

ADAPTATION TECHNOLOGIES BASED ON INDIGENOUS KNOWLEDGE FOCUSED ON WATER RESOURCES – EXPERIENCES FROM SOUTH AMERICA

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**ASSISTING COOPERATION PARTNERS
IN IMPROVED NATURAL
RESOURCES MANAGEMENT FOR
CLIMATE CHANGE ADAPTATION AND
INCREASED HUMAN SECURITY**



Overview

CONTEXT SETTING:

- **Traditional Knowledge**
- **Ecuador's Diversity of Indigenous Groups**
- **Differences & Common Grounds between Traditional Knowledge & "Western Science"**
- **Converging research areas for indigenous knowledge and Western science**

POLICY AND INSTITUTIONAL SETTING FOR ITC AND ADAPTATION IN WATER RESOURCES

- **MAE 1: Adaptation to the Impact of Accelerated Glacier Retreat in the Tropical Andes**
- **MAE 2: Adaptation to Climate Change through Effective Water Governance Project**
- **SENAGUA Traditional Knowledge and Water Dialogues**
- **Ancestral Knowledge Coordination within SENESCYT**

PROFILE OF THE PACC-COMUNIDEC PROJECT: *Sembrando Agua para el manejo técnico del riego de las huertas agroforestales de las cuencas altas de los ríos Catamayo y Playas para adaptarse al cambio climático*

OTHER INITIATIVES

BARRIERS AND LIMITATIONS

ENABLING FACTORS

CONCLUSIONS

REFERENCES

TRADITIONAL KNOWLEDGE (TK), INDIGENOUS KNOWLEDGE (IK), TRADITIONAL ECOLOGICAL KNOWLEDGE (TEK) often overlap, and involve:

- **Local knowledge systems** that have accumulated **large sets of systematic observations about the interactions** of *humans, plant and animal life, with the environment, including the climate*.
- Are the **cultural traditions of specific regional, indigenous, or local communities**. Often orally passed for generations from **person to person, and held specially by community elders and leaders**.
- **Include myths, stories and lore that often convey values of cultural significance**.

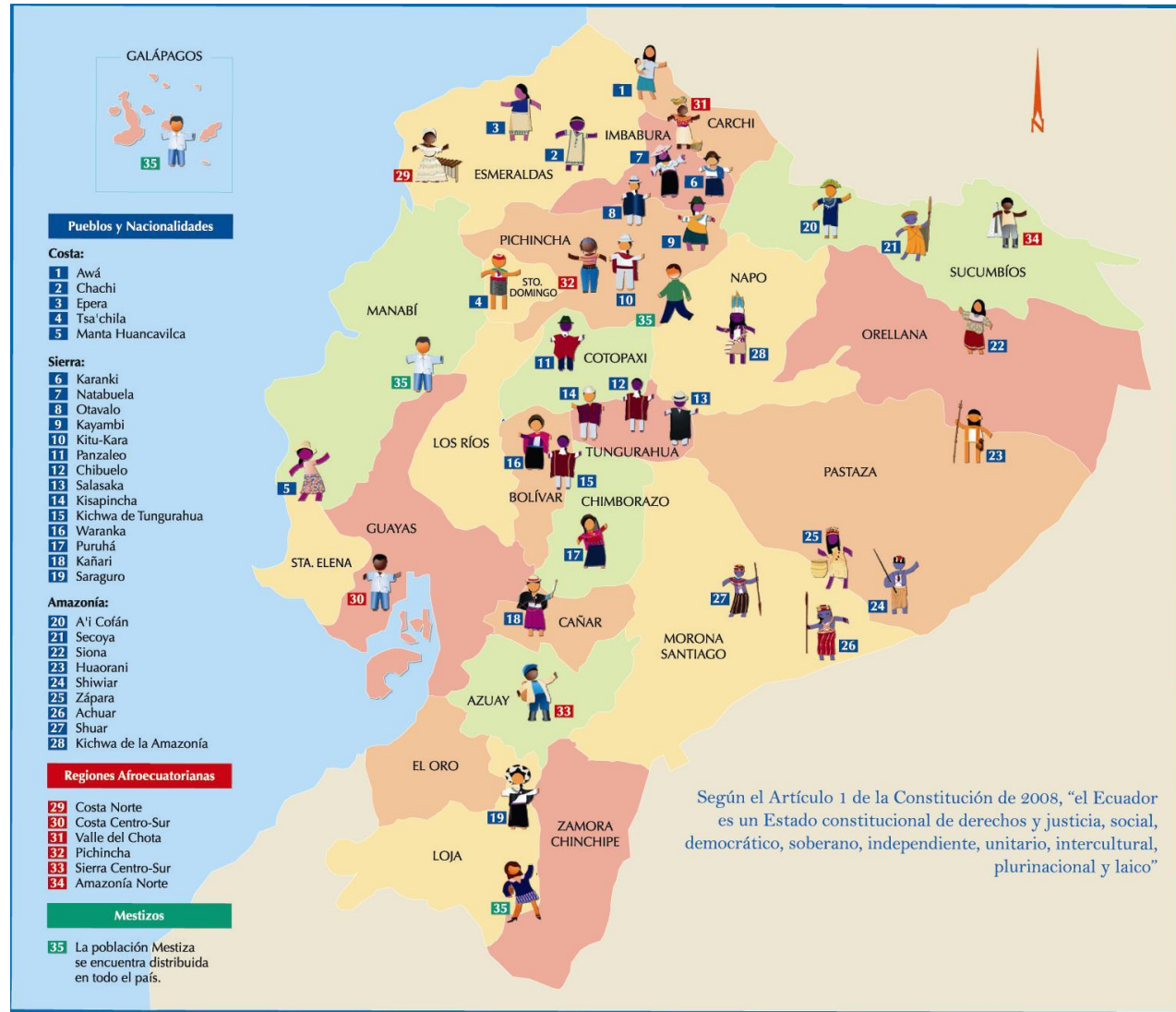
Traditional knowledge holds information, for example, about:

- Traditional **subsistence technologies**
- **Ethno-botanical resources and** curative/preventative health applications
- **Crop and livestock diversity and suitability of cultivars and varieties to agro-climatic niches**
- **Ecological timing** : bio-indicators, cropping and hunting calendars
- **Climate patterns and variability;**
- Local **weather forecasts** on different timescales, such as quantity of rainy seasons;
- **Water management** techniques; role of vegetation in water flows; properties of local geological formations

We use the term overall term *Traditional Knowledge* (TK) in this ppt, intending this to cover and include the types of indigenous knowledge that are specific to social identities.

Sources: Wikipedia, UNESCO

ECUADOR'S DIVERSITY OF INDIGENOUS AND ETHNIC GROUPS



Ecuador's diversity of ethnic groups have very different origins. Some descend in part from the Spaniards, such as the *Cholos* of the coast, the *Mestizos* and the *Montubios*. Others are descendants of African communities brought into the colony. Others, such as the *Sarguros*, have Inca ancestors. The vast majority of ethnic groups in the Eastern Amazon region, are native except for the Eastern *Quichua*, who descend from ancient Incas who took refuge in lowland forests during the Spanish conquest. Source: <http://rutamerica.wordpress.com/ecuador>

Traditional Native Knowledge

- holistic
- includes physical & metaphysical world linked to moral code
- emphasis on practical application of skills and knowledge
- trust for inherited wisdom
- respect for all things
- practical experimentation
- qualitative oral record
- local verification
- communication of metaphor & story connected to life, values, and proper behavior
- integrated and applied to daily living and traditional subsistence practices

Common Ground

Organizing Principles

- universe is unified
- body of knowledge stable but subject to modification

Habits of Mind

- honesty, inquisitiveness
 - perseverance
 - open-mindedness

Skills and Procedures

- empirical observation in natural settings
 - pattern recognition
- verification through repetition
 - inference and prediction

Knowledge

- plant and animal behavior, cycles, habitat needs, interdependence;
 - properties of objects and materials;
 - position and motion of objects;
 - cycles and changes in earth and sky

Western Science

- part to whole
- limited to evidence and explanation within physical world
 - emphasis on understanding how
- skepticism
- tools expand scale of direct and indirect observation & measurement
- hypothesis falsification
- global verification
- quantitative written record
- communication of procedures, evidence and theory
- discipline-based
- micro and macro theory (e.g. cell biology & physiology, atomic theory, plate tectonics, etc.)
- mathematical models

Handbook for Culturally-Responsive Science
Sidney Stephens, 2000. (Ref 1)

The sets of local knowledge held by communities and skills derived from thousands of years of careful observation, scrutiny and survival in a complex ecosystem, is inevitably not the same as Western Science

Research areas in which traditional knowledge and Western science have been shown to readily converge, from the *Alaska Native Knowledge Network*.(Ref 2)

Weather forecasting

Animal behavior

Navigation skills/star knowledge

Observation skills

Pattern recognition

Seasonal changes/cycles

Edible plants/diet/nutrition

Food preservation/preparation

Rules of survival/safety

Medicinal plants/medical knowledge

Terminology/concepts/place names

**Counting systems/
measurement/estimation**

Clothing design/insulation

**Tools
/technology**

Building design/materials/construction

Transportation systems

Genealogy

Waste disposal

Fire/heating/cooking

Hunting/fishing/trapping

Ecuadorian policy and institutional context for TK

- National Plan for Good Living
- Second National Communication to UNFCCC (Ref 3)
- Third Communication in process (with explicit recognition of TK)
- National Climate Change Strategy (Ref 4)
- Ecuador “National Climate Change Plan”, (supported by [FactorCO2](#), Ref 5; picture right)
- Technology Needs Assessment (supported by Intercooperation; Ref 6)
- MAE Submissions to TEC :
 - Quantity and Quality in Water Management (Ref 7);
 - Water for Irrigation (Ref 8)
- Ministry of Environment - Some Selected Projects
 - (1) Adaptation to the Impact of Accelerated Glacier Retreat in the Tropical Andes
 - (2) Adaptation to Climate Change through Effective Water Governance project



Fuente: <http://ecuador.iagua.es>



MAE 1: Adaptation to the Impact of Accelerated Glacier Retreat in the Tropical Andes (PRAA)

This MAE-WB/GEF project strengthens the resilience of ecosystems and local economies to the impacts of glacier retreat and to degradation of high Andean moorlands.

From 2009, in liaison with CARE and other partners, PRAA used a systematic participatory process to carefully select adaptation interventions, mainly for application in Quijo canton of Napo province. **Traditional knowledge and perceptions were identified via a series of community workshops using the CRISTAL methodology, in liaison with CARE.**



Adaptation measures included improved drinking water and sanitation systems; adaptive management of paramo ecosystems; ecotourism infrastructure; improved livestock management; and greenhouse-based fruit and vegetable production. As well, hydro-meteorological and glacier monitoring stations were installed.





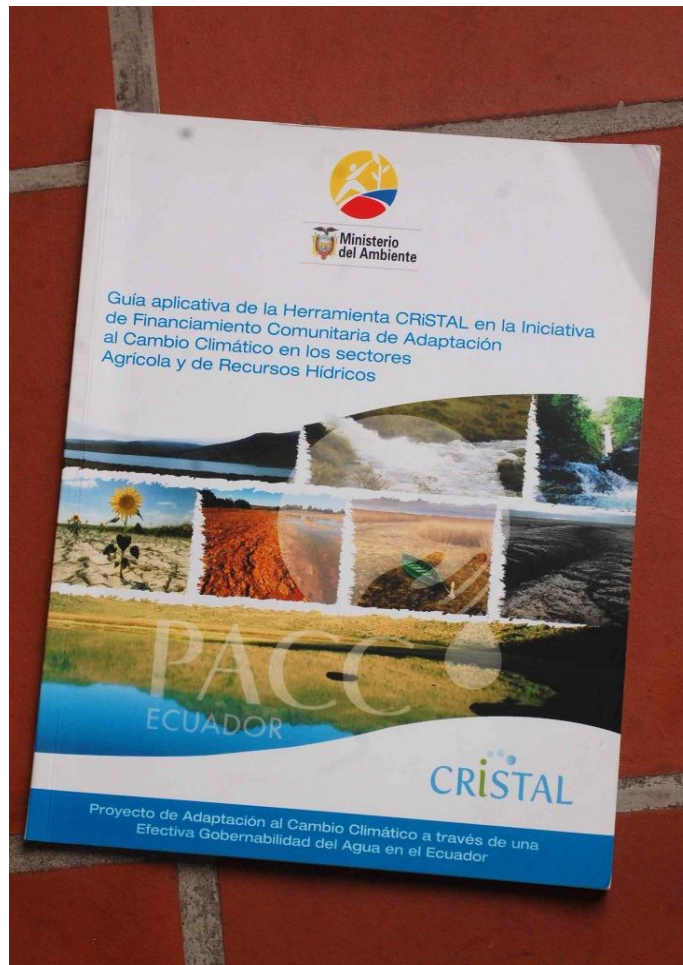
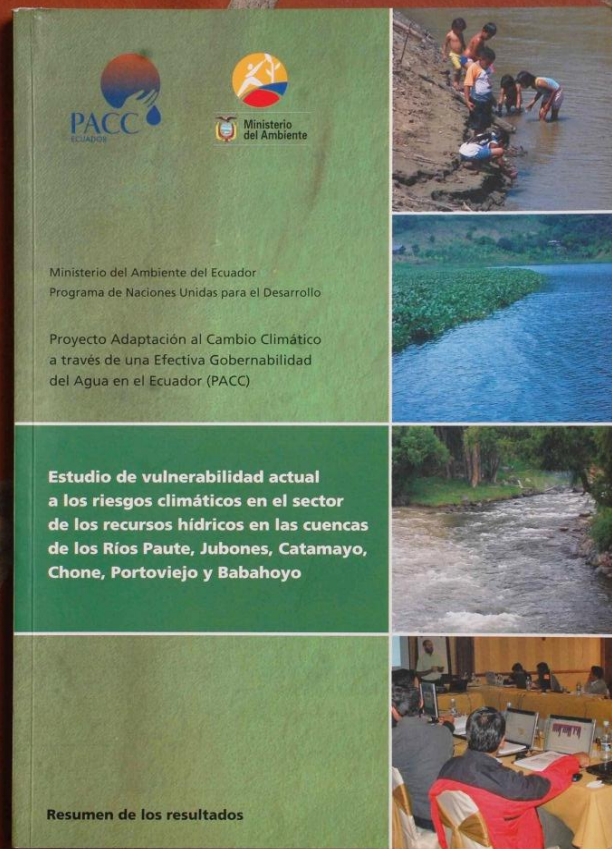
Proyecto de Adaptación al Cambio Climático a través de una efectiva gobernabilidad del Agua (PACC)

MAE 2: Adaptation to Climate Change through Effective Water Governance Project



- The PACC project, running from 2007 to 2015, aims to reduce the vulnerability of Ecuador to climate change through more effective management of water resources.
- Develops capabilities of partner institutions in six target watersheds (Paute, Jubones, Catamayo, Babahoyo, Chone and Portoviejo), as well as nationally.
- Produces and promotes information-sharing for improved knowledge.
- Implements a financing mechanism for local sustainable water management initiatives, with second round of 20 projects underway. These projects are carried out usually by alliances of communities, NGOs, sub-national governments and research centres.

See <http://www.pacc-ecuador.org>



PACC begun in 2008 by conducting an ambitious and systematic vulnerability study across the selected watersheds (R9); and testing vulnerability assessment tools, such as CRISTAL (R10)

Selected PACC Projects across Ecuador: Second Call for Funding



COMUNIDEC



CORFAM



EMAPAL



Zhidmad



UNL



GPL



ACJ



GPLR-GPB

Secretariat for Water has developed significant knowledge products, via a series of Dialogues with Indigenous groups

Provincial dialogues about ancestral knowledge of water, were carried out by SENAGUA in close coordination with municipal and Provincial governments. These were both face-to-face, as workshops, and organised via video-conferences. These dialogues discussed ancestral knowledge held by various nationalities and peoples including *Kichwas de los Pueblos*; *Kichwa Amazonica*; *Waorini*; *A'i Cofan*; *Secoya*; *Shuar*; *Afroecuatorianos*; *Paltas*; *Montubios*; *Mestizos*.

The dialogues collected stories, myths, traditions and a wide range of practices related to water conservation, protection and use.

Sacred sites were inventoried and their location was mapped, while beliefs and practices about care of natural resources and water management were discussed in depth.

SENAGUA aims to incorporate the collective vision and wisdom of ancient peoples and nationalities within water management plans, consistent with the *Plan del Buen Vivir* of 2008.



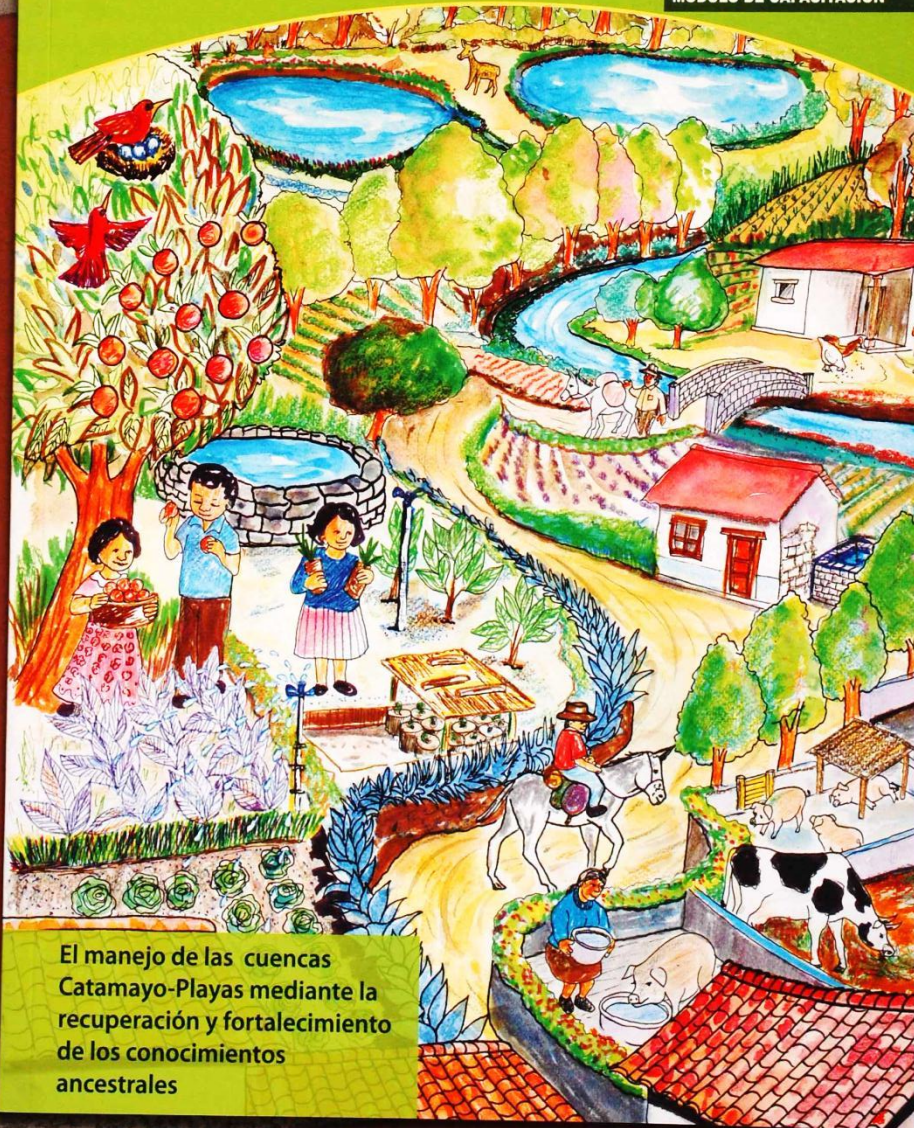


**SENAGUA-led
Dialogues on Ancestral
Knowledge and Water
Resources held in
various Ecuadorian
cities during 2013**



Sembrando AGUA para la VIDA

MÓDULO DE CAPACITACIÓN

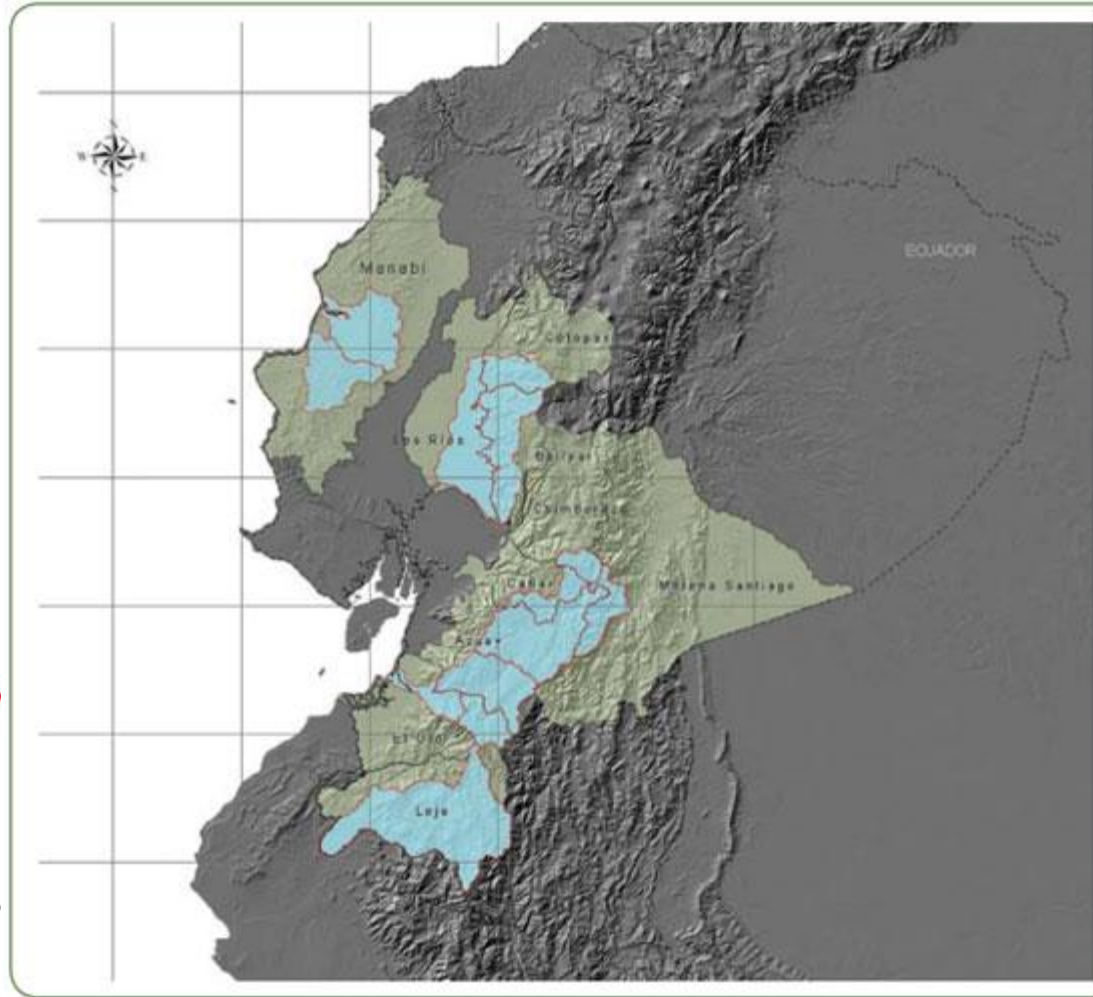


El manejo de las cuencas
Catamayo-Playas mediante la
recuperación y fortalecimiento
de los conocimientos
ancestrales

PACC MAE/UNDP has supported the COMUNIDEC Foundation's project: "Planting Water for Improved Irrigation Management of Agroforestry in the Upper Watershed of the river Catamayo and Playas to adapt to climate change"

Sembrando Agua para el manejo técnico del riego de las huertas agroforestales campesinas de las cuencas altas de los ríos Catamayo y Playas para adaptarse al cambio climático

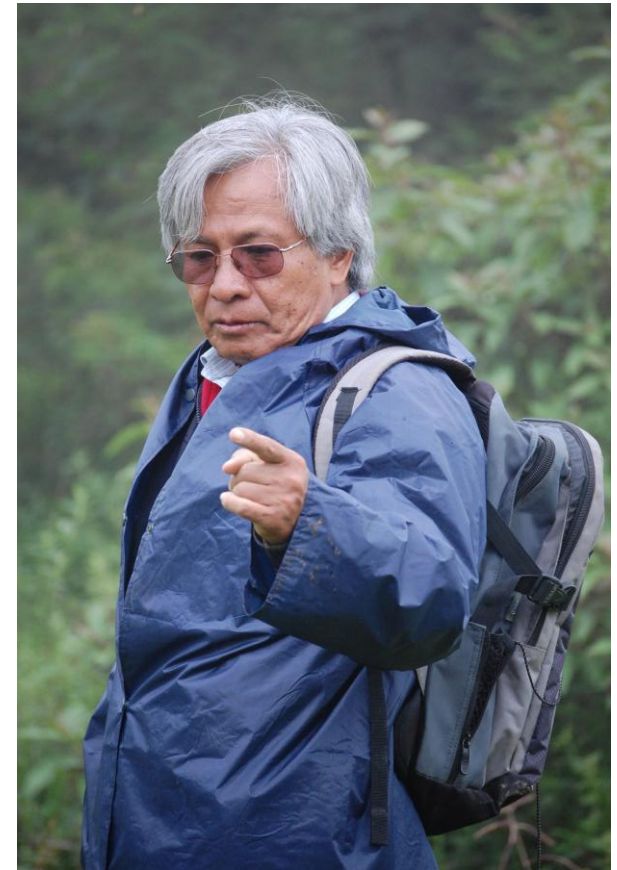
PACC works in the selected target watersheds of Paute, Jubones, Catamayo, Babahoyo, Chone and Portoviejo



To the left, the Province of Loja, with the Municipality of Paltas in pink. Paltas is the location for the COMUNIDEC Foundation – PACC project.



Ministry of Environment PACC/UNDP-GEF - COMUNIDEC Foundation Project



**Galo Ramon, historian and the
Foundation's Director.**

All photographs by Mark Kowal except where noted,
Slides / Pages 16 - 45

“Sembrando Agua en Las Paltas”: the approach

REBUILDING THE PRODUCTIVE BASES OF THE CANTON VIA FOUR APPROACHES:

1. Through the **building of a system of marshlands, lakes and other humid areas** (know as “albarradas”) in the higher parts of watersheds, to recharge and to continuously refill the underground aquifers, and thereby **keep open water springs and sources at lower elevations**, despite rainfall variability and droughts;
2. A **management program of the project’s micro-watersheds** (through reforestation; construction and management of water storage reservoirs; rainwater harvesting; and micro-irrigation). This includes the removal of eucalyptus from around water sources and mass production of local tree and shrubs species;
3. A program to support the **production of agroforestry-based orchards** (using micro-irrigation technology, support for farmer access to credit);
4. Recovery and **retelling of the peoples traditional stories and myths** about water sources, the water cycle and the role of traditional knowledge), combined with science-based explanations, so as to give participating communities the benefit of both science and tradition as mobilizers for high-quality community development.

Sources: <http://www.comunidec.org/publicaciones/24-publicaciones/79-sembrando-agua-para-la-vida>
http://www.comunidadandina.org/predecan/doc/libros/SISTE22/EC/EC_CATACocha.pdf
http://www.iepala.es/IMG/pdf/2_Sembrando_agua.pdf

Spanish colonial map showing location of indigenous community lakes



The Paltas devised a system of exploitation and management of the rainfall in the region between December and May. In the mountains, artificial wetland "lakes" were built to hold rainwater, which infiltrated underground to refill aquifers, which gave rise to a host of water holes or springs that provided drinking and irrigation water to valley households. Lakes were associated with large mountains and their deities that "granted the water". In popular myth, every hill has its lagoon, and each lagoon holds a protector serpent spirit.

This 1792 map, from Spanish colonial times, shows locations of artificial lakes built by the Paltas people, and now restored by the communities and COMUNIDEC to recharge their aquifers.

This recovery of historical information provided precise siting information for the reconstruction of the marshlands. This image was widely shared and shown to the communities, as a motivational tool. It shows in a practical way how to engage with traditional knowledge, by applying historical research to local development. Source: COMUNIDEC 2014



One of the stories validated by SENAGUA in their programme of *Dialogo de los Saberes* is about a “Bull Called Congo”; a Sacred Animal revered by the pre-Inca *Paltas* indigenous group

El torito Congo.

“La historia pues del torito Congo se refiere a la laguna ancestral pues que es al pie del Pizaca. Dice que en aquella hacienda que hoy pertenece lo que les decía a ustedes que hoy Naturaleza y Cultura la adquirieron para el comité de gestión en ese tiempo pues era un potrero digamos para ganadería. Y dice que en el cerro del Pizaca pastaba un torito, y él pues se llamaba el de la fecundidad, se le llamaba el torito Candoro porque dice que tenía relación el cerro Pizaca con un cerro que hay en la Parroquia de Cangonamac que se llama Can, entonces había relaciones entre el Pizaca y el cerro Congo. Muchos tienen dice que ellos se comunicaban pues entre el uno y el otro y ese torito era el que permitía pues de que el agua permanezca casi todo el año. No se secaba porque llovía la laguna se quedaba llena, el ganado pastaba allí, tomaba agua y era una cosa maravillosa. Los amigos del Perú se habían anoticiado de que había un ser que les podía, que ellos a lo mejor necesitaban porque dicen que es seco y alguna vez pues hicieron todos sus rituales para poderlo capturar, para poderlo coger. Entonces llegó un momento que todo se les cumplió y lograron llevárselo de ahí, de Pizaca, se llevaron a Gualcabamba y nos dicen pues que a partir de eso empezó ya los tiempos secos. Al término pues de que la laguna pues haya llegado temporadas, sobre todo los meses de finales de verano, noviembre, octubre, noviembre, diciembre, cuando no llueve pues se seca completamente. Cuando antes no pasaba, permanecía todo el tiempo con agua, nunca se secaba. Se fueron llevando al torito y se llevaron nuestra agua”

(Celso Guajalá, Pueblo Palta-Taller Loja).

The story of the Paltas and their Bull

- The popular myth, revived by COMUNIDEC from the town of Catacocha, tells us that Pisaca Mountain had a son, called Cango The Bull, who grazes on the hills. He would only eat the grass growing on the edges of *cochas*, or highland marshes.



- The mythical bull had the virtue that when he bellowed it would rain. This meant that when he was “at home” and in his place, there was water, harvests were good, and there was prosperity.
- However, envious neighbours take advantage of the Palta people and steal the bull ... while the Paltas are too careless themselves to recover their animal, and to care for its home, and instead are plunged into a cruel and long drought.
- In more detail, as told in past times, and retold today:

THE THEFT OF CANGO THE BULL

- Known as *el Torito Cango* (Cango the Bull), he was supposed to be the son of a local mountain, *Pisaca*. He was a tremendously-powerful, gold-haired, stocky animal, which would sleep in mountain caves, and range across the mountains. He grazed on the hill-slopes, pasturing only on the specially-rich grasses and herbs found growing on the highest wetland sites, and on the shores of the numerous lakes and streams that were found around Pisaca, and on the close-by Sierras.
- The bull had a virtue that when he decided to moo, his bellowed voice was heard long and hard by all the people far down in the valleys; then clouds below would swirl, and welcome rainstorms would burst onto the land. Birdlife and insects abounded in the upper regions. In the Palta communities' villages, fruits produced well, children were healthy, and the rivers never grew so large so as to harm the villages, while harvests were good and constant. Local people had many cattle, abundant grass, lots of water and enjoyed prosperous lives.
- However, the good times did not last forever. A poor and aggressive tribe, called the *Guayacuntus*, an ethnic group living across the river Catamayo, had come into possession of powerful shamans. They were envious of the prosperity of the Paltas.

- They decided to steal *Cango*, drugging the bull with a strong powder and haltering him with a gold rope. Then they fenced him in, on a field on a wasted mountain above their own villages, and waited for his adaptation..... they wanted him to bellow, and so to bring them the rains.
- However, the bull did not find the grasses and herbs he liked, nor any lagoons to bathe in, and became silent and uncooperative. Over the next weeks and months, the animal turned listless and melancholic, and produced no benefits for the *Guayacuntus*.
- At the same time, the Paltas had fallen into ruin. Water no longer flowed regularly down the hills, many trees were dying, what crops did grow were attacked by many strange kinds of insects, and the livestock could not fatten, covered as they were in parasites. When it did rain, the rivers grew quickly in size when it rained, destroying houses and the land. Many took to drinking fermented alcoholic juices, which made their lives only worse. The highland meadows dried out, the soil turned yellow and the streams fell silent.
- The robber tribe *Guayacuntus*, likewise failed in all they endeavoured, and plagues fell on all the peoples and their crops and animals. The Golden Bull was lost from these lands and was taken by other peoples some say taken as far away as Peru, or even Panama. The farmers and their families felt much disappointment, and a sense of defeat and frustration at the loss of their health, water and plenty.

However, another chapter was added to the old story, by COMUNIDEC story -tellers. Rather than concluding in a defeatist reading, COMUNIDEC leaders decided to re-tell the story showing a way out of this almost-irreversible situation..... In this way, the retold story served to animate the people and their communities to take part in the project, and so rebuild their own hydraulic infrastructure....



THE RETURN OF CANGO THE BULL

- In this new made-up telling: the leading Shamans of the two tribes realised that they must act, or else failure and sadness will overpower them all. They held a meeting to speak, and to better understand what should be done.
- They decide to take *Cango the Bull* back to Pisaca Mountain, and to re-sow the special herbs that the bull likes so much. The Las Paltas communities put all their energies into action, working together for days at a time, deciding together to rebuild the lagoons, take the silt out of the highland lakebeds, and replant the grasses, which are the favourite herbs eaten by the Bull. They protect the land from fires and look after all kinds of local trees. They built feeder drains across the slopes above the lagoons to send water into the *Cochas*. In these ways, they produced water that could resurface in springs further down the valley.
- So finally they **get the bull to acclimate back in his home area, where he lived for many good years, creating fertility, helping make the waters flow, crops to harvest and to fatten the peoples' livestock.**
- So the story-tellers would tell the listeners and their children, to join efforts and to work to recover the system of mountains, vegetation, lakes and rivers, and to redouble local efforts to store the water inside the land, and so rebuild the whole system of moisture management across the landscape.
- This new reading of the myth, called "**The Return of the Cango Torito**", allowed the communities' own voices to speak in the language of myth, expressing the same content as the scientific explanation of the cycle of recharge of water in the Andean hills. In this language, conversations between outside agents, researchers and project stakeholders take part in an overall intercultural exchange that is fluid, symbolic and highly-persuasive. By sowing "water-plants", as a cultural metaphor, the communities could bring back Torito Cango, as a "return to the ancient times".
- Retelling the old story aloud **recharged the social capital of the Paltas communities**, and invigorated their spirits. By telling the story as one of recovery, speaking in the language of myth, combined with scientific explanations, this useful practice allowed the COMUNIDEC project to "plant itself in the heart of the communities", and for participants to feel themselves not just part of a local village, but as agents with roles to play across the entire watershed.



One of more than 200 *albaradas* or “*cochas*”, showing water infiltration into the subsoil. These were built largely through community labour.







Many COMUNIDEC community leaders are women and their knowledge is valued and closely integrated into the development process.

Strong community spirit links the people taking part in the project



Conservation of *Palta* sacred sites





THE TURTLE ROCK: The giant turtle-shaped rock in the middle of the north lagoon below Pisaca Mountain, serves to measure the amount of accumulated water and the progress of the infiltration process.



Watermarks on the sides of this rock show how careful management of lake levels can relate to local harvest planning and prediction systems, that forecasts harvests according to the adequacy of the rains, and the resulting constancy of lake water levels.



Hillslope water conduction drains or trenches convey water above the “*cochas*” down to enhance water collection across the watershed



Much of the Las Paltas highland area has been replanted with native species of trees and shrubs and is under natural regeneration.



***Tajamares* (check dams) have been built at close intervals along the dry creek beds. These are now allowed to silt up, then that silt is cleared out and can be taken to farmers' fields. The river courses more slowly and will now stay running for longer into the dry season.**

Upstream view of a *tajamar* showing how the robust dam provides potential habitat for ecosystem recovery and helps aquifer recharge





COMUNIDEC tree nurseries and family farm development subprojects led to considerable improvements in food security





Water distribution tanks or “*pilancones*” take water piped from local springs for storage before distribution to farmers’ agroforestry and crop fields

The retelling of traditional stories has helped to activate a sense of “agency” and of co-responsibility amongst actors in watershed and aquifer management



With more reliable springs fed by recharged aquifers, crops can be irrigated



FOTOS: Ramón, 2010

**OVERVIEW OF
COMPONENTS OF
THE “SEMBRANDO
AGUA” PROJECT**



**AQUIFER RECHARGE
PONDS AND LAKES**



AQUIFER RECHARGE



**“TAJAMARES” OR
CHECK DAMS TO
SLOW STREAMFLOW**



**“PILANCONES” FOR
STORAGE OF
IRRIGATION WATER**



**IRRIGATED FIELDS
AND AGROFORESTRY
SYSTEMS**





**Working at the
landscape level;
and for urban
water supply of
Catacocha town**



**Community agroforestry gardens;
biological pest control for
enhanced food security**





In other similar projects, PACC has worked with local municipalities and provincial administrations to provide tree saplings and municipal heavy machinery



Other initiatives:

- ASOCAM and Intercooperation Regional Platform
- IUCN and the “*El Clima Cambia, tu tambien cambie*” program
- Secretariat for Risk Management/MAE and guidance for Ancestral Water Management Techniques
- IUCN Traditional Knowledge for Adaptation regional programme
- SENESCYT and Ecuadorian Institute for Intellectual Property initiatives

ASOCAM and Swiss Intercooperation, with PACC, have developed systematic outputs and guidance for adaptation, that fully respects traditional knowledge (Ref 11) and provides in-depth resources for vulnerability assessment of both “blue” and “green” water resource types.

The document “*Medidas Probadas en el Uso y la Gestion de Agua*” published by PACC MAE, ASOCAM and Intercooperation (Ref.12) provides the first authentic systematisation of adaptation measures as developed in practice across Andean countries



Under the project, “*El Clima Cambia, tu también Cambie*” IUCN with partners have managed a series of pilot projects across Andean countries that integrate traditional knowledge into adaptation strategies & projects in various sectors



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¿Cómo hacer del conocimiento tradicional, una herramienta efectiva de adaptación?

Acceda a las presentaciones del Foro regional de adaptación al cambio climático, que se llevó a cabo en Quito, Ecuador, el 12 y 13 de noviembre de 2013. El evento incluyó tres paneles: Adaptación al cambio climático y el rol de los conocimientos tradicionales; Estrategias nacionales de adaptación al cambio climático; Estrategias locales de adaptación al cambio climático. Finalizó con reflexiones y recomendaciones sobre la adaptación al cambio climático basada en conocimientos tradicionales para Colombia, Ecuador, Perú y Bolivia.

[Click aquí para ir al detalle de las presentaciones:](#)



El proyecto **El Clima Cambia Cambia Tú También** identifica en Bolivia, Colombia, Ecuador y Perú, zonas de ecosistemas andino-amazónicos frágiles, donde las comunidades están buscando adaptarse al cambio climático. A través de testimonios y estudios de caso se identifican condiciones de vulnerabilidad y adaptación, para luego traducirlas en recomendaciones de políticas públicas v

Fotografías sobre los estudios de caso:



Bolivia, El Salar



Perú, Huasta, los quenuales



Bolivia, huertas orgánicas y cusi



Ecuador, Chimborazo, siembra de agua



Perú, Tamshiyacu, El Chino



Colombia, Araracuara, El Guacamayo

Programas de radio y archivos de audio

- ▶ [Lista de reproducción con todos los programas del proyecto](#)
- ▶ [Cambio climático y conocimiento tradicional \(cuña radial\)](#)
- ▶ [Cambio climático y políticas públicas \(cuña radial\)](#)
- ▶ [Cambio climático y conocimiento tradicional. \(programa completo\)](#)
- ▶ [Cambio climático y políticas públicas. \(programa completo\)](#)
- ▶ [Siembra de agua y agroforestería: adaptación en los andes de Ecuador. \(cuña radial 1\)](#)
- ▶ [Siembra de agua y agroforestería: adaptación en los andes de Ecuador. \(cuña radial 2\)](#)
- ▶ [Siembra de agua y agroforestería: adaptación en los andes de Ecuador. \(programa completo\)](#)
- ▶ [Adaptación local al cambio climático en Tamshiyacu, Perú. \(cuña\)](#)
- ▶ [Adaptación local al cambio climático en Tamshiyacu, Perú. \(programa completo\)](#)

Presentations from an international workshop:

http://www.portales.org/index.php?option=com_content&view=article&id=158&Itemid=10000083

Ecuador cases: <https://portals.iucn.org/library/efiles/documents/2013-015.pdf>

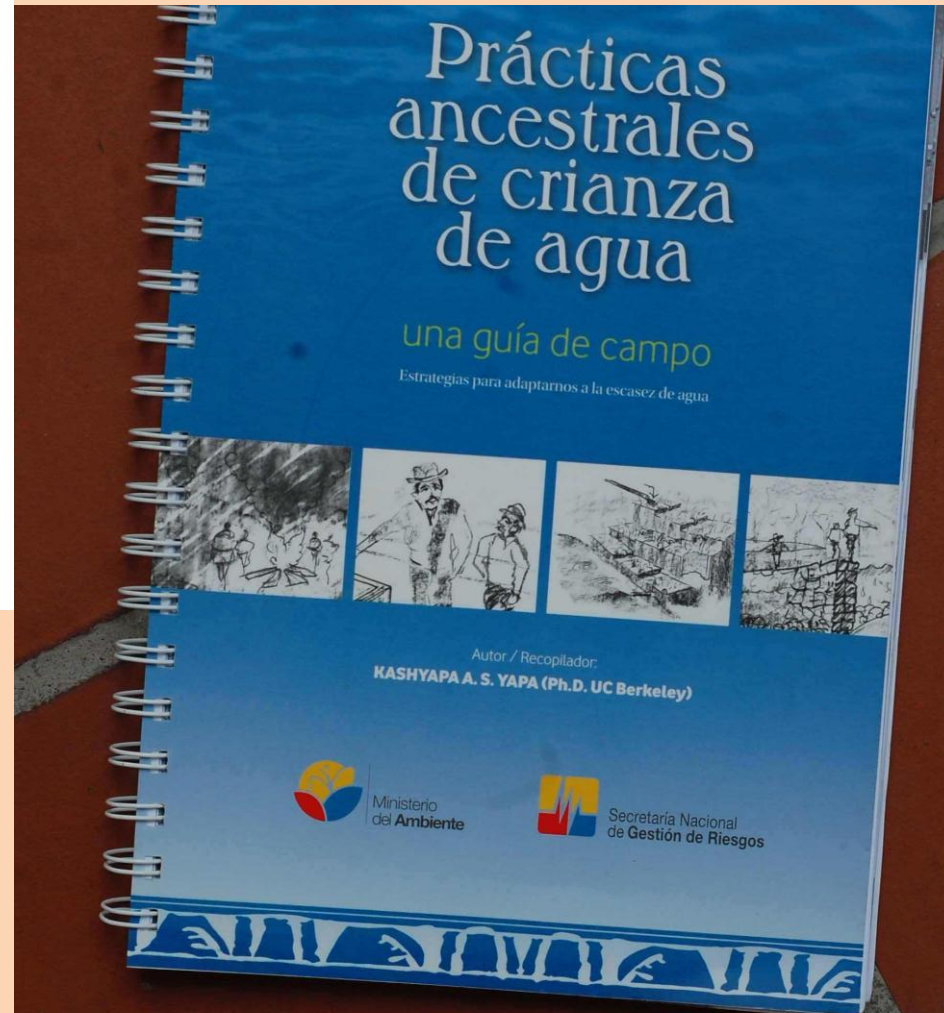
Ancestral Knowledge Coordination within SENESCYT

- The **Ministry of Higher Education, Science, Technology and Innovation** (SENESCYT) through the Coordination of Ancestral Knowledge, seeks to build up “Knowledge Dialogues”, that enrich the development of Ecuador’s *System for Higher Education, Science, Technology and Innovation*.
- An **intercultural approach** has been adopted as a practical exercise towards the inclusion of “Different Knowledge” (ancestral knowledge, traditional and local knowledge) in coexistence with scientific research, technology development and academic work.
Consultations have been carried out in Provinces and with key actors to develop **Technical and Technological Profiles** for educational content in disciplines such as environmental management, natural resources management, agriculture, agro-ecology, medicine and ecosystem conservation.
- Considering “Buen Vivir” as the overarching goal, SENESCYT has established a **Ancestral Knowledge Coordination Unit** staffed by around 10 experts from across disciplines, who are working on projects that seek to build human and social capital as part of the green economy. This implies doing things that are community-centric, ecologically-balanced and culturally-sensitive.
- María Rivadeneira, Unit Leader, has noted that *“the only way to establish real multiculturalism in the country is making it a daily reality, and higher education is an excellent niche for it. For this you need to consult with people in different territories, nationally, on an academic offering that is of interest to all, and can be provided by state institutions. This involves the recovery and integration of ancestral knowledge within technical and technological careers”*.
- The Coordination Unit is developing a **Climate Change Adaptation and Ancestral Knowledge Project** which should provides opportunities for a series of institutional partnerships.



Integrated management, organic production, and local revaluation of traditional Andean crops: experience of sensitization in the parish of Lloa, District of Quito. ECOPAAR is linked with the MAE PRAA paramos and glacier retreat program (Ref 13)

Book (R14) by MAE/SGNR/PNUD (by Kashyapa Yapa) following a 2013 International Workshop (R15), published by UNDP, Secretariat for Risk Management and the Ministry of Environment Ecuador, on *Ancestral Techniques for Water Development*.





An **International Forum** was held in Sept 2013 on “**Traditional Knowledge , Genetic Resources and Associated Biocommerce as tools for Sustainable, Fair and Equitable Development for Good Living**”. Hosted by the Ecuadorian Institute of Intellectual Property, with the Ministry of Environment of Ecuador, and Ministry of Higher Education, Science and Technology , Project UICN-PNUMA/GEF ABS LAC and the Andean Biocommerce Project, the Forum engaged state agencies, researchers and indigenous & local communities, about the best practices and regulations when accessing traditional knowledge (associated with genetic resources); adequate development of Bio-Prospecting; how to identify illegal access to genetic resources; and reviewed existing biocommerce experiences.

Foro Internacional
sobre los **Conocimientos tradicionales, Recursos genéticos y Biocomercio**
como herramientas para el **desarrollo sostenible,**
justo y equitativo en búsqueda
del **Buen Vivir (Sumak - Kawsay)**



The Ecuadorian Institute for Intellectual Property has produced a series of booklets for all ages, and technical documents, analysing illegal trafficking in country genetic pools.



BARRIERS AND LIMITATIONS TO ENHANCED ROLE OF TRADITIONAL KNOWLEDGE IN THE ADAPTIVE MANAGEMENT OF WATER RESOURCES 1

- A significant concern is the **erosion of local knowledge systems** by the “outside values” of a globalising world; and due to the out-migration of younger people from rural areas. This may be often be seen by traditional communities as a key threat to their sustainability. Similarly, improvements in the **governance of development** may be a more immediate concern of some indigenous groups and their representative organisations, compared with the more diffuse impacts of climate change.
- Western science as the **dominant paradigm for resilience-building knowledge** and practice, subjects hypotheses, data and facts to strict tests of their credibility. This can get in the way of **assigning value to local knowledge systems**, as these are often seen as “subjective”, and not necessarily perceived by outsiders as based on clear sets of evidence. It is often difficult for public sector actors, academic researchers and project managers to interpret the validity of belief systems that are local to a given region and social identity; are not explicit as public knowledge and maintained orally. **Authentic recognition of TK is required in public policies and in the attitudes of decision-makers.**
- Conceptually there is considerable difficulty defining “**Adaptation based on Indigenous and Traditional Knowledge**” as a separate type of adaptation, given that specific cases will often include elements that could be typed as Ecosystems-Based Adaptation or with Community-Based Adaptation.

BARRIERS AND LIMITATIONS 2

- Ecuador's ENT and submissions to UNFCCC include specific mention of Aquifer Recharge as a priority technology and provide a barriers analysis, including treatment of **legal and regulatory issues**. This notes that the legal mandate and sharing of responsibilities amongst actors for **actively recharging aquifers** is still weakly articulated in national law. Municipal land and water association or utility management plans are a key entry point.
- **Provincial and Municipal governments in many parts of Ecuador have limited capabilities** to apply community-based agendas for climate-resilient water resource management, as part of their routine and strategic planning of landuse, and within their approaches to environment and social risk management.
- Obtaining **landuse rights and social control** over the key recharge zones in watershed uplands to enable investments in lakelands may be a significant barrier. In the longer-term, **shifts in agroecological zones** may increase pressure on uplands.
- Limited capabilities of knowledge managers and change-agents in the water resources sector **to effectively systematize the adaptation technologies being piloted**. Preparing Technology Roadmaps and similar information products, should give practical guidance about how to integrate traditional knowledge within adaptive watershed management practices, so that other actors can replicate these in their own communities.
- There is a significant need for **“How-To-Do-It” guidance**, directed at specific users such as planners in municipal and provincial governments; landuse managers; Watershed Demarcation Authorities; and Community Water Associations. The common barrier of excessively-technical communication styles has to be overcome through use of **practical, easy-to-understand language**.

ENABLING CONDITIONS FOR CONTINUED INTEGRATION OF TRADITIONAL KNOWLEDGE WITHIN ADAPTATION 1

- To ensure value is given to the contributions of traditional knowledge to adaptation, it is key to apply the **best available practices in the participatory project management**, from the original inception of a project, and through all stages of design, implementation, evaluation and lesson-learning.
- **Partnerships and collaborative alliances between key actors have a key role to play.** Relevant agents include community-based organisations, development and conservation NGOs (both national and international), Universities and research institutes, Provincial/Municipal Governments, knowledge exchange platforms, private sector actors, international cooperation organisations, and sector-focussed ministries and secretariats. Aspect to be accounted for in collaboration include ensuring a **practical orientation, gender equity and inter-cultural dialogue.**
- Approaches to participation should account for and develop the **skills of local leaders**, especially rural women, and assign key roles to them in the course of local processes, such as **building-up networks and alliances.**
- Collaborations should design and deliver programmes that are part of an **overall national approach** that guides the integration of traditional knowledge into climate adaptation efforts, and that **disseminate specific cases of good practices.**

ENABLING CONDITIONS FOR CONTINUED INTEGRATION OF TRADITIONAL KNOWLEDGE WITHIN ADAPTATION 2

- For zones where adaptations are proving successful, **learning visits need to be structured** (probably more than one-day duration), so that **community leaders from possible replication sites** can be properly tutored to understand the key aspects of the adaptation technology, and to grasp the role of traditional knowledge in its development.
- **Local government can contribute significant complementary resources to those of civil society actors.** They should be provided with technical support to **apply the lessons learned into their strategic development**, so that the techniques such as Aquifer Recharge based on traditional knowledge are considered as elements of **landuse policy**.
- **Rural extension and information services** that are working each in their own sectors (such as Agriculture, Livestock, Forestry, Water resources and other related sectors), need to **deliver their services in a joined-up or integrated manner**. Their role is to **help deliver on community plans and adaptation actions**, not just those of their own institutions. They must **operate locally, and in liaison with community leaders**. This will help build a strong base of social capital and leadership capacities.
- **Opportunities exist to build alliances** between SENAGUA, MAE and the Ancestral Knowledge Unit of the Secretariat for Higher Education, Science and Technology; and that build linkages between TK and climate adaptation “champions” in ministries, local government and civil society. A key international actor could be IUCN, which has already implemented a regional programme in this area.
- Ecuadorian Universities and their field staff should be encouraged to **make research projects account for the diversity and depth of the traditional knowledge** found amongst the country's peoples and nationalities.

CONCLUSIONS

- An ongoing role should be given by development actors to **local stories** that show how people relate to natural systems, especially for agroforestry and food security systems; and for water capture, harvesting and aquifer recharge. Giving local people and their stories a role can allow for **deeper social communication** that enables motivated and sustained participation in technology development.
- Future work can build on the basis established in Ecuador's ENT and **existing submissions to UNFCCC**. Given the considerable progress of Ecuador's policies and frameworks for improved treatment of traditional knowledge, and national adaptation planning in the water resources sector, one or more **Technology Roadmaps** could be developed for community-based measures similar to the ones profiled here, based on projects similar to the PACC-COMUNIDEC "community-based aquifer recharge" experience.
- TRMs for this suite of technologies would establish the actions needed, milestones, targets and would estimate resource requirements, such as the **finance and technical assistance needed** to carry out further pilot and dissemination projects.
- **Lesson-learning and systematisation** of the results of pilot projects, should provide key results that contribute to national and sectoral programming. This requires application of **contributions from various disciplines**, to better understand the **replicability** of these technologies in other contexts, and identify **drivers of change**.
- Continued **inter-cultural dialogue, receptivity to alternative viewpoints and political will** are key drivers of change towards giving traditional knowledge a proactive role in adaptation efforts.

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