



# INDIGENOUS PEOPLES AND CLIMATE CHANGE IN THE ANDES

An indigenous perspective  
on a global problem







## INTRODUCTION

The Andes mountain ecosystems have been long recognized as highly sensitive to climate change; mountain glaciers are melting at unprecedented rates, while unique plants and animals struggle to survive over ever diminishing areas, and indigenous peoples in the Andes eco-regions have become particularly vulnerable to the impacts of climate change due to the close connection between their mountain environment and their livelihoods, culture, spirituality and social systems.

While governments seek technical solutions to climate-related problems, indigenous peoples in the Andes are struggling to understand events that are altering their livelihood. The occurrence of more frequent and extreme weather events such as storms, droughts, frost and floods, shifting crops up mountain-sides and the expansion of extractives industries such as mining that destroys high wetland pastures is having significant impacts for Andean indigenous peoples, with the most critical impacts to agriculture practices and productivity, including medicinal plant cultivation.

However, at the same time indigenous peoples are using their traditional knowledge that they have long used to adapt to environmental change to respond to the impacts of climate change and strengthen their deep and long-established relationship with the mountain environment.

This picture book is based on a workshop that brought together indigenous leaders and community members from Colombia, Ecuador, Peru, Bolivia, Argentina and Chile, as well as climate and social scientists to a workshop that took place in the Potato Park, Cusco, Peru on November 20-21, 2012. It presents the challenges that communities in the Andes are facing and the responses that the re-valorization of elders and traditional knowledge and the maintenance of diversity offer as a foundation for indigenous resilience.

The picture book is dedicated to Andean indigenous peoples who, in spite of the monumental challenge they face, are using their indigenous knowledge for informing observations in their communities and creating responses to climate change. It is time that national government recognize the value of Indigenous knowledge and support meaningful participation of indigenous communities in planning, approving and implementing processes that involve their knowledge & resources.



## THE WORKSHOP

From November 21 to 22, 2012, a workshop on Climate Change and Indigenous Andean Peoples took place in the Potato Park, Cusco, Peru. This gathering brought together indigenous leaders and community members from Colombia, Ecuador, Peru, Bolivia, Argentina and Chile, as well as climate and social scientists to:

- Document how Indigenous Peoples are affected by climate change through a thorough review of existing data and literature.
- Analyze and document in a participatory way how Indigenous Peoples perceive climate change, adapt to and minimize adverse impacts of climate change, and leverage opportunities, including through the use of local and traditional knowledge and practices.
- Provide recommendations for strengthening Indigenous Peoples' engagement and direct participation in the formulation of national and international public policies regarding climate change.

The workshop was a “Contact Learning Zone”. It encouraged participatory knowledge discovery, cooperative management of knowledge, community-to-community information and technology transfer and the fostering of interdependent horizontal networks. Indigenous peoples who are geographically and historically separated were unified through dialogue, creating horizontal and democratic spaces for intercultural practice, inquiry, and participatory learning, replacing colonial legacies of coercion, inequality, and conflict, with sharing and solidarity.



## INDIGENOUS PEOPLES AND CLIMATE CHANGE IN THE ANDEAN REGION

The Andean region with its rich indigenous culture and knowledge base, as well as complex microclimates, is predicted to be amongst the most affected regions of the world. The region's indigenous peoples who are the largest and poorest populations are feeling the greatest burden. The hazards and impacts of climate change felt by the indigenous peoples of the Andes eco-region include seasonal variability and unpredictability that is influencing their traditional knowledge of the land.







*“30 years ago, we used to plant potatoes at 3200 meters altitude. Now, maize grows in the areas where we once planted potatoes and to plant our potatoes we have to come up to 4000 meters.”*

### **Livelihood and climate change**

In the Potato Park, community members have observed warming temperatures in the region as evidenced through the migration of potato cultivation region to higher, cooler, altitudes. This migration of growing conditions to higher altitudes has also been accompanied by an increased observance of pests and crop diseases, as well as direct impacts on the work load of farmers who must now walk longer distances in order to work the fields.



*“The periods of unprecedented and extreme cold temperatures are causing health problems, especially among the elderly, young children and our animals.”*

### **Increase of Extreme Events**

The number of climate-related natural disasters in the Andean region has more than doubled in the last 30 years producing human, economic and material losses. For Andean indigenous peoples this represents loss of agricultural productivity, food insecurity, alteration of cultural and spiritual practices, and impacts on the workload of women.





*“Our agricultural productivity has become low; obviously Pacha Mama’s upset for the lack of respect for Her, as well as for the damages and alterations to Her natural environment and processes that industries such as mining produce.”*

### **Food and water security**

Glaciers are melting at unprecedented rates resulting in the destabilization of ice slopes causing landslides and mudflows. In addition, glacial lakes formed from melt water are often newly formed, unstable, and susceptible to glacial lake outburst floods. Cumulatively, changes in precipitation, warming temperatures and the increased incidence of extreme events, are resulting in reduced agricultural productivity for indigenous peoples in the Andes.



## Traditional knowledge and culture

Seasonal variability, uncertainty and unpredictability is impacting the use and occurrence of natural indicators and ecological calendars by indigenous peoples. Since weather and ecological patterns are now altered, traditional forecasting and early warning systems are not as effective as they used to be and the agricultural productivity of the region has been decreasing in the last few years.



*“In former times the fox knew a lot. He advised us when to sow and told us on the production of the year. Now acting on his advise we are failing a lot. The same is happening with the lizards who used to tell us of the occurrence of frosts. Now the advice is not as it should. The same is happening to us in the communities. We are no longer watching these signs. Our children and ourselves have become real sleepyheads.” Vizcachani community leader, Puno, Peru (Source: PRATEC 2009)*



## USE OF TRADITIONAL KNOWLEDGE IN RESPONDING TO CLIMATE CHANGE

Indigenous peoples in the Andes have a long history of coping with harsh conditions and extreme climatic events and as such have developed robust adaptation and coping strategies in the face of such variability and risk. Of greatest significance to Andean communities has been their use and employment of mixed farming and agro-biodiversity techniques, as well as their farming codes and sophisticated methods of social organization that have emerged from a combination of their cosmovision and traditional beliefs in universal interconnectedness, but also the inherent climate risk, uncertainty and variability of the region.



*“Agriculture is managed in a traditional way and this includes making offerings to the Pacha Mama before carrying out any activity. If we do not pay to the Pacha Mama, she will be angry and send pests and wild animals to destroy the crops.”*

### Agrobiodiversity

Farmers continue to farm a high level of genetic diversity within their crops varieties and animal breeds, well suited to their complex and risk-prone environments. The Andean farmers of the Potato Park maintain a vast number of potato varieties with some plots containing more than 100 varieties of potatoes.



## Socioecological networks and knowledge exchange

As part of their cosmovision, a traditional belief in the Andean region is that each element in this world is a living part of a larger unit that is in constant and cyclical movement. As a result, the people of the Andes have developed livelihood strategies that are based on verticality and sharing resources, knowledge and information between the upper, colder and wetter areas, and the lower, hotter and drier environments.



In Peru, Barter Markets (Challayplaza) are an example of robust exchange of goods and services and cooperative adaptation strategy. For the Mapuche in Chile, the exchange and cooperation system takes place between the coastal and mountain communities who exchange farm produce and marine products. In Colombia, the Ingas communities have been exchanging plants among the communities of the high Andes and the lower Amazon region to adapt to changing ecosystem distributions. In all Andean communities' seed and plant exchange, and exchange of knowledge and experience is also occurring as young apprentices are placed in different communities to both learn and promote traditional conservation techniques from their respective communities.





### **Indigenous technologies and practices**

Although indigenous peoples are particularly vulnerable to climate change given their dependence on the natural resource base, they are also particularly resilient due to their traditional knowledge, practices and way of life. In fact, the resilience of indigenous peoples to climate change is rooted in traditional knowledge and practice, specifically, their ways of using crop, species and land-use diversification strategies, as well as their strong social networks and customary systems of governance.

The Potato Park has been established following the principle of the Ayllu, seeking a balance between humans, the wildlife and the sacred; it is because of this that it exhibits good resilience to climate change. The Ayllu system is the sum of generations of agro-biodiversity practices, diversified land use practices using ancient principles of verticality and multi-layered land-use based on altitude, topography and microclimates; and social networks and knowledge exchange based on principles of ayni and communal agriculture.





## **Contributions of Traditional Resource Management Systems to National and International Climate Goals and Targets**

Indigenous knowledge and Traditional Resource Management Systems in agriculture provide critical contributions to biocultural heritage and biodiversity conservation and are of high importance for mitigation and adaptation to climate change. Therefore it provides important contributions to meeting national and international goals and targets in the areas of climate, biodiversity and sustainable development policy.

National and international climate change processes, such as the UNFCCC, must support indigenous peoples and their traditional management systems and help to bring down the barriers impinging upon them.



## CLIMATE JUSTICE

Linking indigenous knowledge to action on climate change requires respect and recognition of the inherent rights of indigenous peoples, particularly of their traditional resource rights. The examples of biopiracy of indigenous knowledge by pharmaceutical companies underscores the importance of meaningful participation of indigenous communities in planning, approving and implementing processes that involve their knowledge or resources.

Indigenous peoples continue to be highly marginalized within their own countries, and under-represented in international climate change dialogues; therefore questions of power and voice in the UNFCCC are an important consideration. There are many positive lessons, which can be drawn from other fields such as biodiversity and conservation.





## RECOMMENDATIONS

- Recognize, respect and protect indigenous peoples rights to land, territories and natural resources.
- Support for strategies, tools, and techniques which are critical for responding to climate change.
- Support processes through which this knowledge is transmitted and put into action including social learning, knowledge sharing, and collaborative management or decision-making.
- Support the conservation of Biocultural Heritage.
- Adaptation plans and strategies at the national-level should be informed by traditional knowledge of the indigenous peoples.
- Recognize indigenous environmental authorities and find mechanisms to integrate traditional knowledge and indigenous experience in the national climate change adaptation plans.
- Acknowledge indigenous land tenure and ownership. Associated with this ownership must be the ability to access, manage, and use the natural resources of the land
- Communities need to be better informed of climate hazards and potential impacts.
- Studies need to further engage indigenous peoples, including local and indigenous experts.
- Successful experiences in adaptation need to be made more accessible and shared amongst communities and stakeholder.
- Promote ethno and inter-cultural education within the official curriculum, ensuring that there is an indigenous cultural presence within the schools and institutions.
- Facilitate knowledge exchange experiences that include indigenous groups, academia, NGOs and government institutions.
- Acknowledge the significance and relevance of indigenous-led, community-based research.
- Count with agricultural biodiversity and customary sustainable use as a source for resilient agricultural systems.



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