International Network on Climate Change - INCA

Incorporation of climate change component at the National Environmental Planning in Bolivia.

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Outline

- **Introduction**
  - Aim of the presentation
  - About the Bolivian Environmental Planning
  - Social view of watershed and climate change
  - Political view of watershed and climate change planning
- **CC component at the Bolivian National Watershed Plan**
  - Current Situation
  - Follow up strategies
  - Verified methods
- **CC component at the Bolivian National Climate Change Program**
  - Objectives
  - Institutional Projects
  - Bolivian National Adaptation Mechanism
  - Project Adaptation of the accelerated glacier retreat in the Tropical Andes
- **Study areas proposals**
- **Acknowledgements**

Introduction

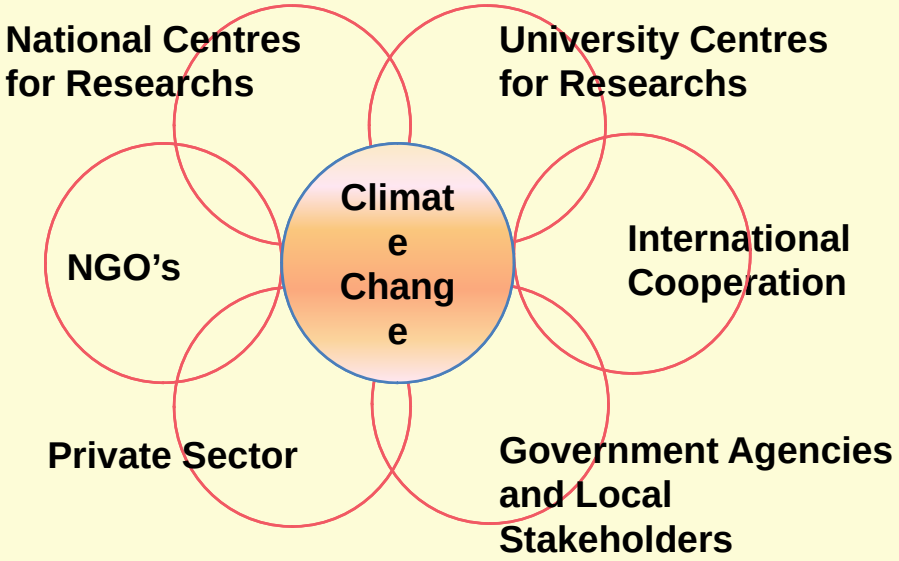
Introduction

Aim of the Presentation

To assess the policy making process and institutional opportunities in order to use the climate change information for water resources management and environmental planning in Bolivia.

Introduction

About the Bolivian Environmental Planning



	Water Resources and Watershed Integrated Management	Climate change adaptation in watershed
Knowledge	**Government Programs and Initiatives** Integration, critical analysis, new knowledge and projects. **PNC – PNCC**	
Politics		
Information		

PNC Plan Nacional de Cuencas de Bolivia – **Bolivian National Watersehd Plan**

PNCC Programa Nacional de Cambios Climáticos – **National Climate Change Pr**

Introduction

Social view about watershed and climate change

How to respect the vision of the indigenous communities and farmers of the tropical Andes, strengthen their identity, assert their rights and conserving water resources, given the effects of climate change?

Introduction

Social view about watershed and climate change

- **Increased number of projects prioritized by watershed communities that seek to reduce the effects of climate on agricultural production.**

- **Increased number of local governments that are interested in addressing climate change through the social management of watersheds.**

Introduction

Social view about watershed and climate change

- **Institutions working on the theme of watersheds have now better mechanisms to resolve conflicts over access to and use of water.**

- **Increased efforts on implementation of payment schemes for environmental services as a new form of institutional arrangement in the watershed management approach to adaptation to climate change.**

Introduction

Social view about watershed and climate change

Thematic / Component	Biodiversity	Water Resources	Production systems	RESULT
Vulnerability	Scenarios of impact on ecosystems (ecological niche)	Scenarios of impacts on water resources	Species production scenarios strategic	Integrated analysis of social and environmental vulnerability of the tropical Andes.
Cases Studies: Adaptation / Mitigation	Synthesis of the state of local knowledge in more detail in previous work intensive sites	Synthesis of the state of local knowledge in more detail in previous work intensive sites	Synthesis of the state of local knowledge in more detail in previous work intensive sites	Reading section of local experiences whose goal has been to respond to social and environmental problems related to biodiversity, provision and access to water resources and agricultural production. Recommendations and lessons learned for adaptation and mitigation.
Social Management	Analysis of models of local management	Analysis of models of local management	Analysis of models of local management	Analysis initiatives at the local level of organization of civil society for the management, and institutional responses of adaptation and mitigation.
RESULT	Vulnerability Analysis and Recommendations for Action	Vulnerability Analysis and Recommendations for Action	Vulnerability Analysis and Recommendations for Action	

Introduction

Political view about watershed and climate change planning

Governance effective adaptation and alliances between climate change networks

Develop a research network to improve government and institutional support, increase resilience to climate change and advocacy coalitions to form around the impacts of climate change on rural communities in Bolivia and the Andean region.

Topic I:

Creating a national - regional platform of knowledge and experiences on climate change.

Topic II:

Development of a range of services for the definition of adaptation strategies in the productive sectors.

Topic III:

Support participatory formulation of bioculture – social and economical policies regarding the current and future impacts of climate change in Bolivia and the Andean region.

CC component at the PNC

Bolivian National Watershed Plan

CC component at the PNC
Current situation

The PNC is a broad collaborative effort of multiple institutions and actors to achieve an instrument which implement a new type of social integrated water management, for a view responsible and sustainable management of natural resources in river basins in Bolivia.

?

Climate Change component is mentioned in several passages of the PNC, but it is not addressed in the context of detection extreme events, impacts, vulnerability, adaptation and mitigation, following the mold of IPCC. The topic of climate is only covered by a philosophical and political context, but not with scientific depth.

CC component at the PNC

Follow up strategies

How to insert the Climate Change component at the Bolivian PNC?

-CC component in the Bolivian Watershed Program Director / Project Guide.

-Consider basic information on climate threats and risks.

-Identification of climate threats by meteorological and appreciation of local knowledge.

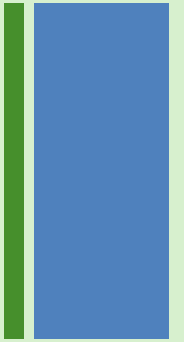
-Consider the factor-level climate and watershed sub-basins, knowing and studying the variability and CC, with emphasis on water balance, as an integrator of the temperature-precipitation interaction.

-Integration of water supply and irrigation sectors

CC component at the PNC

Verified methods

IPCC model for studies on climate change



Detection and diagnosis	**1 - To study variability in weather and climate in the country, using meteorological and hydrological extended registration periods. This demands a need for experienced scientific staff and free access to information.**
Attribution	**2-Once the CC indicators are identified, it will become more difficult to determine the causes. (natural?, human?)**
Impacts and Vulnerability	**3-Assess vulnerabilities and risks of different sectors of the country to climate change.**
Modeling and climate scenarios	**4-Knowing well 1, 2 and 3, we can create or apply proven climate models in the country and to work well in simulating the observed climate at present.**
Adaptation	**5-Defining levels of vulnerability, exposure and risk posed adaptation measures can not be applied if adaptation is not known vulnerability.**

CC component at the PNC

Verified methods

DETECTION AND ATTRIBUTION

Climate and hydrological records:

•Mínimum of 10 years
•Key variables: temperature, precipitation and extremes events
•Water balance (supply and water demand)

Meteorological and hydrological instruments for observation of variability of climate and flows.

•Creating a minimum meteorological network in the basin.
•Automatic meteorological and hydrological stations
•Training and capacity building for local weather observers

Information soils, native grasses, vegetation, erosion, agroforestry, etc. scale intervention in the basin.

•Diagnosis, baseline studies, monitoring, evaluation and monitoring.
•Scale information at the basin.

Information on soil and water pollution

•Identification of threats climatic and hydrological basin.
•Identification of patterns of erosion, flooding and natural hazards and human induced.

Mapping platform

•Thematic maps and vulnerability, risks, threats, climatic, hydrological and natural disasters.

CC component at the PNC

Verified methods

IMPACTS AND VULNERABILITY

Risk assessment for vulnerability analysis

•Identification of threats climatic and hydrological basin
•Identification of patterns of erosion, floods and other natural hazards
•Identification of anthropogenic influence on the generation of natural disasters
•Future projections of vulnerability on rivers

Generation of future climate scenarios

•Validation and calibration of global climate models (IPCC) and using regional climate information.
•Development of ability to use regional climate models to generate scenarios of future climate in Bolivia
•Training in regional modeling of climate change in Bolivian institutions
•Development of geo-referenced maps of future climate scenarios at the watershed level and national reading reports for easy understanding.
•Development of geo-referenced maps of natural vegetation in future climates at the watershed level.

CC component at the PNC

Verified methods

ADAPTATION AND MITIGATION

Adaptation measures for high risk areas

•Assessment and evaluation of adaptation and mitigation against climate change project for each component of PNC (water conservation, pasture management, training, etc.): Price per ton of carbon and valuation of environmental services.
•Hydraulic and agricultural use of water as possible to meet future demand assuming that this increase and less water resources available.

Mitigation strategies to reduce vulnerability

•Agro-ecological and economic zoning.
•Clean Development Mechanism, environmental services and REDD
•Reforestation with native species in areas where possible and necessary
•Recovery of pasture agroforestry systems.

CC component at the PNCC

Bolivian National Climate Change Program

CC component at the PNCC
Objectives

- **Reducing the vulnerability of regions through actions to implement climate change projects in the issues of adaptation, mitigation, research and awareness.**

- **Strengthening research capabilities for the development or adaptation of techniques and technologies to their own answers to climate change.**

- **Training, awareness and education to different parts of the country on the issue of climate change.**

CC component at the PNCC

Institutional Projects

1992	Signing of the Framework Convention on Climate Change United Nations CREATION OF PNCC
1994	Ratification of the UNFCCC
1999	Ratification of Kyoto Protocol
2000	Realización de Inventarios de Gases de Efecto Invernadero (GEI) 1990 – 94 – 98 - 2000
2000	First National Communication
2002	National Implementation Strategy of the UNFCCC
2004	Implementation of Five-Year Action Plan
2007	**Mecanismo Nacional de Adaptación al Cambio Climático MNACC -** Mechanism for Adaptation to Climate Change
2008	**Programa Regional Andino Ante la Retracción Acelerada de los Glaciares PRAA -** Andean Regional Program to the Glaciers Shrinking Fast Track
2009	**Second National Communication / Inventarios de GEI 2002 y 2004**

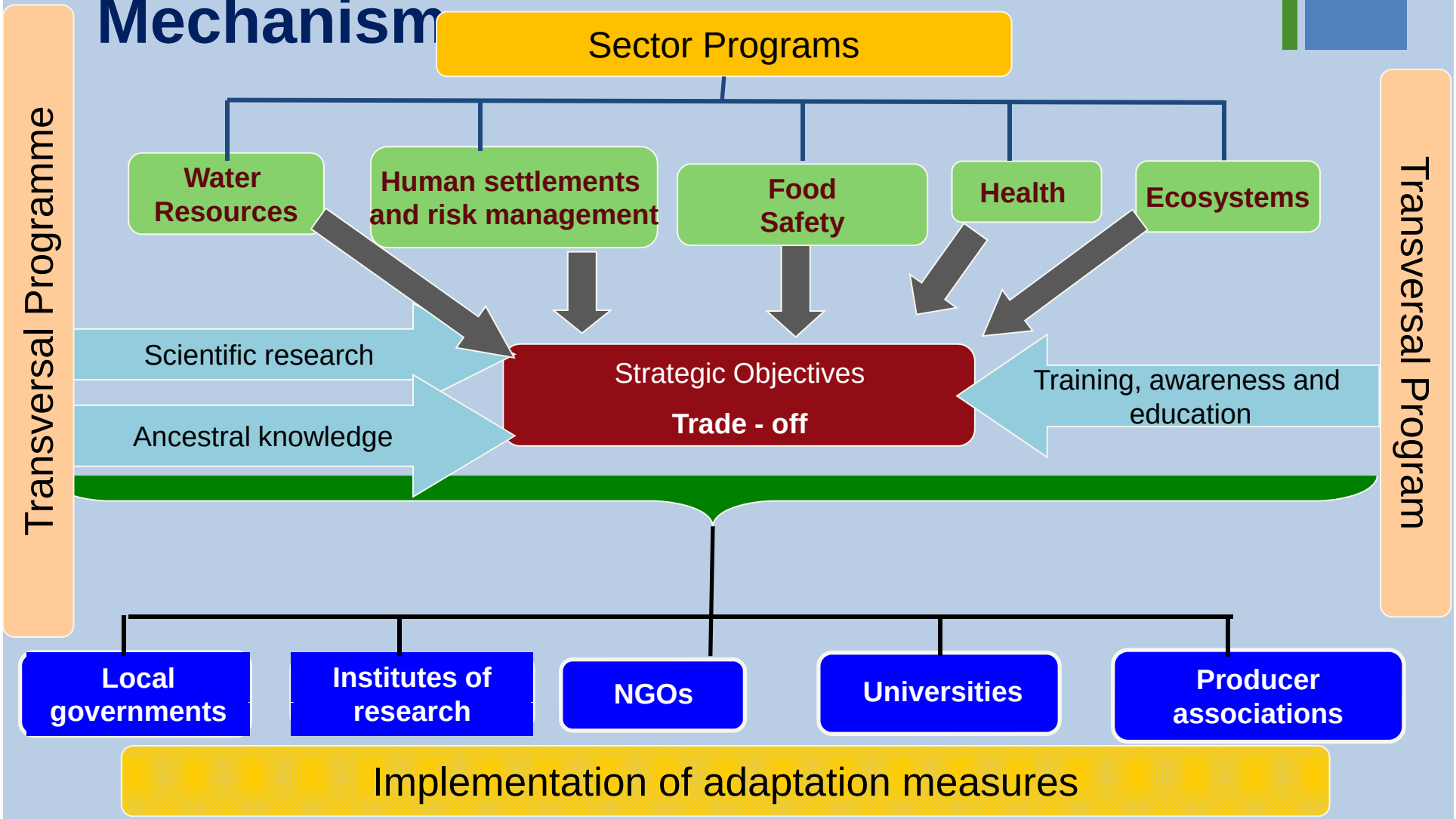
CC component at the PNCC
Institutional Projects

2010

- First Phase of PPCR
- Draft Forest and Climate Change
- National Strategy on Education and Communication
- World People's Conference on Climate Change and the Rights of Mother Earth
- Continuity in Project Financing adaptation, mitigation, education and research

CC component at the PNCC

Bolivia National Adaptation Mechanism

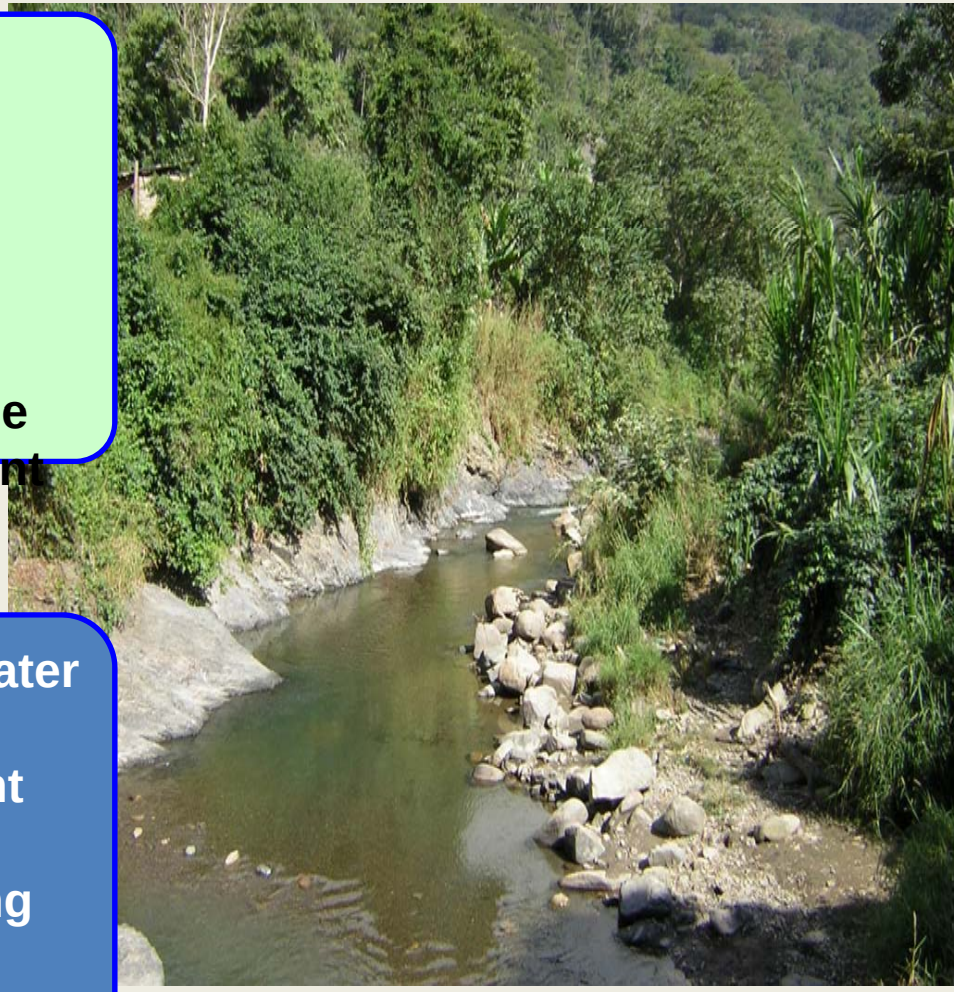


CC component at the PNCC

P1: Adaptation to water resources

Objectives

1. **Improve management of water resources.**
2. **Support adaptation activities in the redesign of hydraulic works.**
3. **Promote the use of water harvesting techniques of rain and the efficient use of surface and ground water in different sectors.**



Adaptation measures

- **Integration of climate change on water resources policies**
- **Assessment of water quality treatment and reuse promotion**
- **Technological alternatives for handling and use of water in different sectors.**
- **Vulnerability Information**
- **Groundwater recharge**

CC component at the PNCC

P3: Food safety

Objectives

1. **Contribute to reduce the effects of climate change and variability impacts.**
2. **Restore early alert systems for food safety related with bio-climate security mechanisms.**
3. **Strengthen the improve of genetic crop programs .**

Adaptation measures

- **Vulnerability assessment of food systems.**
- **New agriculture calendar.**
- **Germplasm networks and genetics resources management .**

CC component at the PNCC

P5: Adaptation of ecosystems

Objectives

- **Establish biological corridors.**
- **Implement forest restoration alternatives to slash, multilayer crops, afforestation and reforestation.**
- **Develop systems for the protection of wetlands.**
- **To support the integrated management of watersheds, inserting in its shares on climate change as a potential threat.**

Adaptation measures

- **Strengthening the system of protected areas.**
  Spread the multilayer system as agroforestry systems.
- **Coordination of Climate Change Scenarios in Integrated Watershed Management.**
- **Set rotation systems in the use of**

CC component at the PNCC

Project Adaptation of the accelerated glacier retreat in the Tropical Andes - PRAA

Objective:

Build resilience to the impacts of glacier retreat in the Tropical Andes, through the implementation of specific activities in pilot adaptation projects.

CC component at the PNCC

Project Adaptation of the accelerated glacier retreat in the Tropical Andes - PRAA

Components:

*** Generation of Climate Change Scenarios.**

*** Design and Implementation of Pilot Adaptation Measures.**

*** Monitoring of glacier retreat in the region.**

CC component at the PNCC
Lessons learnt

- **Lines of Scientific Research in Climate Change** (Insertion into university curricula).

- **Strengthen national and international networks on Climate Change** (Comprehensive plans of academic cooperation).

- **Revaluation and systematizing knowledge** to understand ancient peoples adapting to climate change.

- **Scientific studies and institutional** glacial retreat in the tropical Andes.

- **Development of pilot projects** on climate change adaptation in watersheds.

Study areas Proposals

Parque Nacional Cotapata

Cuenca Qurpuma

Cuenca Palca – Nevado Mururata

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