyzed through a set of surveys applied to sectoral experts. 45%
2. **Mitigation potential:** The information was the result of the abatement cost curves both from DNP/World Bank Study and Andes University Study. In the industry sector, it is currently under development. Results from the energy sector were refined from July through October.
3. **Implementation costs:** The information was the result of the abatement cost curves both from DNP/World Bank Study and Andes University Study. In the industry sector, it is currently under development. 10%
4. **Co-benefits perception and actual data:** Information resulted from the scenario building teams during 2012 and other complementary studies 10%

The SMAPs were developed and approved in specific sectoral meetings with the inputs outlined in 1 to 4 above. Sectoral EC-LEDS consultants led the process by providing Directors and Viceministers the information needed for decision making.

RESULTS TO DATE 2013						GOALS FROM SEPTEMBER THROUGH DEC 2013
MILESTONE	**2013 Final Expected outcome**	**FEBRUARY - MARCH**	**APRIL -JUNE**	**JULY - AUGUST**	**SEPTEMBER - OCTOBER**	**NOVEMBER - DECEMBER**
SMAPs	6 SMAPs in total approved by each sector: transport, energy, agriculture, industry, mines, waste	1. 5 MAC Curves finalized. Analysis of abatement cost curves resulting from World Bank studies and Andes study 2. Surveys designed to address criteria of alignment with sectoral growth priorities 3. Internal meetings to design the prioritization process	1. Apply surveys to more than 80 sectoral experts 2. Research and analytical process to address information gaps for SMAPs	1. First meetings to prioritize actions in waste, transport and mines 2. Abatement cost curve for the building/commercial sector finalized and analyzed by the housing consultant	1. Four (4) SMAPs approved by the sector: transport, waste, mines, energy 2. Abatement cost curve in the industry sector developed 3. Abatement cost curve in the agriculture sector refined 4. Abatement cost curve in the energy sector refined	1. Two (2) SMAPs approved by the sector: industry, agriculture
NAMAs	1. 18 NAMAs identified 2. Four NAMAs designed presented to the national authority MADS.	1. The waste sector and transport consultants prepared NAMAs for the NAMA Summit in Denmark. Both: Transit Oriented NAMA and Waste NAMA 2. First version NAMA template Off grid zones 3. Meetings to involve all relevant stakeholders in the refrigerators substitution NAMA. First	1. TOD NAMA and Waste NAMA presented in Denmark by Viceministers. The Waste NAMA received a preliminary approval of 20MUSD. 2. First draft of Off-grid zones NAMA template	1. Off-grid zones NAMA idea template presented to MADS 2. Four (4) new NAMAs identified	1. Freight NAMA idea template presented to MADS 2, Two (2) new NAMAs identified	1. Waste NAMA designed 2. TOD NAMA designed 3. Freight NAMA designed 4. Off-grid zones NAMA designed 5. Six (6) new NAMAs identified

RESULTS TO DATE 2013						GOALS FROM SEPTEMBER THROUGH DEC 2013
MILESTONE	**2013 Final Expected outcome**	**FEBRUARY - MARCH**	**APRIL -JUNE**	**JULY - AUGUST**	**SEPTEMBER - OCTOBER**	**NOVEMBER - DECEMBER**
		pilot designed. 4. Freight transport NAMA design process started 5. Electric vehicles pilot NAMA component discussion	3. First draft of Freight NAMA template			
SISCLIMA	Decree on rules and regulations for SISCLIMA approved by all Ministries.	1, First version of the Decree approved by MADS and DNP	1. Official presentation of the Decree to the legal Directors of all Ministries involved in the ECDBC. 16 June. Preliminary approval.	1. Adjustments to the Decree. 2. Preparation of the National Environmental Council where the Decree is expected to be approved by all Ministers/Viceministers	1. National Environmental Council. Decree approved.	1. Draft rules and regulations of finance subcommittee or working group