TECHNOLOGY TRANSFER FOR CLIMATE CHANGE ADAPTATION: CASE STUDIES IN ETHIOPIA, COLOMBIA AND PERU OF PROJECTS SUPPORTED BY THE GEF

Laura Kuhl
August 14, 2012
The Fletcher School, Tufts University
Field Research

• Research conducted June 4-July 14, 2012
• Interviews with key stakeholders including:
  – Project staff
  – Government officials at both national and local levels
  – NGO partners
  – Academic experts
  – Community leaders
  – Project beneficiaries
• 56 interviews conducted
Case Studies

• **Ethiopia**: Coping with Drought and Climate Change (UNDP) (GEF SCCF Fund)

• **Colombia**: Integrated National Adaptation Plan (INAP) (World Bank, Conservation International) (GEF SPA Fund)

• **Peru**: Adaptation to the Impact of Rapid Glacier Retreat in the Tropical Andes Project (PRAA) (World Bank, CARE Peru) (GEF SCCF Fund)
Case Selection

- **Wide geographic variety**
  - Urban/ rural
  - Latin America/Africa
  - LDC/middle income
  - Mountainous/coastal

- **Wide sectoral variety**
  - Agriculture
  - Health
  - Marine
  - Water management
  - Glacial

- **Different strategic approaches to adaptation**
  - **Ethiopia**: livelihoods/resilience approach
  - **Colombia**: data monitoring/planning approach
  - **Peru**: ecosystem/watershed approach
Projects a Positive Experience for Countries

• Ethiopia
  – Model project (learning tours by other organizations ie Oxfam, WFP)
  – New experience for country (historical focus on humanitarian intervention, not development)

• Colombia
  – First opportunity for different govt agencies to work together- one of the largest challenges but greatest value

• Peru
  – Not new techniques, but first time placed in climate change context
CASE STUDY 1: ETHIOPIA:
COPING WITH DROUGHT AND CLIMATE CHANGE
Coping with Drought Project Overview

• Adaptation Challenge:
  – Project region already one of the most drought-prone, degraded areas in Ethiopia
  – With climate change, droughts expected to be worse

• Project Design:
  – Working with 6 kebelas (villages)
  – Identified “model farmers” to receive intensive treatment
  – Other farmers received various components; replication from model farmers
  – Some community-level interventions as well
Coping with Drought Project Overview Cont.

Project Components:

1. Seeds (drought-resistant, short season variety, vegetables, fruit trees)
2. Drought-resistant livestock
3. Water harvesting and irrigation systems
4. Integrated pest management committees
5. Early warning systems (data collection and dissemination to farmers)
6. Flood control
7. Watershed rehabilitation and forage crops
CASE STUDY 2: COLOMBIA:
INAP: INTEGRATED NATIONAL ADAPTATION PLAN
INAP Project Overview

• Adaptation Challenge:
  – High mountain ecosystems, insular areas and health identified as the key vulnerabilities
  – Project goals to develop knowledge base and contribute to Colombia’s adaptation planning

• Project Design:
  – Project focused on monitoring and capacity-building of key planning institutions
  – IDEAM responsible for background data and high mountain ecosystems, INVEMAR and CORALINA responsible for insular areas and Institute of Health responsible for health component
INAP Project Overview Cont.

Project Components:

1. High Mountain Ecosystems
   • Glacial monitoring
   • Hydrological monitoring
   • Livestock and agricultural management practices

2. Insular Areas
   • Oceanographic and meteorological monitoring
   • Coral monitoring
   • Demarcation of marine reserve
   • Integrated rainwater harvesting/sanitation system
   • Population modeling
   • Aquifer monitoring and modeling
   • Sand dune restoration

3. Health
   • Dengue modeling
   • Malaria modeling
CASE STUDY 3: PERU:
PRAA: ADAPTATION TO THE IMPACT OF RAPID GLACIER RETREAT IN THE TROPICAL ANDES PROJECT
PRAA Project Overview

• Adaptation Challenge:
  – Tropical glaciers expected to disappear by 2030
  – Huancayo a rapidly growing city, but water 80% dependent on glacier melt

• Project Design:
  – 2 project locations in Peru: Cusco and Huancayo
  – CARE responsible for social components, Ministry of Agriculture responsible for technical components
  – Part of a regional project with Bolivia, Ecuador and, to a lesser extent, Colombia
PRAA Project Overview Cont.

Project Components:

1. Glacial monitoring
2. Hydrological monitoring and modeling
3. Reforestation of the upper watershed
4. Infiltration ditches
5. Irrigation and water storage for agriculture
6. Water metering to encourage conservation
7. Livelihood improvements (environmental edu, improved cookstoves, sanitation)
<table>
<thead>
<tr>
<th>Country</th>
<th>Technology</th>
</tr>
</thead>
</table>
| Ethiopia| - Sheep and goats- drought-resistant variety  
- Geomembranes for rainwater harvesting  
- Wing pumps and drip irrigation  
- Drought resistant/short season seed varieties (cereals and vegetables)  
- Integrated pest management techniques  
- Rain gauges (official and household use)  
- Highland/lowland fruit varieties, intercropping methods, and modern beehives  
- Gabions and gully crossings for river management |
| Colombia| - Health modeling (malaria and dengue)  
- Climatological monitoring stations (high mountain, glacial and coastal)  
- Hydrological monitoring stations (high mountain)  
- Oceanographic monitoring stations  
- Aquifer monitoring wells and modeling of water availability  
- Integrated rain water harvesting and sanitation system  
- Livestock stables (high mountain and island)  
- Small scale irrigation systems  
- Marine demarcation buoys  
- Sand dune/coastal restoration |
| Peru    | - Reforestation of high mountain praderas and infiltration ditches  
- Small scale irrigation, water storage reservoirs and improved irrigation canals  
- Household water meters  
- Improved cook stoves and sanitary toilets  
- Climatological monitoring stations  
- Hydrological monitoring stations |
SUCCESS FACTORS FROM CASES
Local government has taken leadership role integrating project into ministerial activities
Strong agricultural extension program a key facilitator to technology transfer
Innovative model of tech transfer enabled widespread adoption of a favorite technology
Enhanced data monitoring capacity, including first time many institutions addressing climate change
Project provided local government unique opportunity to engage with underserved populations
Clear focus on watershed management helped integrate all activities
Strong technical expertise enabled success even though this was largest-scale project ever attempted
Local government ownership major distinction between Huancayo and Cusco locations
Key Challenges

- Development of markets for technologies and agricultural products promoted by project
- Social acceptance of new practices/adoption by users
- Integration of social and technical aspects of projects