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ACHIEVEMENTS AND BENEFITS OF INTEGRATED NATIONAL ADAPTATION PROJECT (INAP)

COLOMBIA

Bonn - Jun 5th 2008
World Bank

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COLOMBIA IS BEING THREATENED BY ...

INCREASING TEMPERATURE:

(According to RCLIMDEX, last 30 years until 2003).

Tendency of increase:

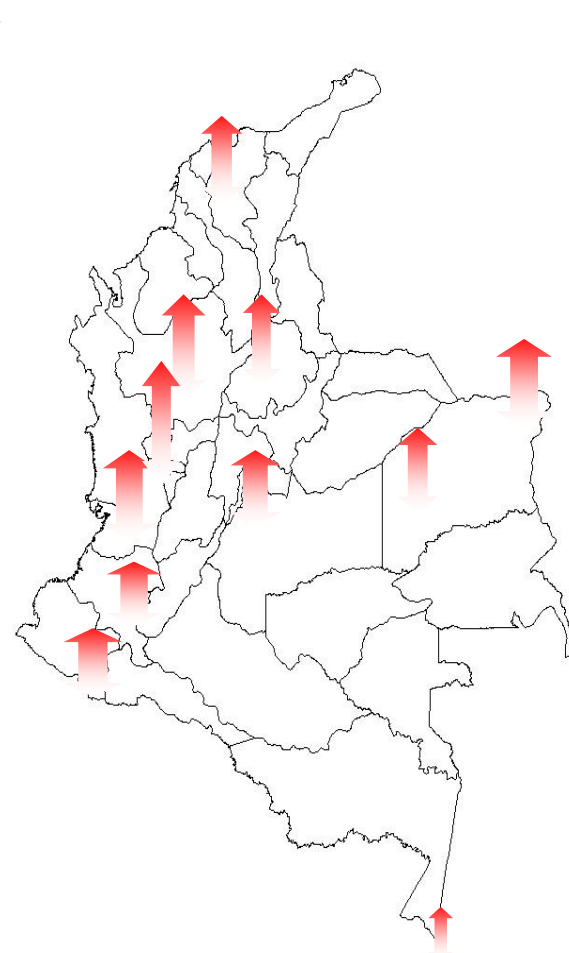
In Colombia: +0.2 to /decade

In major cities:

Barranquilla +1.0 °c/decade

Bogotá +0.5 °c/decade

Cali +0.2 °c/decade





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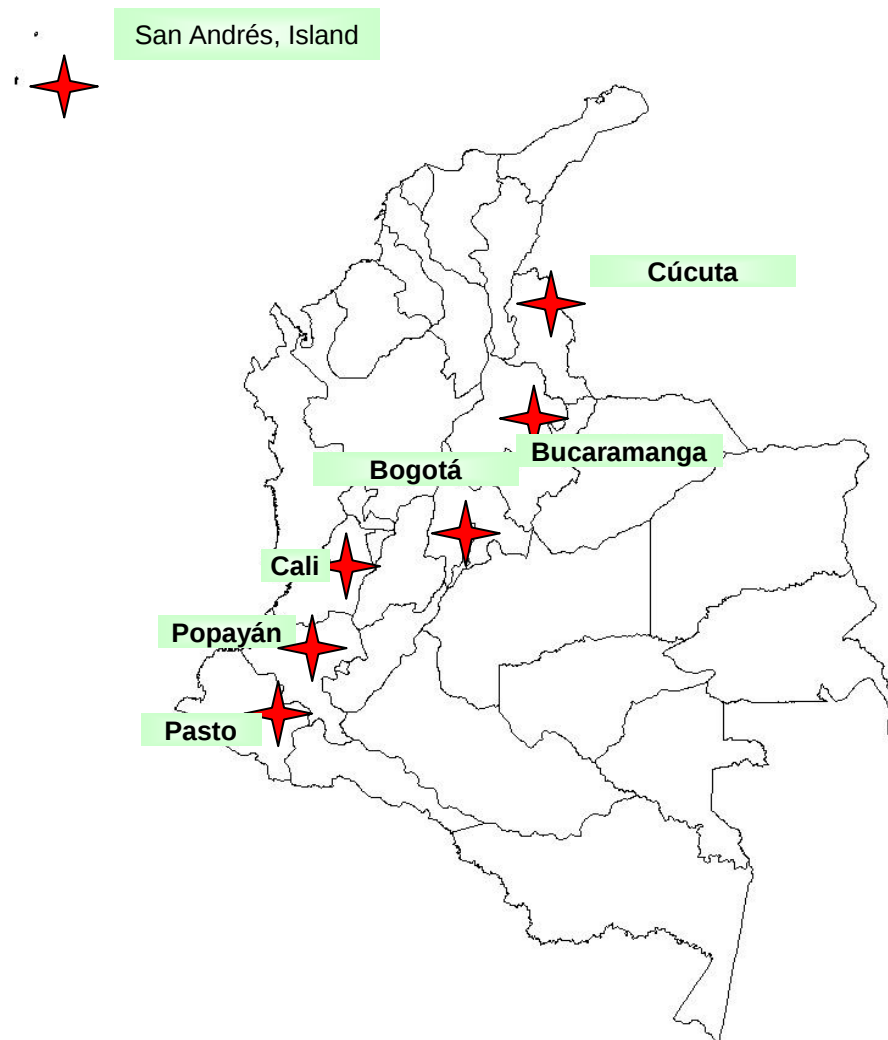
VARIABILITY OF PRECIPITATION

(According to RCLIMDEX, last 30 years until 2003).

Annual Accumulated Precipitation :

Stations with Negative Tendency: ★

Reduction on Precipitation : - 4%/year





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INCREASING SEA LEVEL:

(According to Invemar- Institute).

3 - 5 mm/year on Pacific Coast

1 - 2 mm/year on Caribbean Coast



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IMPACTS TODAY

(According to RCLIMDEX, last 30 years until 2003)

INCREASING EXTREME PRECIPITATIONS: ●

Tendency: days/year with extreme precipitations (above average)

Causing: Strong floods, Strong slidings and Avalanches.

May- Jun 2008-First Rain Season: the levels of main rivers (Magdalena and Cauca) surpassed the historical records. 40 dead people and 176.000 affected.

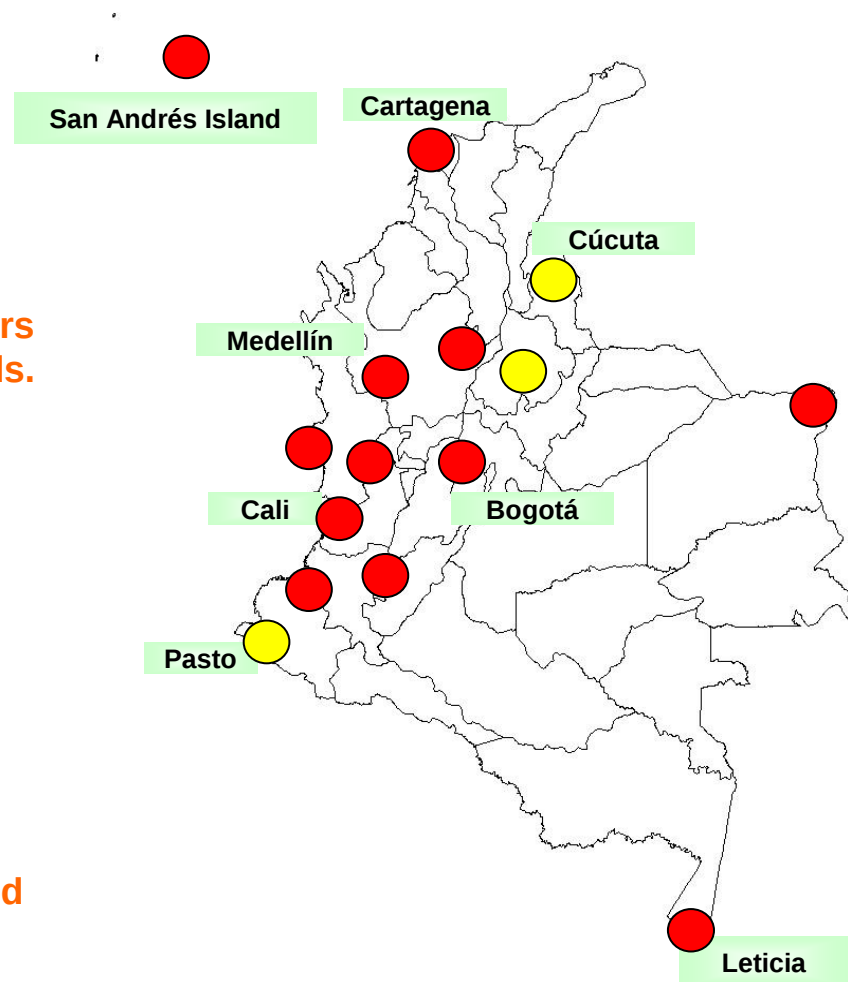
2003-2007: 3 million people affected. Expenditure: US\$35 millions (1)

Others: Storms and hail storms in unusual places and harvest losses.

INCREASING EXTREME DROUGHTS: ●

Tendency: days/year with extreme precipitations (below average)

Causing: Supply Shortage, Harvest loss, Soil damages, and Biodiversity loss.





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LOSS OF HIGH MOUNTAIN ECOSYSTEM

GLACIERS MELTING:

Rate of reduction 2 - 3 % area per year. **In 2030 total loss of all the Colombian glaciers.**

ECOSYSTEM LOSS: PARAMO (MOORLAND)

Paramos: main regulators of hydric resources
in Andean region.

43% *Paramos* are in Colombia
(25% of the country's population
depends on Chingaza *Paramo*).

Threat:

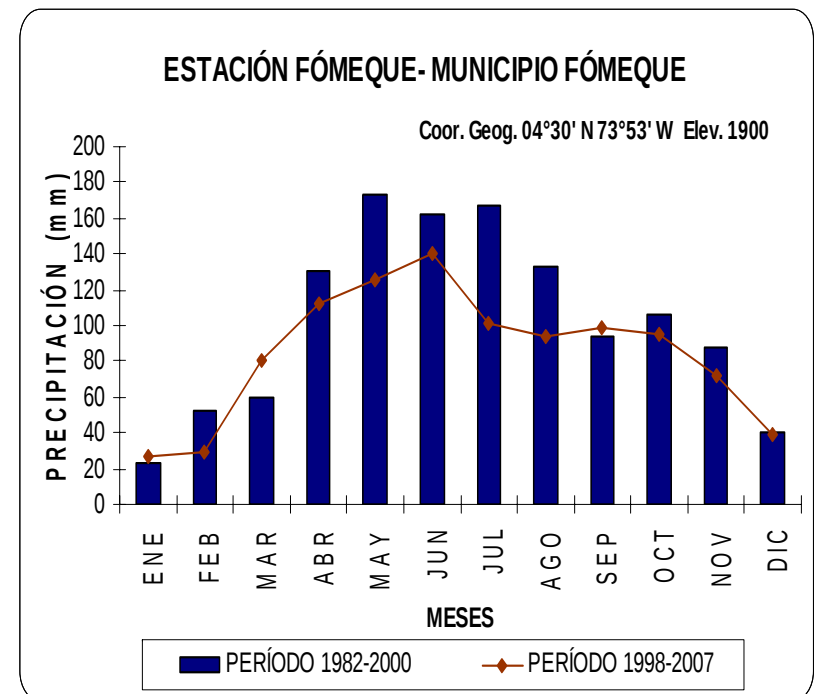
Increasing average Temperature :

0.2 - 0.3 °C/decade

Reducing monthly Precipitation :

2 - 3 mm / decade

Precipitation Index I (%) for a
Chingaza Ecosystem Station





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INCREASING SEA LEVEL:

**Continental Caribbean Coast and Caribbean Insular areas
are being affected by:**

- Intrusion of sea-water in groundwater.**
- Erosion.**

HURRICANES AND STORMS :

**Rate: Each year a high category hurricane pass very close
to the continental caribbean coast (Iván 2004)**

**Each year San Andres and Providence islands
are affected.**



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INTEGRATED NATIONAL ADAPTATION PROJECT (INAP)

DESCRIPTION:



**Approved by the GEF Council in 2005 and effective in July 2006.
Duration of 5 years. Investment of \$15 million is required.**

**Funding of \$5.4 million is provided by GEF through the World Bank.
Colombia's contribution of \$7.4 million is in kind.**

Other Donors contributions of \$2.4 million, include Conservation International-Colombia- CI, the Meteorological Research Institute of Japan – MRI, and the International Research Institute for Climate Prediction (IRI)



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INAP SUPPORTS 4 MAIN COMPONENTS:

1st COMPONENT: MAKING AVAILABLE CLIMATE CHANGE INFORMATION.

OBJECTIVE:

To strengthen Colombia's capabilities to produce and disseminate climate information (useful for resource allocation and operational decision making)

GOALS: 2011 / IDEAM has strengthened capabilities to provide:

FORECASTS to improve resource management and conservation decisions in high mountain ecosystems.

CLIMATE SCENARIOS to develop ecosystem management plans, land conservation and adaptation options in highland moorlands (*Páramos*), insular and coastal areas.

WARNINGS for Malaria and Dengue diseases.





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ACHIEVEMENTS:

a) Colombia holds climate change scenarios:

1. Model Precis. Scenario A2 2070-2080 for the 24 climatic regions. Scale 25Km/25Km. Operating by Universidad Nacional.

2. Model Japan JMA_GSM. Scenario A1B 2090-2100.-Scale national 20Km/20Km. Operating by IDEAM. Advising by MRI Japan.

b) Skills enhancement. Complete staff of internal professionals (5 people) and external (1 person) working on this objective.

c) In process of acquisition, equipments for 157 Hydro Meteorological Monitoring Stations.

d) Implementation of Pilot Program for models WRF and CAM, and in process of acquisition machine of high performance (MAR) and equipment of storage.

e) Carry out of Iberoamerican Seminary of Climate Change Scenarios in Bogotá April 2008, supported by RIOCC and WWO.

NEXT STEPS:

- Installation of machine of high performance - MAR.

- Installation of equipments for 157 stations.

-To continue with scenarios modelling for specific areas of Health and High Mountain components and rest of areas (improvement of scales).

-To guarantee constant maintenance of monitoring stations network and data analysis.

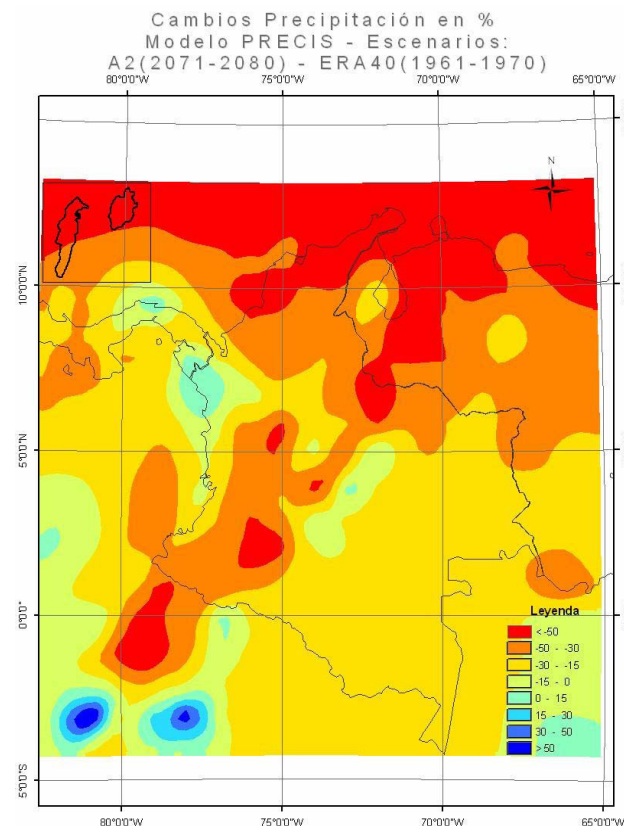
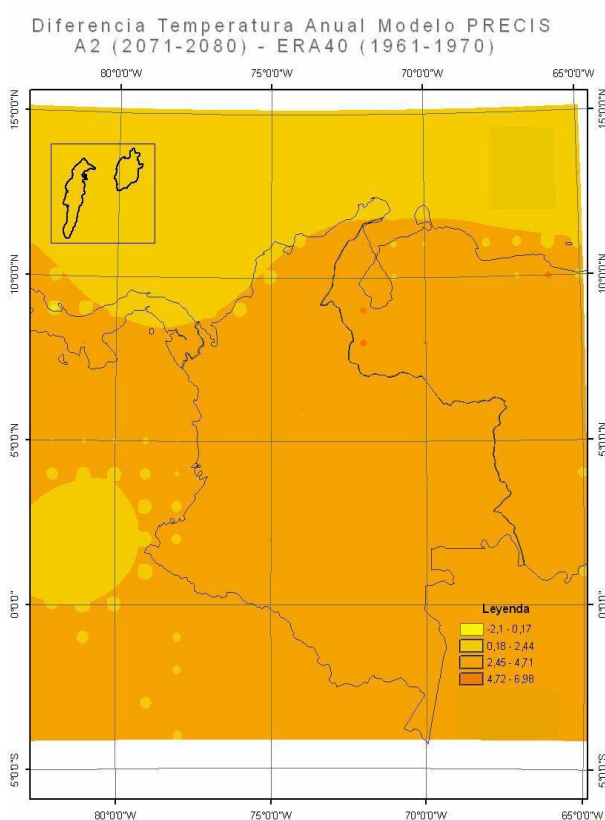


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COLOMBIA'S FUTURE CLIMATE SCENARIO A2 2070-2080 (PRECIS MODEL)

- Increase of Temperature 0.5 °C per decade
- Variability of Precipitation +/- 15% - 30% depending on region
- Sea level increase 40 cm in Caribbean coast and 60 cm in Pacific coast





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BENEFITS OF IMPLEMENTATION OF “MAKING AVAILABLE CLIMATE CHANGE INFORMATION”

10 engineers granted with specialization studies scholarships in Meteorology in the Postgraduate School at the Universidad Nacional de Colombia.

Colombia holds climate scenarios to develop ecosystem management plans, land conservation and adaptation options on highlands (*Páramos*), insular and coastal areas, and prevention plans of tropical vector-borne diseases.

Today these scenarios are the base of governmental plans and strategies to prevent and minimize the vulnerability and risks of sectors and public services (freshwater supplying, agriculture and energy) and strategic ecosystems (coral reefs and high mountain).



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2nd COMPONENT: ADAPTATION PROGRAM IN THE CHINGAZA AND LAS HERMOSAS MASSIFS IN THE CORDILLERA OF LOS ANDES.

OBJECTIVE:

To Conserve one of the most important natural areas of the Andean Region. Plays a key role in regulating 80% of water supply for over 8 million people (20% of the country's population).

Chingaza also enables synergies between this project and the Clean Development Mechanism Project of Santa Ana, already approved, which seeks to reduce greenhouse gas emissions from the power sector.

GOALS: 2011 / to support:

- Ecosystem planning and management seeking to maintain its high biodiversity assets.
- Conservation of potential for hydropower generation through adoption of measures to protect the Chingaza's watersheds.
- Adaptive land-use planning model seeking to reduce impacts from climate change on land degradation.
- Improvement of productive agro-ecosystems and reduction of their socioeconomic vulnerability to GCC impacts. At the end the project seeks maintenance of the current level of access to environmental services.





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ACHIEVEMENTS:

- Start of cycle of water and carbone modelling in micro-basin of Calostros (Chingaza) and river Claro in the Natural National Park of Los Nevados. (with Japanese Intl Cooperation)
- Installation of 2 new stations.
- Initiation of the characterization and diagnosis of the soil cover.
- The secondary schools network have included this program in their education plan.
- Community promotes agro forestry as a more resilient system to GCC than traditional agriculture.
- Agreement between IDEAM and EBB (water supply co) to carry out commitments.
- Joint of all governmental organizations around the project.
- Enhancement of community organization to formulate Land Use Plan of the basin of river Blanco with GCC impacts on high mountain ecosystem and adaptation measures.

NEXT STEPS:

- Formulation of the Restoration Plan, Conservation and Handling of the soil covers.
- Implementation of adaptation measures related with improvement of agro productive activities in the basins.
- Improvement on precision level on climate change scenarios.
- Improvement on methodologies for calculation of glacier melting impact on water supply.



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BENEFITS OF IMPLEMENTATION IN THE CHINGAZA AND LAS HERMOSAS MASSIFS.

- Strengthening of national, regional and local capacity** for developing adaptation projects.
- Social cohesion** around the project to formulate the land use plan. (very complex process).
- Foreign and local universities specialized on this subject are interested on investing funds. e.g. scholarships for native people
- Protection of natural and cultural heritage** (increasing interest on protection and research of pre-Columbian local culture).
- Minimization of forest fires** because of environmental school courses (this land has high level of risk) and, of course, costs of implementation of contingency plan.



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3rd COMPONENT: ADAPTATION MEASURES IN COLOMBIA'S CARIBBEAN INSULAR AREAS.

OBJECTIVE:

To support the implementation of physical adaptation measures in order to reduce the vulnerability of the Caribbean insular area, specially with regard to the changes in rainfall, temperature and sea-level rise.

GOALS: 2011 / to support:

- Implementation of GOOS (Global Ocean Observing System)-based monitoring stations in the Western Caribbean (complementing the regional network under CPACC)**
- Integrated Water Resources Management to enhance the availability of fresh water in the Caribbean insular areas (San Andres island)**
- Implementation of the marine protected areas system in the Seaflower Biosphere Reserve and the reefs Corales del Rosario, San Bernardo and Isla Fuerte, in order to contribute to the conservation of marine ecosystems.**
- Integrated Coastal Management to reduce the vulnerability of ecosystems, infrastructure and population living close to the coast. At the end the project seeks to maintain resilience of insular areas to climate impacts.**





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ACHIEVEMENTS:

- Incorporation of the Information related to adaptation in the plans of management of Protected Marine Areas of Colombia.**
- Strengthening of the network of oceanographic monitoring stations with the installation of 2 new stations (San Andrés and El Tesoro) in the south of the Great Caribbean.**
- Construction of the Integrated System of Water Fresh and System of Waste Water Treatment by sediment trap with anaerobic filter. Project executed by the native community with cooperation of local environmental authority.** It is related to rain harvesting of water supply system for a small community (25 families), that did not have piped water. In rain season the total capacity of supply is 5.700 liters /day and in drought season this source reaches for 10 days.
- Enhancement of community organization to implement the project.**
- Signalization of 20% of marine protected areas in the Seaflower Biosphere Reserve, for the conservation of coral reefs and associate species.**
- Finalization of the socialization process of adaptation measures in San Andrés Island to formulate the Public Policy of Population. (the most dense populated archipelago in the world).**
- Three Land Use Plans of micro basins for Providencia island, with information related to adaptation measures, to reduce the vulnerability of the island.**



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NEXT STEPS:

- Implementation of Global Ocean Observing System** based monitoring stations in the Western Caribbean (complementing the regional network under CPACC).
- To manage the integrated water resource to enhance the availability of fresh water in the Caribbean insular areas** (San Andres island), and incorporate it inside the Water Efficient Use System of the islands.
- To create an Aquifers Protection Program** in the islands.
- To continue with implementation of the marine protected areas system** in the Seaflower Biosphere Reserve and the reefs Corales del Rosario, San Bernardo and Isla Fuerte, in order to contribute to the conservation of marine ecosystems facing climate impacts.
- To carry out the Integrated Coastal Management to reduce the vulnerability of ecosystems, infrastructure and population living close to the coast.** At the end the project seeks to maintain resilience of insular areas to climate impacts.
- Research of climate change impact on marine and coastal ecosystem.**
- Incorporation of vulnerable areas due to sea level rise inside the Land Use Plan.**



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BENEFITS OF IMPLEMENTATION MEASURES IN CARIBBEAN INSULAR AREAS

- Social cohesion** around the project.
- Community empowered** to plan new goals.
- Reaching the hydric resources sustainability.**
- Minimization of pressure against the San Andrés aquifer.**
- Improvement of quality of life of 125 people (with new Integrated System of Water Fresh)**
- Strengthening of process of formulation of land use plans** of hydric basis of islands.
- Protection of social assets** and installed infrastructure.
- Protection of heritage or cultural habits.**
- Reduced public service costs for water supply.**



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4th COMPONENT: RESPONSES TO THE INCREASED EXPOSURE TO TROPICAL VECTOR-BORNE DISEASES (MALARIA AND DENGUE) INDUCED BY CLIMATE CHANGE.

OBJECTIVE:

The existing reactive system will be transformed into a highly proactive process, improving assessment of transmission risk nation-wide, thus facilitating the effective allocation of health resources and more cost effective preventive responses.

GOALS: 2011 / to support:

- a) Continuous integration of climatic, demographic, epidemiological and entomological data, to evaluate the local risk of dengue and malaria transmission in the face of global climate change.
- b) Determination of locally adapted preventive actions in the areas of vector control and prompt diagnosis and treatment, to prevent epidemics.
- c) Formation of inter-sectorial partnerships and community-based participatory strategies, in order to implement preventive actions.
- d) Implementation and continuous evaluation of an integrated malaria and dengue surveillance and control system.





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ACHIEVEMENTS:

- Design and implementation of evaluation of integrated warning and control System for Malaria with Early Warning System** (IRI Advise in evaluation of global circulation models and *near term climate change* models, and techniques of reduction of scale of models of global and regional circulation). **Warning models are in evaluation and operating in 4 major cities.**
- Joint between environmental and health public sectors** around this project.
- Implementation of workshops of prevention programs** and change of cultural habits related with tropical vector- borne diseases (dengue and Malaria)
- Evaluation of the local risk of dengue and malaria transmission** in the face of global climate change, by continuous integration of climatic, demographic, epidemiological and entomological data.
- Determination of preventive actions** locally adapted in the areas of vector control and prompt diagnosis and treatment in order to prevent epidemics before they appear.
- Continuous cooperation between IRI and INS** (Health National Institute)
- Continuous cooperation with the municipalities.**

NEXT STEPS:

- **Formation of inter-sector partnerships and community-based participatory strategies**
- **Implementation of continuous evaluation** of an integrated malaria and dengue surveillance and control system.
- Evaluation of the early warning models precision.**
- Implementation of local preventing measures.**



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BENEFITS OF IMPLEMENTATION OF COMPONENT “RESPONSES TO THE INCREASED EXPOSURE TO TROPICAL VECTOR-BORNE DISEASES”

Municipalities hold early warning monitoring system

Strengthening of public prevention policy in Colombia



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PRELIMINARY ESTIMATED COUNTERPART INVESTMENTS - April 2008

COMPONENT	Estimated Counterpart (US\$ million)	Real Counterpart (US\$ million)
C 1 : Making Climate, Climate Variability, and Climate Change Information available for adaptation measures and policies	2,1	0,4
C 2 : Adaptation program in the Las Hermosas Massif in the central range of The Andes	0,4	0,6
C 3 : Adaptation measures in Caribbean Insular Areas	1,1	1,2
C 4 : Responses to the increased exposure to vector-borne diseases (Malaria and Dengue) induced by CC₂₂	3,6	0,4
Total Baseline Cost	7,2	2,6
C 5 : Project Management Component	0,2	0,1



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STAKEHOLDERS

- **The Climate Information and the High Mountain components are being implemented by IDEAM, a national research institute which coordinates the Colombian Environmental Information System. It play a key coordinating role in the production of NC-2 and is leading the general techni-coordination of INAP.**
- **Conservation International (CI) is responsible of the the project's financial and administrative coordination.**
- **The insular component is implemented by INVEMAR and CORALINA:**
- **INVEMAR, also a national research institute, carries out basic and applied research on conservation and sustainable use of natural resources in Colombia's coastal and insular areas and oceanic ecosystems.**
- **CORALINA is the Corporation for the Sustainable Development of the Islands of San Andres, Old Providence and Santa Catalina. Its mandate is to manage the environment and natural resources so as to promote sustainable development in its jurisdiction.**
- **The INS - National Health Institute along with the Ministry of Health, coordinate the health component of the project.**
- **INAP's key interlocutors are local authorities, the scientific community, the local community, and ministry of Foreign Affairs , and many more..**



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GENERAL ACHIEVEMENTS

- M&E System is working and has the control of goals of each component
- National Policy of Climate Change (in elaboration) is based on INAP outcomes
- A lot of learnt lessons to share and to improve.
- The public organizations that are responsible for this project have improved their image and trust



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GENERAL NEXT STEPS

- Implementation of risk management culture on adaptation projects .
 - Strengthening of disasters prevention national system on climate change issues.
 - Enhancement of synergy between disasters prevention national system and local planning authorities.
 - Minimization of uncertainty on local climate change scenarios.
 - To cover other vulnerable sectors (Water supply system, agriculture, ecc)
 - Cost – benefits evaluation. Costs planning related to climate change.
 - Insertion of climate change issue in public policies. (e.g. National Hydric Policy)
 - Support to the creation of an outcomes evaluation and monitoring process.
 - Improvement of methodologies and Indicators of climate change impact, mainly on social and economic issues.
-
- **ADAPTATION MEASURES WORKSHOP**
 - Recognizing our commitment to these purposes, and to share our experiences and to reach the proper adaptation outcomes, with the support of the **Ibero-american Climate Change Offices Network (RIOCC)** Colombia will be carrying out a Workshop to evaluate the implementation of adaptation measures as an strategy to reach effectiveness.

YOU WILL BE VERY WELCOME TO COLOMBIA ON OCTOBER 2008 !!!!



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THANK YOU

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