Ecosistem based Adaptation in the Andes

The Mountain Institute

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The Mountain Institute

Scaling Up Mountain EbA Program

Presentation for Mountain Sentinels - April 19, 2018

Ecosystem based Adaptation (EbA) is defined as:

"the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change."

(CBD, 2009)

4 key elements to the definition of EbA:

1. use of biodiversity and ecosystem services
2. to help **PEOPLE**
3. adapt to the adverse effects of climate change
4. as part of an overall adaptation strategy.


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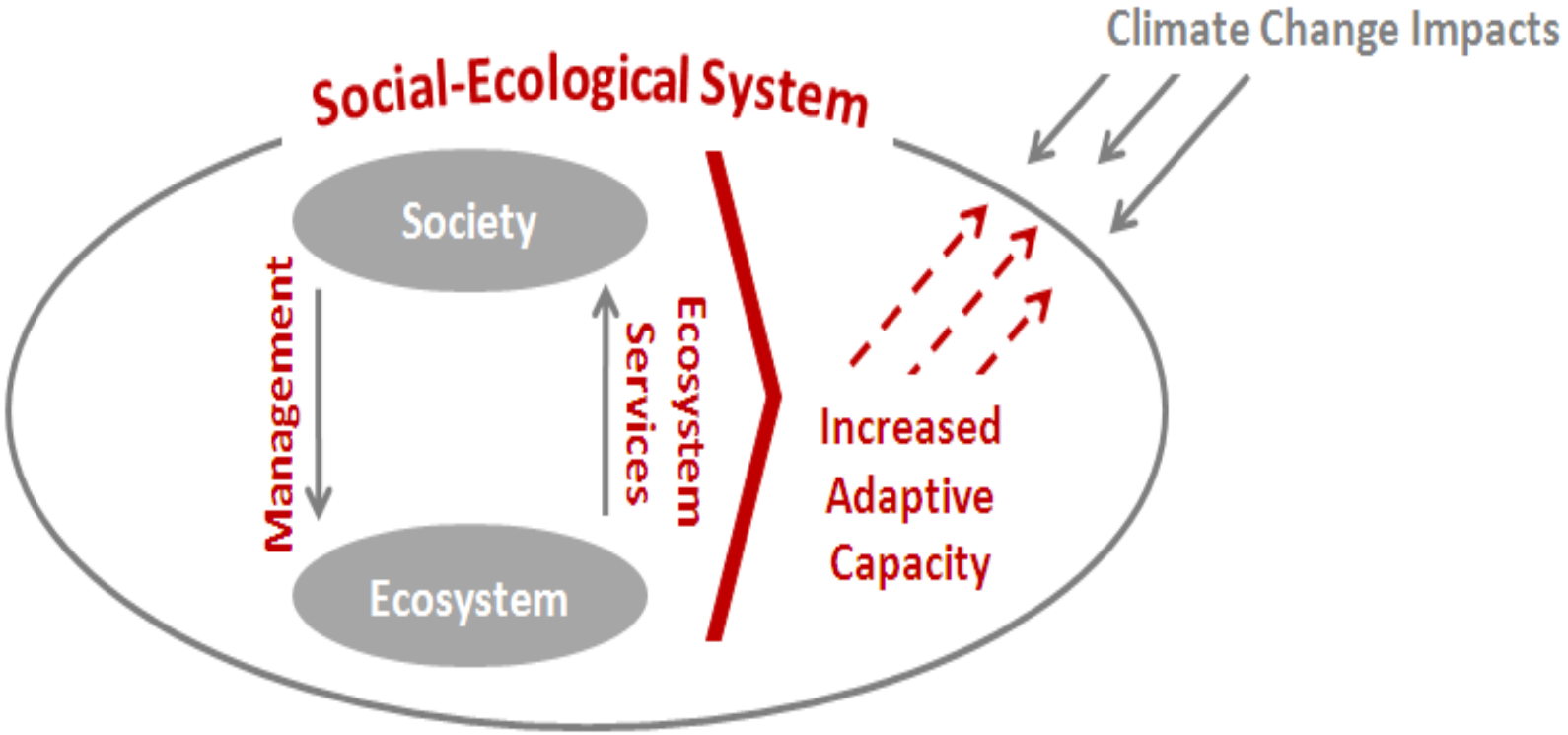
Climate Change Impacts
Social-Ecological System
Society
Management
Ecosystem Services
Ecosystem
Increased
Adaptive
Capacity


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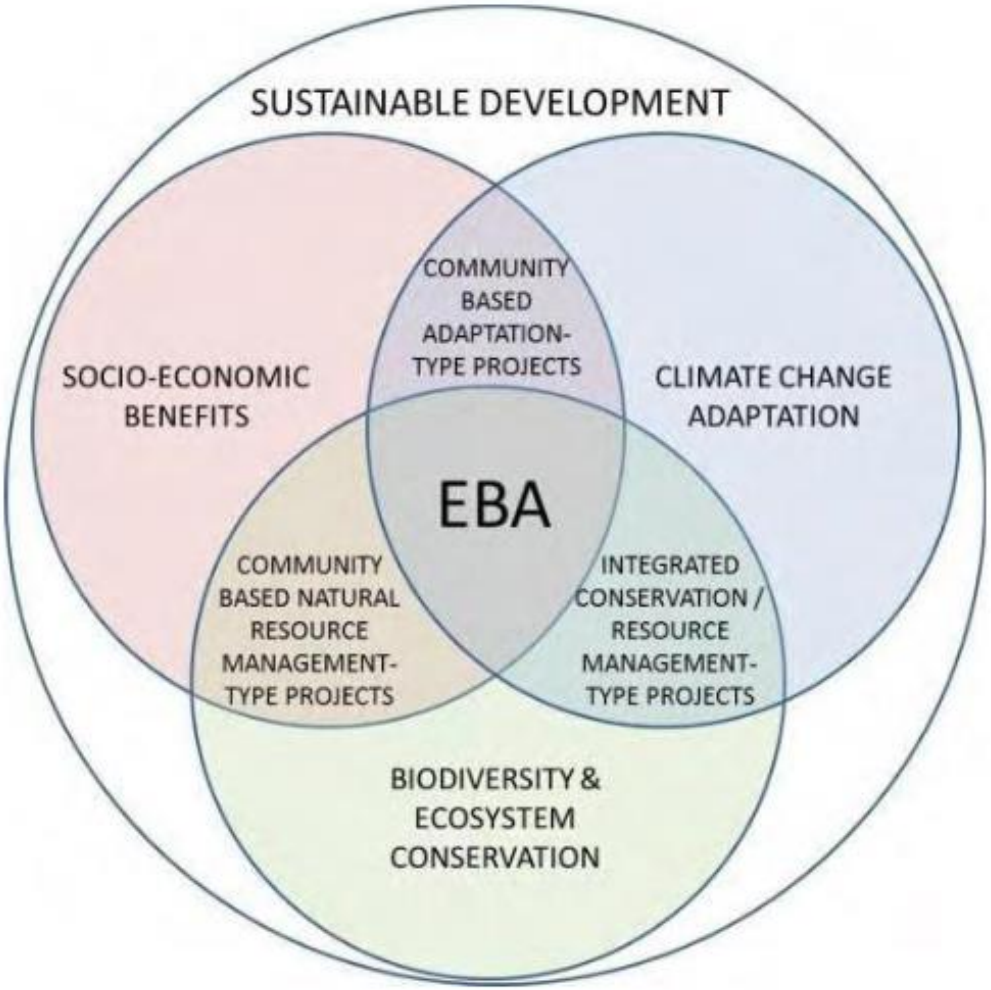
SUSTAINABLE DEVELOPMENT
SOCIO-ECONOMIC BENEFITS
CLIMATE CHANGE ADAPTATION
BIODIVERSITY & ECOSYSTEM CONSERVATION
COMMUNITY BASED ADAPTATION-TYPE PROJECTS
COMMUNITY BASED NATURAL RESOURCE MANAGEMENT-TYPE PROJECTS
INTEGRATED CONSERVATION / RESOURCE MANAGEMENT-TYPE PROJECTS
EBA

Examples of EbA

- Restoration of mangroves to reduce coastal flooding and erosion.
- Sustainable management of a watershed's headwaters to maintain or improve water quality and streamflow
- Reforestation to stabalize slopesides and avoid landslides.
- Water collection and storage.
- Conservation of agrobiodiversity.

(CBD, 2009: 41-50).

Mountain EbA initiatives in the Andes:

- Mountain EbA Flagship Program (2011-2016)

- Scaling Up Mountain EbA Program (2017-2020)

Mountain EbA Flagship Program

Goal: Strengthen national capacity to identify and implement EbA measures to reduce the vulnerability to climate change of local communities in high mountain ecosystems.

Countries: Uganda, Nepal and Peru

Timeframe: 2011-2016

Partners: UNDP, UNEP, IUCN + TMI in Peru + other country partners

Supported by: International Climate Initiative (IKI) - BMU

UNEP

IUCN

UNDP
Empowered lives.
Resilient nations.

Supported by:
Federal Ministry
for the Environment, Nature Conservation,
Building and Nuclear Safety
based on a decision of the German Bundestag

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Scaling Up Mountain Ecosystem-Based Adaptation:

Building evidence, replicating success, and informing policy

Goal: To scale up EbA as a means to build climate-change resilience and promote adaptation in mountains

Flagship countries: Nepal, Peru, Uganda
Expansion countries: Bhutan, Colombia, Kenya

Timeframe: July 2017– June 2020

Partners: TMI, IUCN, and country partners
Supported by: International Climate Initiative (IKI) - BMU

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IUCN


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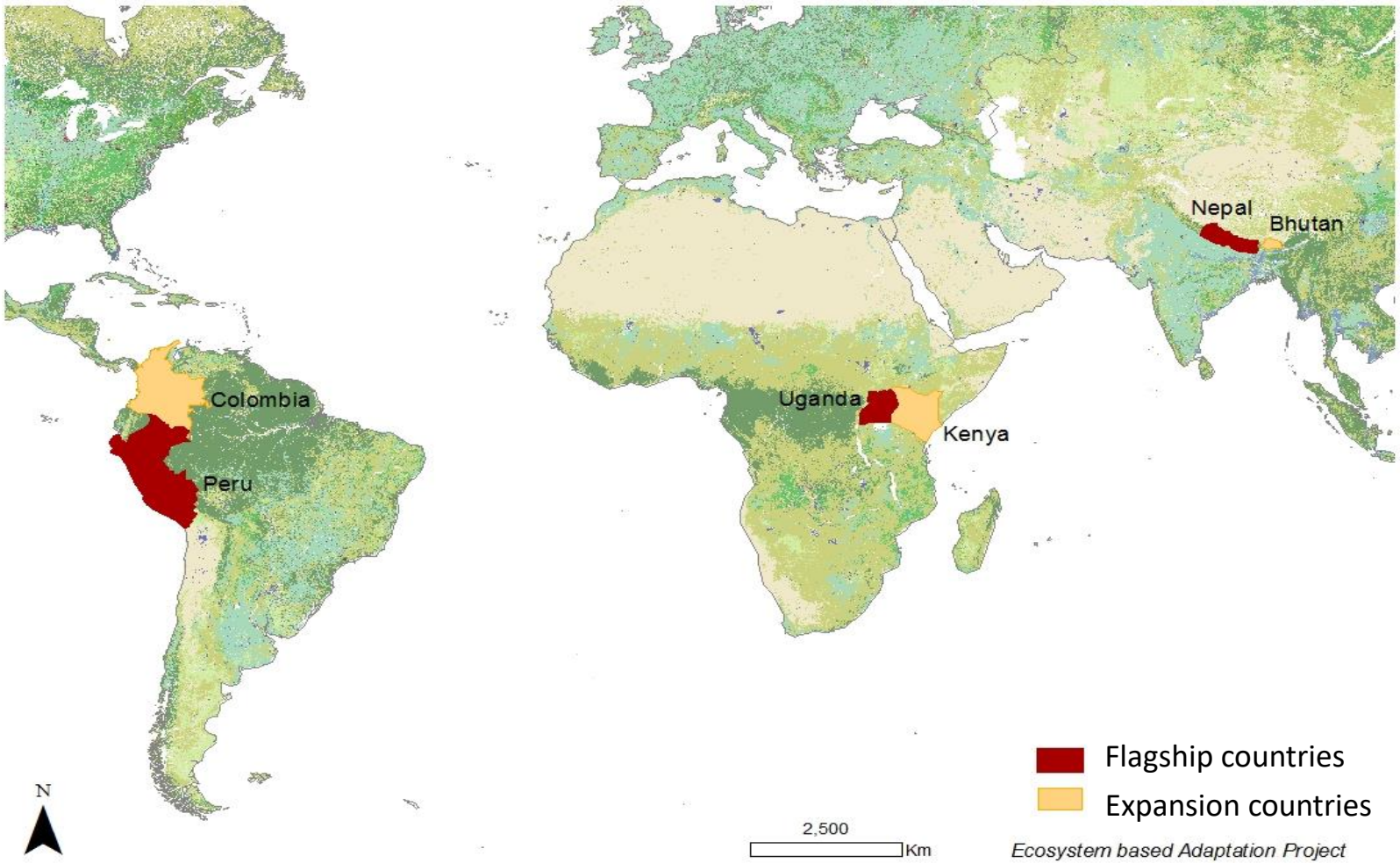

Nepal
Bhutan
Colombia
Peru
Uganda
Kenya
N
2,500
Km
Flagship countries
Expansion countries
Ecosystem based Adaptation Project

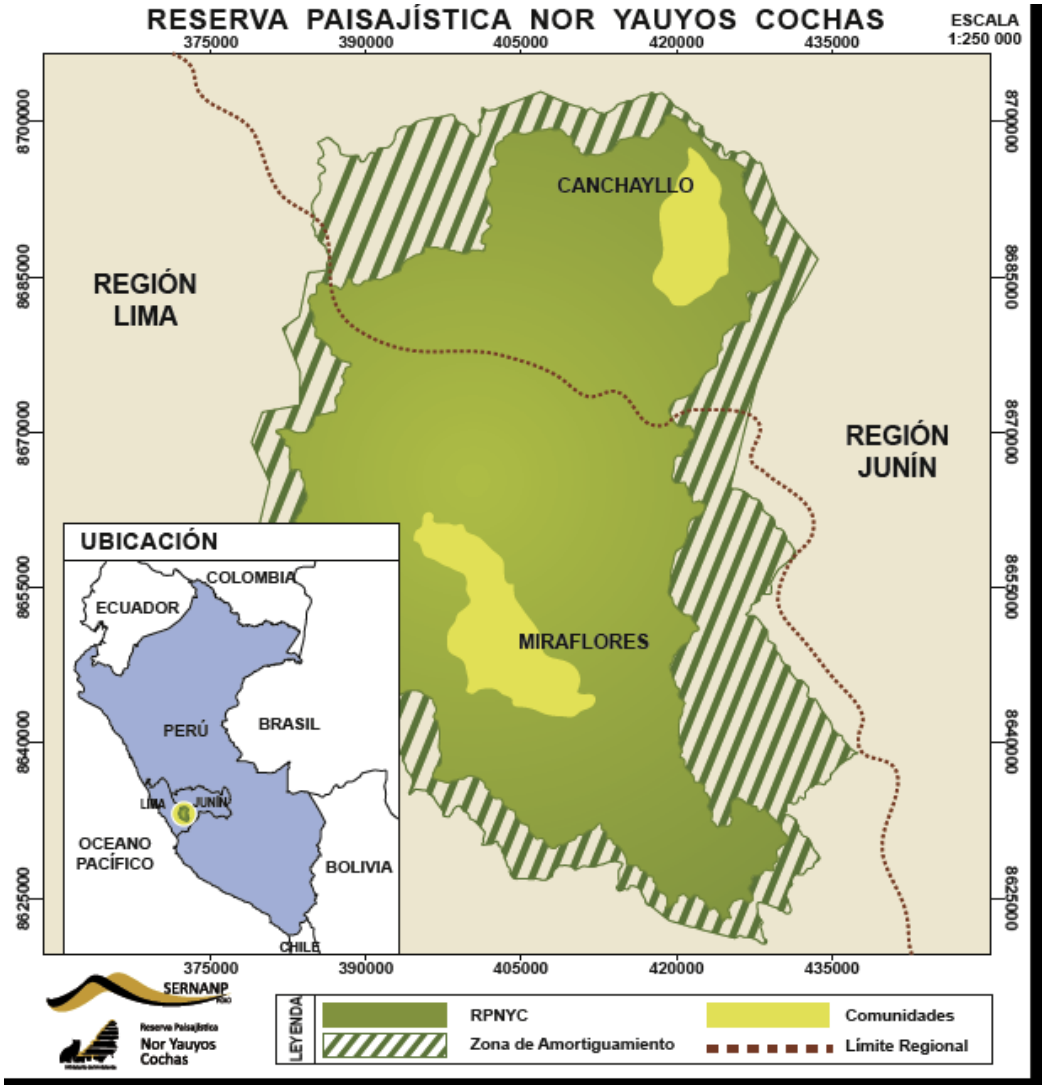
Mountain EbA Project: Peru

Fuente: http://www.ebaflagship.org/peru/index.php/eba-montana-peru

THE CONTEXT:

Nor Yauyos Cochas Landscape Reserve (NYLR)

- Central Andean Mountains of Perú
- Direct used protected área
- V UICN protected category.
- Land tenure mostly comunal
- 19 communities, 12 districts, 15,000 inhabitants



- Vulnerability and Impact Assessment (VIA)
- Participatory assessment focused on local vulnerability

Climate	(VIA) for the NYCLR-BZ - high level of uncertainty (FDA, 2013).	Climate trends and scenarios - 2100 (Mantaro River watershed)	Climate disaster risks
Average T° : 8°; T° max: 19°C; T° min 0. Pp: 650 -750 mm/year Two diferenced periods: Dry seasion Fron may to Nov. And wet seasion from dec to april. High climate Variability.	Temperatures will increase between 0.61°C and 1.12°C (2011-2030). Precipitation, no changes in annual rainfall, but changes in patterns Reduction of surface water runoff	Increased minimum and maximum temperatures, in average 2.7°C and 2.3°C, Reduced precipitation during summer and winter in the northern and central sectors of the watershed; Increased frequency of frosts in certain areas	Longer drought periods More intense but shorter rainfall patterns Potential landslides Higher fire risks

Changes in hydrological patterns → affect grassland and water resources, which are vital for livestock-dependent communities.

Restoring puna landscapes in Nor Yauyos Cochas Reserve

- Nor Yauyos Cochas Landscape Reserve, Central Andes, Peru
  - Located between 2500-5860 m a.s.l.; 15k inhabitants; direct-use protected area.
- Puna landscapes (~70% of reserve) drying out and shrinking due to overgrazing and climate change.
  - Canchayllo – 1774 people; ~40% dependent on cattle-grazing; also hydroelectric power, mining
  - Miraflores – 441 people; ~70% depend on agropastoral livelihoods (cattle-grazing)





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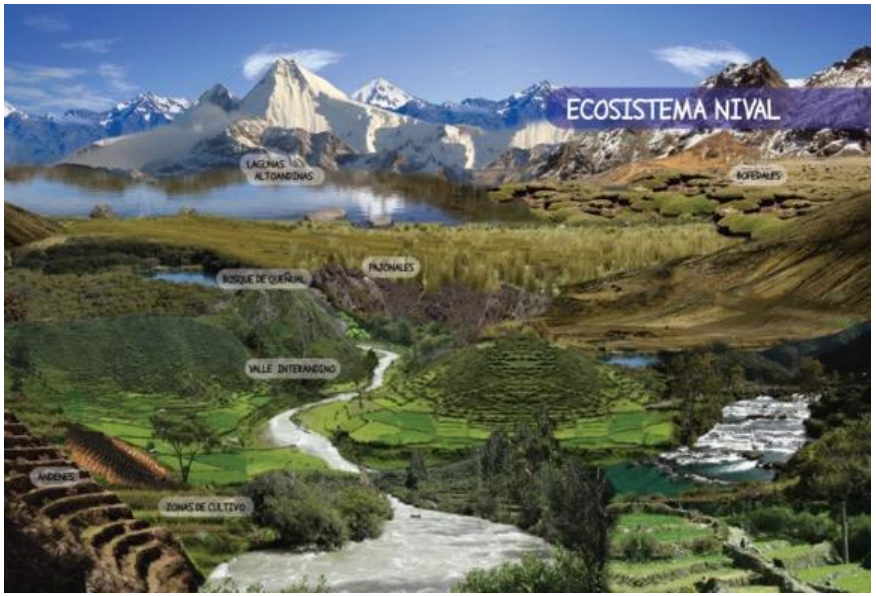
THE CONTEXT: High Mountain Ecosystem







EbA measures

Implementation process

Consultation, diagnosis and design

Apr.- Nov 2013

Implementation

Dec. 2013 – Oct. 2015

Systematization and closure

Nov. 2014 - Nov. 2015




EbA Measures: Community-based sustainable water and native grassland management





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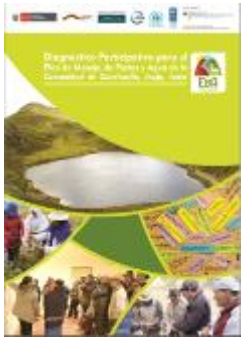
- Community Grassland and Water Management Plans

- Strengthen capacities
- Link with local/traditional knowledge




- Restore wetlands, natural grasslands and natural water courses and reservoirs
- Water infrastructure restoration (canals/pipes and dikes)
- Protection fences





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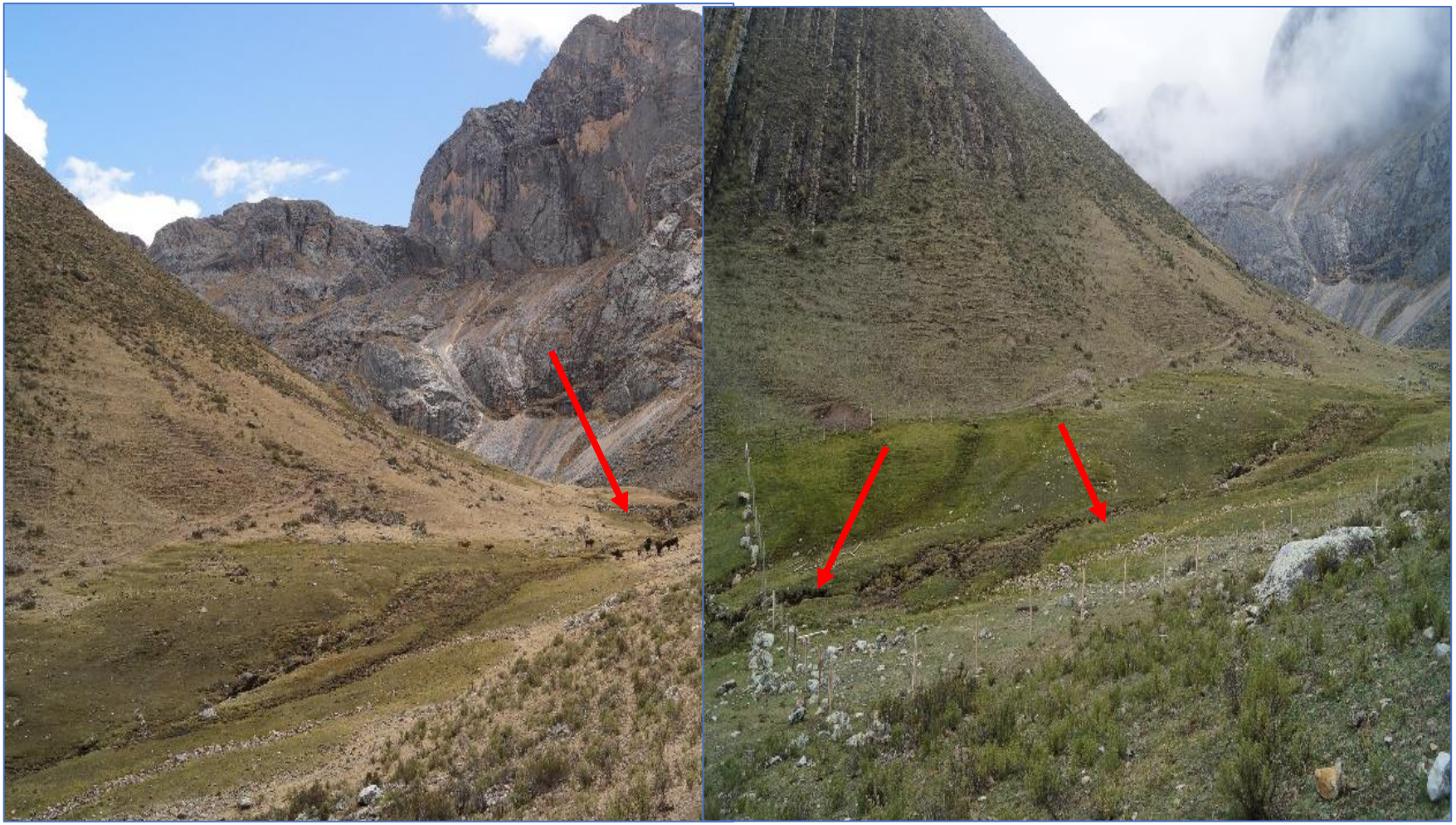
Miraflores

LEYENDA

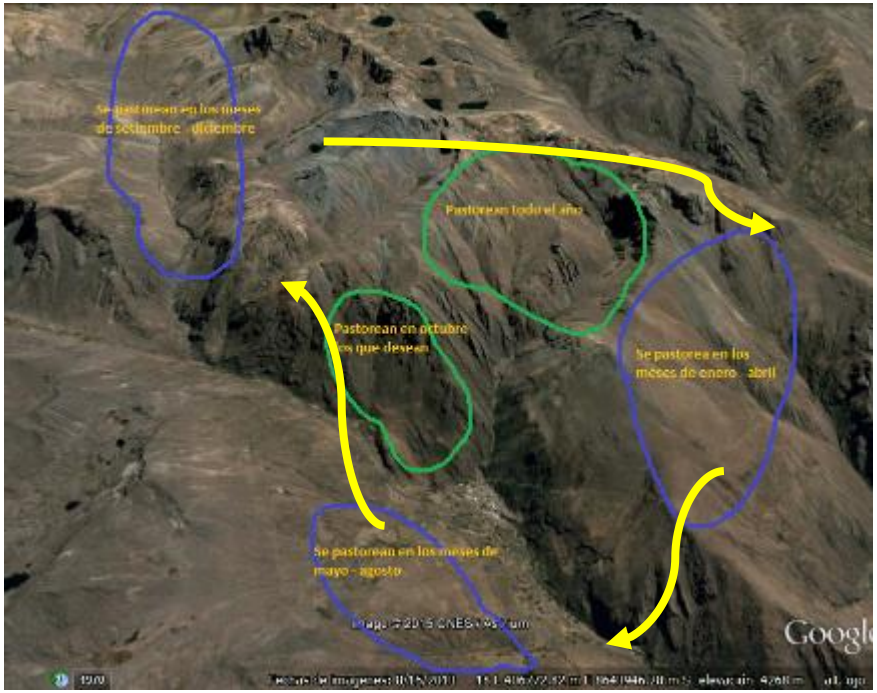
- Canal restaurado
- Ampliación de canal
- Cerco
- Abrevaderos nuevos
- Abrevaderos reparados
- Fuente de agua
- 80 hectáreas hectáreas

Miraflores: Before and after fencing

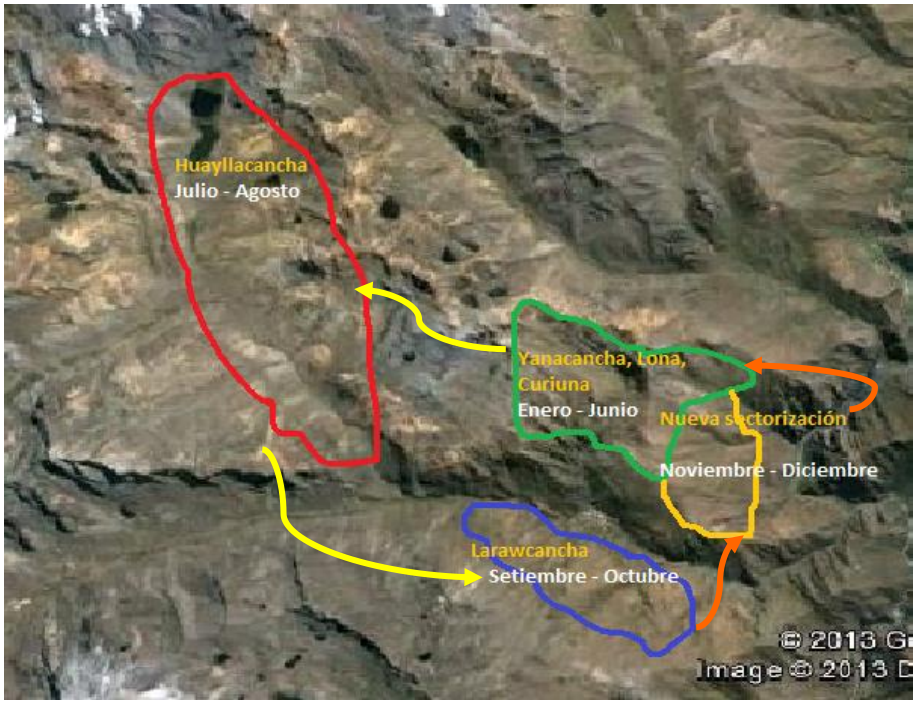








Rotación de pastoreo en la comunidad de Miraflores. Elaboración Propia, en base a Segura (2013



Nueva rotación de pastoreo en la comunidad de Miraflores. (Setiembre 2015)

Before and after: New grazing area and cattle rotation system





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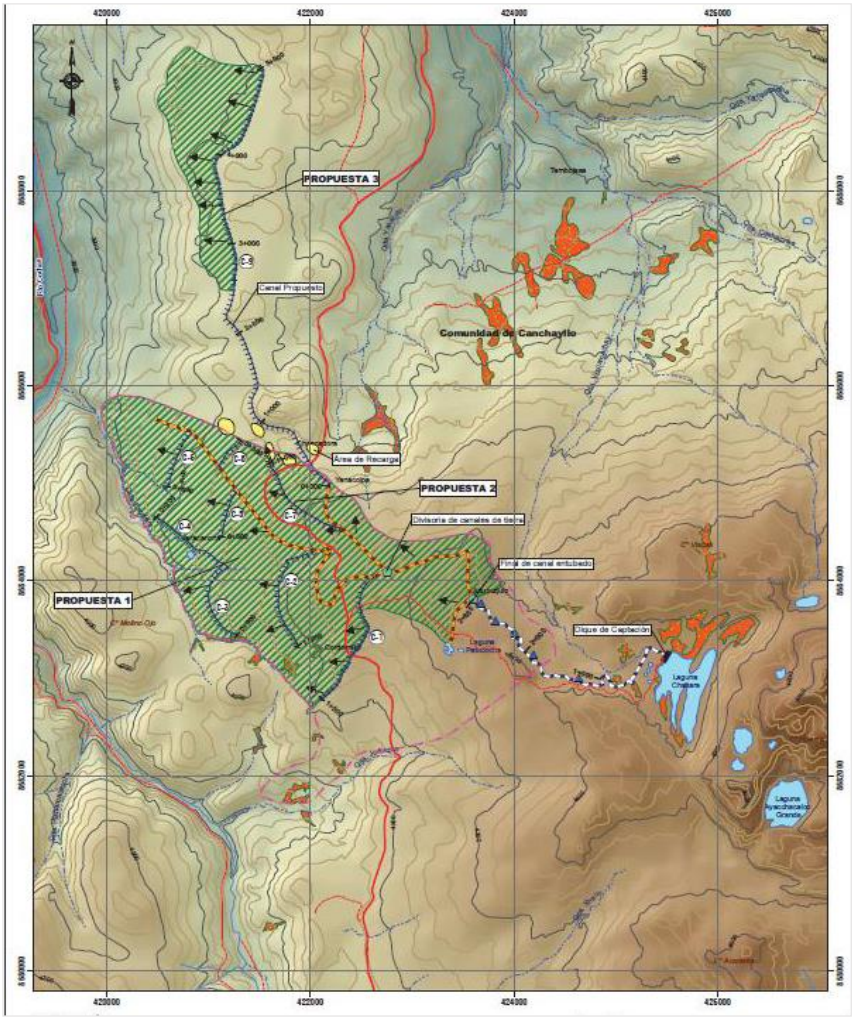
Canchayllo










Rehabilitation of water channel in Canchayllo (green-gray)

Canchayllo: Before and after

Main Results

- Participatory selection, design & implementation of two EbA measures.
- Engagement and capacities of the local communities and Reserve staff in the process.
- Methods and tools adapted and developed for a participatory and reflective process of the no-regret measures.
- Experiences and lessons of the process disseminated and systematized to extract recommendations → upscale and replication.

Ecosystem benefits/services

- Hydrological regulation: Water storage, groundwater recharge and regulation services enhanced
- Better water distribution
- Restoration and conservation of native grasslands; improving grassland provision
- Redistribution of grazing activities
- Grassland fire prevention
- Other ecosystem services: biodiversity conservation and enhancement of carbon storage.

Climate Change Adaptation:

- Increase the resilience and adaptive capacities
- Water availability during droughts
- Reduced impact of extreme events

Socio-economic Benefits

- Strengthened institutional arrangements, capacities and knowledge for community management of water, grasslands and livestock
- Improve grassland productivity by organizing grazing activities in the different community sites
- Strengthened governance through better coordination of development and conservation goals between communities, municipalities and the NYCLR.
- Recovery and re-value of traditional knowledge for grassland and water management
- Conventional & Participatory Cost Benefit Analysis (including social, economic, environmental and climate change dimensions) → benefits higher than costs:

Community	Conventional CBA				Participatory CBA
	without project/ without CC	without project/ with CC	with project/ without CC	with project/ with CC	B/C Ratio
Canchayllo	0.57	0.52	1.07	1.03	2,18
Miraflores	0.96	0.91	1.60	1.44	2,25

Effective EbA: A balance

- Aligning EbA measures with the local context
  - → Adapting old technologies to modern needs
- Institutional strengthening
  - → Participatory development of “Water and Grassland Management Plan” for both communities
- Community organization
  - → Development of a new grazing rotation plan