

Project PE-3 Communities and Watersheds

Summary October 2004



COMMUNITIES
& WATERSHEDS

PROJECT

**SUMMARY ANNUAL REPORT
2004**



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PROJECT PE-3

COMMUNITIES AND WATERSHEDS



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PE-3 PROJECT Communities and Watersheds

1. Project Description and Logframe

Goal: To foster community-based watershed management (CBWM) to address local natural resource priorities and contribute to improved environmental management, equitable resource allocation, and enhanced livelihood and food security.

Outputs:

1. Improved watershed management: land-water interactions
2. More equitable highland-lowland resource allocation
3. Provision of environmental services: water, biodiversity, and recreation
4. Strengthened organizations: community and institutional capacity building
5. Efficient use of project resources through participatory project management

Gains: Farmers and local organizations adopt technologies, tools, and methodologies developed with CIAT and its partners at research watersheds. Results are sustainable, production systems profitable, land use improved, and natural resources preserved at the watershed level. Partner organizations apply technologies, tools, and methodologies developed by or with the project for their planning and activities at local, national, and regional levels. Decision makers at various levels have information, tools, and methodologies provided by the project to support their planning, monitoring, and decisions.

Milestones:

- 2004 Establish monitoring networks and indicators for individual research sites / watersheds. Document land-water interactions, highland-lowland interactions, resource allocation inequity, and community priorities. Initiate capacity building programs at the local level. Promote the adoption of already proven approaches and technologies.
- 2005 Continuation of monitoring networks. Capacity building, strengthening local organizations, and training programs. Develop new technologies and approaches. Community-based adoption of proven methods and technologies. Improved local management using CIAT's research results.
- 2006 Continuation of monitoring networks. Community-based adaptive management with proven methods and technologies. Ongoing capacity building. Decision support providing information, tools, and methods at various levels (local, national, regional). Training programs. Improved watershed management using CIAT's research results. Scaling out.

Users: Farming families, youth, and rural communities of tropical watersheds. Project sites profit from increased community action aimed at improving watershed management. Educational institutions directly through youth involvement and student participation, and indirectly through

access to research materials. National and international development organizations involved in priority setting and investments in development.

Collaborators: CATIE, CIP, IPCA, IWMI, IICA, CIRAD, CIPAV, CVC; universities of Georgia, Florida, Guelph, British Columbia (Canada), Nacional Agraria (Nicaragua), Hue (Vietnam); INTA, CONDESAN, ACERG, Herederos del Planeta, ASOBOLO, CGIAB, GTZ, ICIMOD, Grupo Randi Randi, KIB, PARDYP, RNRR, Campos Verdes, CLOs, CIALs, Hillside Agricultural Program (HAP), Haiti.

CGIAR System Linkages: IWMI, CIP, CIMMYT, ICRAF, ILRI, IRRI, and Water and Food CP.

CIAT Project Linkages: Soils (PE-2), Land Use (PE-4), Agroindustries (SN-1), Participatory Methods (SN-3), Forages (IP-5), Impact Assessment (BP-1), Bean Improvement (IP-1), Cassava (IP-3), Rice (IP-4) Projects.

CIAT PE-3 Project Logframe, 2003-2006

Project: Communities and Watersheds
Manager: José Ignacio Sanz

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p>Goal: To foster community based watershed management (CBWM) to address local natural resource priorities, and contribute to improved environmental management, equitable allocation, and enhanced livelihood and food security.</p>	<p>Water quality Biodiversity Conflict resolution mechanisms Income (monetary and/or in kind) Farmer adoption of technologies / methods</p>	<p>National and local statistics Local research</p>	<p>The environmental, social, economic, and political conditions are maintained on a macro level.</p>
<p>Purpose: To strengthen local processes of watershed management and sustainable agricultural development in tropical regions, based on the experiences of natural resource management (NRM) at research sites.</p>	<p>User groups (number and types) Institutions with community involvement Local capacity building – training programs Youth involvement in NRM Community-based involvement in watershed management</p>	<p>Field verification Institutional reports</p>	<p>Local partners continue project-related activities. Donors remain interested in the proposed project objectives, and continue to provide support.</p>
<p>Output 1 Improved watershed management based on knowledge of land-water interactions. Farmers adopt approaches and technologies developed with CIAT and its partners to establish environmentally sound management and livelihood alternatives.</p>	<p>Land-water interactions: Water quality Land use change / intensification/ diversification Soil erosion Nutrient management</p> <p>Productivity</p>	<p>Local research Field verification Project reports Youth reports</p> <p>Local research groups' reports</p>	<p>Climate variability is normal.</p>

Continued.

CIAT PE-3 Project Logframe (continued).

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p>Output 2 More equitable resource allocation based on highland-lowland interactions and trade-off analysis. Identify and monitor indicators of highland-lowland resource interactions. Promote community-based approaches for resolution of inequities.</p>	<p>Highland-lowland interactions: Erosion Water quality Water quantity (drinking and irrigation) Trade-off analysis: Water rights/ concession Income distribution (highland-lowland) Livelihood opportunities Conflict resolution: User association participation Consortium functioning Policy and/ or institutional changes</p>	<p>Local research Field verification Youth reports CIAL reports Consortia reports Monitoring reports</p>	<p>Social stability</p>
<p>Output 3 Valuation and analysis of environmental services, including water, biodiversity, and recreation. Adoption of sustainable management practices by local farmers and user groups. Increased forest and agricultural biodiversity. Realizing the potential of recreational opportunities.</p>	<p>Water: Water quality Water quantity Biodiversity: Native vs. exotic species numbers (temporal and spatial) Agro-biodiversity (number and type) Recreation: Types and no. of suppliers Eco-tourism</p>	<p>Field verification Local research CIAL reports Youth reports Institutional reports</p>	<p>Climate variability is normal.</p>
<p>Output 4 Strengthened organizations. Local and national organizations involved in sustainable agricultural development at various levels (site, national, regional) use the technical and methodological resources developed by the project in their decision making and other activities. Inter-institutional coordination is enhanced.</p>	<p>Training programs (number and type) Youth group formation and activities User groups supported (number and type) Digital information (number and type) Decision support mechanisms Information dissemination (format and content)</p>	<p>Local research groups' reports Youth reports Training reports Institutional reports Dissemination materials and project reports</p>	<p>Social stability</p>

Continued.

CIAT PE-3 Project Logframe (continued).

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p>Output 5 Efficient use of project resources through participatory project management. Internal and external partners directly participate in project management to ensure adequate and efficient use of the project's resources.</p>	<p>Approved projects designed with partners and donors Partners participate in fieldwork Data sharing agreements</p> <p>Lessons learned by the project and its partners disseminated New projects adopt methods, techniques, and experiences generated by the project and its partners.</p>	<p>Planning documents, proposals, and reports Dissemination materials and project reports Direct verification through networks and consortia Reports to donors Annual reports</p>	<p>Institutional linkages maintained</p>

2. Project Inputs

Investigators:

Colombia:

José Ignacio Sanz	PhD Soil Science, Project Manager
Vicente Zapata	EdD Adult Education, Institutional Capacity Building
Sandra Dossman	BSc Graphic Designer, Communications Assistant
Adriana Domínguez	BSc Finances, Administrative Assistant
Sandra Brown (50%)	PhD Resource Management, , Senior Staff, UBC-CIAT Alliance
Lina A. García	MSc Watershed Management
Andrea Carvajal (50%)	BSc Journalist, Documentation Center (left during 2004)
Gregoire Leclerc	PhD Physics, Consultant, Book Editing
Pedro Lorenzo Burgos	BSc Agronomic Engineer, Research Assistant
Wilson Celemin	Officer
Gustavo A. Duque	Worker
Luis Enrique Echeverri	Worker
Adriana Giraldo	Part-time Worker
Julián Giraldo	Part-time Worker

CIAT – CONDESAN in Colombia

Rubén Darío Estrada	MSc Economist, Leader Policy Analysis
Ernesto Girón	BSc Topographic Engineer, Research Expert
Ximena Pernet	BSc Agriculture Engineer, Research Assistant

Costa Rica:

Mario Piedra (25%)	PhD Agricultural Economics, Senior Staff, CATIE-CIAT Alliance
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Honduras:

Guillermo Giraldo	MSc Agronomy, Consultant, Seed Systems
Vilia Escobar (50%)	BSc Journalist, Administrative Assistant
Gilman Palma	Technician, Production Systems, Field Assistant
Rosalio Mencía	Para-technician, Field Assistant, Yorito
Juan Evangelista	BSc Forestry Engineer, Research Assistant
Justa Mérida Barahona	High School Ecology and Environment, Local Coordinator Youth Project

Nicaragua:

Jorge Alonso Beltrán	MSc Agronomy, Liaison Officer
Juan Bosco Franco	BSc Agronomic Engineer, Research Assistant
Pedro Pablo Orozco	BSc Agronomic Engineer, Production Systems, Research Assistant
Elvis Cayetano Chavarria	Field Assistant, San Dionisio

Haiti:

Gardy Fleurantin	MSc Agronomy, Liaison Officer
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Southeast Asia:

Rod Lefroy	PhD Soil Science, Regional Coordinator of CIAT in Asia
Keith Fahrney	PhD Agronomy and Soil Science PRDU Project Director
Lao Thao	BSc Crop Protection, PRDU Project Assistant (Lao PDR)
Duong Van Son	PhD Agronomy, PRDU Project Assistant (Viet Nam)

Students:

Colombia:

Maria Cecilia Roà, PhD studies, Wetlands Hydrology UBC (Canada)
Olaf Westermann, PhD studies, Social Capital and Collective Water Management, Roskilde University (Denmark)
Katherine Tehelen, MSc in Environmental Socio-economics, CATIE (Costa Rica)
Gracia María Lanza, MSc in Environmental Sciences, Wageningen University (Holland)
Alina Estrada, Student internship Graphic Designer, Universidad Autónoma (Colombia)

Nicaragua

María Eugenia Baltodano MSc in Environmental Socio-economics, CATIE (Costa Rica)
Valerie Piccand, Student internship, Water Quality Indicators, Swiss College of Agriculture (SCA)
Suzanne Zanelli, Student internship Natural Resources, Universidad de La Paz (Costa Rica)

Collaborators:

Within CIAT: See under CIAT project linkages, project description, page 2.

Outside CIAT: See under Collaborators and System linkages, project description, page 2.

Budget:

Headquarters / Latin America and the Caribbean

Source	Amount (US\$)	Proportion (%)
Unrestricted core	479,702	49
Restricted core	0	0
Carry over from 2003	209,868	22
Subtotal	689,570	71
Special projects	263,199	27
Water and Food Challenge Program	20,917	2
Total	973,686	100

Asia

Source	Amount (US\$)	Proportion (%)
Unrestricted core	173,635	11
Core substitution	0	0
Carryover from 2003	151,614	10
Subtotal	325,249	21
Special projects	1,216,388	79
Total	1,541,637	100

Africa

Source	Amount (US\$)	Proportion (%)
Unrestricted core	0	0
Core substitution	0	0
Carryover from 2003	0	0
Subtotal	0	0
Special projects	136,426	100
Total	136,426	100

3. Research Highlights in 2004

This year we highlight seven areas of our current research work.

1. INTA-CIAT (FUNICA) Project

In Nicaragua, we are adapting environmental sensitive area assessment (ESA) to local conditions by incorporating a social component (environmentally and socially sensitive areas, ESSA). The Instituto Nacional de Tecnología Agropecuaria (INTA) and other partners of the alliance (UNA [Universidad Nacional Agraria], CARE International, and CIAT) are strengthened in the focus on

integrated watershed management in the pilot areas of the rivers Cállico (San Dionisio-Matagalpa) and Viejo (La Concordia and San Rafael del Norte-Jinotega). The project is financed by the Fundación para el Desarrollo Tecnológico Agropecuario y Forestal de Nicaragua (FUNICA). In relation to the base line: (a) a minimum set of 50 indicators (24 priority ones) were defined with participating partners in cultural, biophysical, socioeconomic, soil-water and biodiversity, land use-production, and community management aspects; (b) a methodology was established to compile quantified data with partners and municipalities; (c) information was systematized through the Toolbook. Maps have been produced at 1:20 000 scale in the pilot subwatersheds to identify the ESSA, since all existing information in the country is at scales greater than 1:50 000, such a low level of detail not permitting analysis within the watershed. Thirty-six officials of the institutions in the alliance and local partners have been trained (22 from INTA, three from UNA, two from CARE, three from CIAT, one each from the municipalities (mayors' offices) of La Concordia, San Rafael del Norte, and San Dionisio, and three research staff of the Universidad Nacional Autónoma de Nicaragua [UNAN]-Matagalpa).

2. Bolivia Youth Project

The Consultative Group on International Agricultural Research- Canadian International Development Agency (CGIAR-CIDA) Canada Linkage Fund approved our 3-year proposal "Youth Bolivia: alliance for water-science and the future". With this proposal we will attempt to build local capacity where youth is involved in the science of integrated water management in the Tiquipaya watershed in Cochabamba, pilot site of the Consorcio para el Desarrollo Sostenible de la Ecorregión Andina (CONDESAN). A scientific study is underway with youth participating as co-investigators, with the aim of creating capacity to carry out investigations and integrated studies related to water use (balance and quality). The activities include the design, management, and analysis of recognition related to water use at farm level and the participative determination of sensitive environmental areas. The proposal is a collaborative one between the Communities and Watersheds (C&W) Project, the Comité Gestión Integral del Agua en Bolivia (CGIAB) of Bolivia, and the University of British Columbia (UBC) of Canada.

3. Rural youth from different countries trained in multiple aspects

The youth leadership component of the C&W research projects has several purposes: first, it is thought of as the basis of research projects aimed at solving problems that are felt by local communities and perceived by youth as posing a threat to their future. By developing youth leadership skills, young leaders become co-researchers, critics, and the link between rural communities and researchers. In this way, youth leadership serves as the initiation of long-lasting relationships between the scientific and the rural communities. Second, youth leadership potentializes the impact and speed of assimilation of new knowledge in natural resource management. Youth involvement in research projects related to resources that offer them a source of income or employment, now or in the future, ensures immediate use of research findings and the willingness of parents to support and encourage research activities in their watersheds. Leadership development gives adolescents a voice in the decision-making processes that affect their lives. The C&W project has trained youth in geographic information systems (GIS) methods and in technologies of Sistemas Integrados de Producción Pecuaria (SIPP) in El Dovio-Colombia. Youth in El Dovio have received technical training also on bio-intensive

gardening and on the transformation of bamboo, and in relation to these, in computing, commercialization of transformed products and in business and money management. A course on research methodology was given to youth in La Hondura, Colombia.

4. Establishment of water monitoring network in Filandia, Quindio, Colombia.
5. Strengthening and development of local partners, for example, INTA, CGIAB, and Corporación Autónoma Regional del Quindío (CRQ).
6. Staff from C&W entering universities with scholarships: Katherine Tehelen MSc in the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE), Costa Rica; Maria Eugenia Baltodano MSc in CATIE, Costa Rica; Maria Cecilia Roa PhD in UBC, Canada (Association of American University Women International Fellowship).
7. Capacity building of C&W staff (other than those mentioned in point (6) has been a great step forward for both Central and South American teams.

4. Problems Encountered and Their Solutions

This year has passed without major problems. The lack of a greater number of scientists within the project has been compensated for, and even surpassed by, the inputs from our strategic allies and other partners. Being a young project, we have been careful to keep focused and avoid distractions as recommended by the Board of Trustees last year. Gradually, we are building a solid foundation, and although funding is difficult to get, we are managing to generate funds to keep moving on our purpose. To further enhance our team's capacities, some of our junior staff members have received MSc and PhD scholarships in our strategic allied universities, as well as in other postgraduate programs funded by CIAT's initiatives. Our activities in the field and the generation of more solid research results are establishing our good image with partners and donors, and we expect this will improve even more in the near future.

5. Indicators: Technologies, Methods, and Tools

5.1. Technologies

- Bio-intensive gardens with a focus on food security, nutrition, and diversification of diet (Youth projects in El Dovio-Colombia and in Yorito-Honduras).
- Drip irrigation (efficient water use) in Yorito-Honduras (Youth Project and SOL), and in El Dovio (Colombia Youth Project).
- Integration of drip irrigation for bio-intensive gardens: adaptation of techniques currently being tested in Yorito-Honduras and in El Dovio-Colombia.

5.2. Methods

- Participatory research in natural resource management with youth communities – El Dovio-Colombia, Calico River-Nicaragua, and Yorito-Honduras. Approaches include youth-led research, co-investigators and seed funds for characterizing resource use, community perceptions, and identifying potential options for natural resource management with a specific focus on water and watersheds.
- Integrated watershed management (Calico River-Nicaragua, Barbas River-Colombia, and Los Sainos watershed-Colombia): Application of baseline surveys, field and GIS mapping, and monitoring networks to assess the status and dynamics of biophysical resources and their use relative to water availability (quantity) and quality (land-water interactions).
- ESSA Assessment (Calico River-Nicaragua): Adaptation of ESA method to include socioeconomic context currently being applied in Central America as a pro-active approach to land-use planning and the identification of critical areas for protection and/or rehabilitation.
- Leadership for science and small enterprise development (El Dovio-Colombia): Application of leadership training for youth in relation to environmental research and in the transformation of bamboo (artisan products) including team building, communication, and conflict management skills.
- Participatory methods – Participatory Research for Development in the Uplands (PRDU), Lao PDR, Viet Nam, China.
- Participatory monitoring and evaluation methods - Bolivia
- Pro-poor knowledge sharing methodologies – Bolivia: Contributing areas for quantification of water availability (Barbas River-Colombia). Design and implementation of a water quantity monitoring network to assess multi-scale water availability and the contribution of upland wetlands to dry season flow relative to human use.
- Contributing areas for quantification of water quality (Yorito-Honduras and Calico River-Nicaragua): Initiation of water quality monitoring (chemical and biological) relative to land use and potential contamination sources in micro-watersheds to evaluate causes of degraded water quality and options for rehabilitation.

5.3. Tools

- Toolbook - a computer program that will serve for the interactive systematization of the information collected on the base of a group of measurable indicators for the selected themes in integrated watershed management
- GIS and global positioning systems (GPS; El Dovio-Colombia and Calico River-Nicaragua): Application of GIS and GPS tools for the spatial analysis of biophysical and socioeconomic characteristics such as forest area and type for rehabilitation projects, pollution sources,

household - baseline surveys, wetland and spring mapping, and aqueducts to evaluate water resources with respect to quality and availability.

- Partnerships and alliances for science and development (El Dovia and Barbas River-Colombia, Calico River-Nicaragua, and Yorito-Honduras): Applying a partnership approach involving partners in all phases of research projects from fund raising, design, and implementation to action research and particularly in scaling out / replication.

6. Indicators: Publications List

6.1. Refereed journals

Published: 5 articles

In press: 3 articles

Submitted: 1 article

6.2. Book chapters and books

Published: 4

6.3. Workshop and conference papers, presentations, and posters

Presented: 5

6.4. Technical reports and others

Published: 13

7. Indicators: Training List

3 interns

At least 941 farmers trained

5 higher degree students supervised

Courses given during the year are listed on the following page.

Course ^a	Dates	Place	No. of participants
Youth training in GIS	September 2004	El Dovio, Colombia	30 youth
Re-socialization of SIPP proposal	10-12 March 2004	El Dovio area villages, SIPP group	18 youth
Workshop on constructions for fish farming	18-19 March 2004	La Hondura, Colombia	23 producers
Workshop of co-researchers and participative elaboration of protocols	30 June 2004	La Hondura, Colombia	37 researchers
Workshop on zoonotic diseases and practices of sanitation management	6 July 2004	La Hondura, Colombia	26 producers
Business and money management	17 Feb. – 28 March 2004	El Dovio, Colombia	45 youth
Technical training in transformation of bamboo	15 April and ongoing 2004	El Dovio, Colombia	45 youth
Commercialization of transformed products	2 Sept. and ongoing 2004	El Dovio, Colombia	25 youth
Bio-intensive gardening	Sept 2004	El Dovio and La Hondura, Colombia	35 youth
Computing	February 2004	El Dovio, Colombia	25 youth
Research methodology	April 2004	La Hondura, Colombia	35 youth
Strengthening the local organizational process	19-22 October 2004	El Dovio, Colombia	34 representatives from 25 local insitutions
Use of GIS methodologies in integrated watershed management	21-25 July 2004	Matagalpa, Nicaragua	39 professionals
Indicators for integrated watershed management	9-12 March 2004	Matagalpa, Nicaragua	38 professionals
Use of Toolbook for information management on integrated watershed management	13-17 April 2004	Matagalpa, Nicaragua	38 professionals
SOL methodology	4-7 May 2004	Matagalpa, Nicaragua	39 professionals
Monitoring of water quality in surface water	July 2004	Matagalpa, Nicaragua	42 professionals
ESSA methodology	18-22 October 2004	Matagalpa, Nicaragua	39 professionals
Workshop on participatory problem diagnosis and forming farmer interest groups	29 March – 2 April 2004	Xieng Khouang, Lao People's Democratic Republic	5 provincial, 17 district extension staff
Workshop on forage and feed crop technologies and participatory research approaches	14-18 July 2004	Tuyen Quang, Viet Nam	17 provincial, 11 district, 5 commune extension staff, 6 farmers
Study tour (Ha Tay): Ba Vi and Ba Van Forage and Livestock Centers	23-25 August 2004	Ha Tay, Viet Nam	3 provincial, 5 district, 3 commune extension staff, 15 farmers
Participatory monitoring and evaluation	26-30 July 2004	Bolivia	35 facilitators

a. GIS, geographic information systems; SIPP, Sistemas Integrados de Producción Pecuaria; SOL, Supermercado de Opciones para Ladera; ESSA, environmentally and socially sensitive areas

8. Indicators: Resource Mobilization List

8.1. Proposals funded

List of proposals funded in 2004

1. *Evaluación de la influencia del bosque ripario de Guadua (Guadua angustifolia), en la conservación de la calidad del agua en la cuenca media del Rio Garrapatas* (Evaluation of the influence of bamboo riparian forest [*Guadua angustifolia*] in the conservation of water quality in the middle watershed of the Garrapatas River)

Submitted to the CIAT Internal Fund for national staff researchers under 30 by Sandra Dossman and Lina Garcia. Budget US\$2000. Location: Garrapatas Canyon, El Dovia, Colombia. Duration: 1 year. Status: successful.

2. Youth Bolivia: alliance for water-science and the future

Submitted to: Consultative Group on International Agricultural Research- Canadian International Development Agency (CGIAR-CIDA) Canada Linkage Fund. Budget: Cdn \$150,000. Location: CONDESAN's pilot watershed in Bolivia. Duration: 3 years. Status: approved

List of proposals submitted in 2004

1. Watershed management with young researchers in the Tascalapa River subwatershed, Yorito, Yoro-Honduras.

Submitted to: Swiss Agency for Development and Cooperation.
The amount requested is US\$30,000.

2. The community self-organizes for research in natural resource management with emphasis on integrated watershed management

Submitted to: Ministerio del Medio Ambiente y los Recursos Naturales. Location: Nicaragua. This project will be carried out jointly between C&W and IPRA. The amount requested is US\$100,000

3. *Repartir lo que se puede medir: gobernabilidad en el manejo del agua* (Share what can be measured: governability in water management)

Submitted by ASOBOLO in partnership with C&W to the Governance program of the Canadian Embassy in Bogotá. Location: Bolo River, Cauca Valley, Colombia Budget: \$40,000 Canadian. Duration: 18 months. Status: denied, as the focus on water governance did not fit within the Canadian governance framework, which focuses on political participation.

4. Water quality and health: beyond diagnosis. A case study in Quebrada Grande, Colombia

Submitted to the CIAT strategic research fund. Location: Los Sainos watershed, El Dovio, Colombia. Budget: US\$10,000. Duration: 1 year. Status: unknown

5. Innovation in water management: allocation, green water, and demand control in the Andes

Submitted under the pilot project on Agricultural, Research Fondo Regional de Tecnología Agropecuaria (FONTAGRO) / IDB / CGIAR. A joint proposal with CGIAB-Bolivia, Grupo Randi Randi Ecuador, C&W-CIAT, and the UBC. Location: Barbas River-Colombia, Tiquipaya-Bolivia, and El Angel-Ecuador. Budget: US\$495,000. Duration: 3 years. Status: unsuccessful.

6. *Investigación y acciones para el mejoramiento de la disponibilidad de agua en la cuenca del río Bolo*

(Investigation and activities for the improvement of water availability in the Bolo River watershed)

Submitted to: Japanese Embassy. Joint C&W – ASOBOLO submission. Budget: US\$50,000. Duration: 18 months. Status: in process.

7. *Desarrollo de alternativas tecnológicas y capacidades locales de jóvenes y mujeres en busca de la seguridad alimentaria*

(Development of local alternative technologies and capacities of youth and women in search of food security)

Submitted to: the McKnight Foundation in association with CGIAB-Bolivia Location: Tiquipaya Bolivia. Budget: US\$150,000. Duration: 3 years. Status: unsuccessful

8. Youth and green water research: Colombia-Canada International Network

Submitted to: the Re-Source Award 2004 sponsored by the Swiss Re-Insurance Corporation, by C&W in cooperation with UBC. Location: Salmon River-Canada and Barbas River-Colombia. Budget: US\$100,000. Duration: 1 year. Status: submitted

9. Scaling water use, quality, and equitable water distribution issues in the Andes

Submitted to: IFAD under the WFCP. Location: Bolo River-Colombia, Barbas River-Colombia, El Angel-Ecuador, and Tiquipaya-Bolivia. Budget: US\$750,000. Duration: 3 years. Status: unsuccessful – new donor being sought under the umbrella of the WFCP

10. *Feria Jóvenes, desarrollo y paz: “la guadua, alternativa económica y cultural para la comunidad joven de la cuenca media del río Garrapatas, Serranía de los Paraguas – Colombia”*

(Youth Festival, development and peace: “bamboo, economic and cultural alternative for the young community in the middle watershed of the Garrapatas River, Serranía de los Paraguas, Colombia”)

Submitted to: World Bank Initiative in Colombia. Festival of development with the Colombian government in the Plan Colombia Joven (Colombian Youth Plan). Budget: Col. pesos 63,000,000. Status: unsuccessful.

11. Creation of Community Centers of Higher Education - connectivity

Submitted to: The Ministry of Education, Colombia's call for the co-financing of Centros Comunitarios de Educación Superior (CCES). Budget: Col. Pesos 100,000. Duration: 3 years. Status: in progress

12. The CP Secretariat of the Water and Food Challenge Program (WFCP) is actively seeking finance for approved projects, beyond the approximate 20 for which funds already are available. Our proposal, no. 29, is one of those approved without available funding as yet, leaving C&W's scaling proposal no. 2 in the funding queue.

Title: Scaling Water Use, Quality and Equitable Water Distribution Issues in the Andes and Himalayas. Duration: 3 years. Budget: US\$850,000. Location: The Project will be implemented in eight watersheds, four in each mountain region (Andes/Himalayas).

9. New Directions for 2005

Water quality, quantity, and services and the interactions of land-water-community are included in our logframe as essentials when working towards improving food security with sound environmental management. Our primary end users are now the farming families, youth, and rural communities of the tropical watersheds. They are not just beneficiaries, but directly involved, and thus more likely to adopt new technologies. We emphasize the education of youth and the community. This then brings in the educational institutions that become direct users through youth involvement and student participation, and indirectly through access to research materials. National and international development organizations are involved in priority setting and investments in development. Our collaborators now include more government and nongovernmental organizations, and local associations.

Our proposals seek to further these lines of research. We are proposing an extension of the Youth in Natural Resource Management Project into a Latin Youth Network focused on water and natural resources that will link our youth projects in Colombia, Honduras, and Bolivia. Also, the CGIAR-CIDA Canada Linkage Fund approved our 3-year proposal "Youth Bolivia: alliance for water-science and the future". With this proposal we will attempt to build local capacity where youth is involved in the science of integrated water management in the Tiquipaya watershed in Cochabamba, CONDESAN pilot site.

The new framework of policies for the productive rural development of Nicaragua frames INTA's Strategic Plan 2003-07, within which is included the focus on integrated watershed management of the institutions, under the research line – generation of promising technologies. With the aim of supporting INTA and other partners of the alliance (UNA, CARE, and CIAT) in their strategy, we are helping strengthen their focus on integrated watershed management in the pilot areas of the rivers Calico (San Dionisio-Matagalpa) and Viejo (La Concordia and San Rafael del Norte-Jinotega), financed by FUNICA. The steps carried out in the pilot

subwatersheds also will be developed principally by INTA with CIAT's support in 10 other sub- and microwatersheds in the country—in the Pacific zone (subwatersheds Ochomogo, Juacuapa, and Pacora Rivers, Tecomapa microwatershed), northern central zone (Pires River microwatershed), Segovias zone (Aguas Calientes microwatershed, San Nicolas subwatershed), and southern central zone (microwatersheds of Carca and Apompua Rivers).

In connection with students' thesis work, the main objective of one thesis is to estimate the opportunity costs of water uses in the upper watershed of the Barbas River, and to design a proposal for an environmentally adjusted tariff to internalize the costs of water source protection. Fieldwork will be developed in the Barbas River Watershed, in Cali, Colombia, during 2005. The other MSc thesis will be developed in collaboration with the Fortalecimiento de la capacidad local en manejo de cuencas y prevención de desastres naturales (FOCUENCAS) II project in Nicaragua. Fieldwork will be developed in the Calico and Jucuapa watersheds in Matagalpa, Nicaragua. The theme to be addressed will be Environmental Services.

The Project "Strengthening food security in Haiti" will be implemented in four departments: the South, Southeast, Center and North, and will extend over a 5-year period. The main objective is to strengthen food security within the areas of intervention, through yield and production increase, added value to agricultural goods, increased income for farmers, and building of local capacities on a sustainable basis. The project will include two main components: applied participatory research, and transfer of technologies generated in the target areas. Training, both for producers and for the project staff, will be a major component for the replication of activities, and for adaptation trials for the materials that have been selected within the other sites of the project; it will be geared so as to ensure the sustainability of the acquired results.

For the PRDU work in Asia, a training workshop is planned for Guangxi, China later in 2004 to prepare for on-farm trials in focus villages there early in 2005. Support to the IFAD investment project in Ha Giang (Vietnam) will begin after start-up of a new phase of that project (in April 2005). In the on-farm trials, in 2005, we will begin working with villagers to evaluate simple processing technologies, and to conduct trials on utilization of root crops and forages as feed resources for increasing productivity of smallholder livestock systems.

The FIT Project No.8: Pro-poor knowledge sharing methodologies is a Rural Innovation Institute (RII) Project where PE-3 is collaborating with Vicente Zapata. The project will be an opportunity to strengthen the capacities of farmer leaders to systematize lesson learning for pro-poor policy formulation in the Sistema Boliviano de Tecnología Agropecuario (SIBTA) and partner TT providers, including local agricultural university programs. To this end, the project will identify a set of "knowledge-sharing methodological arrangements" useful to respond to the technological knowledge needs of farmers.

The C&W baseline is structured from the minimum set of indicators for watershed analysis that we developed, and is linked to the research framework. This baseline continues in process through the taking of quantifiable data. This leads to more concrete milestones aimed at the better management of natural resources, land use, and water.

Mid-Term Plan 2005-2007

Goal: To improve water, food, and environmental quality and services through research on land-water-community interactions.

Outputs:

1. Improved watershed management: land-water interactions
2. More equitable highland-lowland resource (water) allocation
3. Provision of environmental services: water
4. Strengthened organizations: community and institutional capacity building
5. Efficient use of project resources through participatory project management

Gains: Farmers and local organizations adopt technologies, tools, and methods developed by C&W and its partners within research watersheds. Results are sustainable, land use improved, and natural resources conserved at the watershed level. Partner organizations apply technologies, tools and methods developed in conjunction with C&W for their planning and activities at local and regional levels. Decision makers at municipal and regional levels have information, tools, and methods provided by C&W to support their planning, monitoring, and decisions.

Users:

Primary clients: local governments, local organizations, farmer groups, water user associations

Secondary clients: research institutions, national governments, nongovernmental organizations (NGOs)

Final beneficiaries: farmers and communities

Principal Collaborators:

CGIAR: IWMI, Water and Food CP

Universities: CATIE (Costa Rica), UBC (Canada), National Agraria (Nicaragua)

NGO: CGIAB (Bolivia), Randi Randi (Ecuador), ASOBOLO, CIPAV, ACTUAR (Colombia), Clodest (Honduras), FIPAH (Honduras), CARE (Nicaragua)

GO: CRQ, CVC (Colombia), INTA (Nicaragua), Municipalities of El Dövio (Colombia) and San Dionisio (Nicaragua), RENOC (Nicaragua)

Local associations: ACERG, Herederos del Planeta (El Dövio, Colombia), Asociacion Campos Verdes (San Dionisio, Nicaragua)

Regional associations: CONDESAN

CIAT: Soils (PE-2), Land Use (PE-4), Forages (IP-5), IPRA (SN-3), Beans (IP-1), Information Systems Unit (IS)

Milestones: 2005

Pilot watersheds	Monitoring networks / baseline surveys	<ul style="list-style-type: none"> ▪ A minimum of 2 water monitoring networks established within C&W watersheds by 2005 ▪ Links to a minimum of 2 regional / national monitoring networks by 2005 for data interchange ▪ A minimum of 2 baseline household-level water and resource use surveys designed, implemented within C&W watersheds, and analyzed by the end of 2005
	Integrated watershed management	<ul style="list-style-type: none"> ▪ Image analysis of land use and management (high resolution imagery and ground truthing) completed within 2 C&W watersheds in 2005 ▪ Water availability / wetlands hydrologic response research established in 1 C&W watershed ▪ Riparian use and management studies initiated in 2 C&W watersheds in 2005 ▪ Water Efficient technologies installed and monitored in a minimum of 2 C&W watersheds ▪ Best Management Practices (BMP) assessment in a minimum of 2 C&W watersheds
Workshops / trainings (formal)	Watershed Management	<ul style="list-style-type: none"> ▪ 1 ESA workshop completed by 2005 to support joint CIAT / GO hotspot analysis
	Youth research / leadership	<ul style="list-style-type: none"> ▪ A minimum 2 youth leadership workshops conducted in 2005 ▪ At least 1 joint UBC youth workshop conducted in 2005
	Students / interns	<ul style="list-style-type: none"> ▪ 2 MSc theses to be completed in 2005 ▪ A minimum of 1 ongoing student research activity supported in 2005 ▪ A minimum of 1 internship project completed in 2005
Publications / communication	IT	<ul style="list-style-type: none"> ▪ Website re-design and update completed in 2005 ▪ 1 CD-ROM highlighting project initiatives completed in 2005 ▪ 1 ESA method CD-ROM completed by 2005
	Guides / brochures	<ul style="list-style-type: none"> ▪ A minimum 2 Guides produced on youth research for use by schools and communities by the end of 2005
	Articles, books, conferences	<ul style="list-style-type: none"> ▪ A minimum of 2 scientific papers written and/or presented
Fund raising	Special projects	<ul style="list-style-type: none"> ▪ A minimum of 3 special project proposals written and submitted ▪ Specific donor targets: Kellogg for Colombia and CIDA for Honduras and Nicaragua

Continued.

2006

Pilot watersheds	Monitoring networks / baseline surveys	<ul style="list-style-type: none"> ▪ Continuation of water quantity and quality monitoring within 2 C&W watersheds ▪ Expansion of monitoring sites within 1 C&W watershed ▪ Baseline surveys designed, implemented, and analyzed in 1 additional C&W watershed (based on successful fund raising)
	Integrated watershed management	<ul style="list-style-type: none"> ▪ Image analysis of land use / management completed in 2006 for 1 additional watershed ▪ Continuation of water availability / hydrologic response research initiated in 2004/05 ▪ Assessment of water efficient technologies monitored in 2005 in 2 C&W watersheds
Workshops / trainings	Youth research	<ul style="list-style-type: none"> ▪ A minimum 1 youth research workshop conducted in 2006 ▪ At least 1 joint UBC workshop conducted in 2006
	Students / interns	<ul style="list-style-type: none"> ▪ A minimum of 1 student with research activities ongoing in 2006 ▪ A minimum 1 intern per South and Central America
Publications / communication	IT	<ul style="list-style-type: none"> ▪ Translation of 1 UBC CD-ROM text into Spanish completed in 2006 ▪ Application of ESA CD translated in 2005
	Guides / brochures	<ul style="list-style-type: none"> ▪ Application of Guides produced in 2005 on youth research within 2 C&W watersheds
	Articles, books, conferences	<ul style="list-style-type: none"> ▪ A minimum of 2 scientific papers written and/or presented in 2006
Fund raising	Special projects	<ul style="list-style-type: none"> ▪ A minimum of 2 special project proposals written and submitted in 2006

Continued.

2007

Pilot watersheds	Monitoring networks / baseline surveys	<ul style="list-style-type: none"> ▪ Continuation of water quantity and quality monitoring within 3 C&W watersheds ▪ Expansion of monitoring sites within 2 partner watersheds in South America (based on successful fund raising) ▪ Baseline surveys designed, implemented, and analyzed in 2 partner watersheds in South America (based on successful fund raising)
	Integrated watershed management	<ul style="list-style-type: none"> ▪ Water balance / availability assessment completed in 2007 for 1 C&W watershed ▪ Environmentally Sensitive Area Assessment pilot project initiated to adapt the UBC methodology to Latin America (based on successful fund raising)
Workshops / trainings	Youth research	<ul style="list-style-type: none"> ▪ At least 1 joint UBC workshop conducted in 2007
	Students / interns	<ul style="list-style-type: none"> ▪ 1 UBC PhD student thesis completed in 2007 ▪ A minimum 1 intern per South and Central America
Publications / communication	IT	<ul style="list-style-type: none"> ▪ Website and CD-ROM developed in 2007 highlighting research results in 1 C&W watershed
	Articles, books, conferences	<ul style="list-style-type: none"> ▪ A minimum of 2 scientific papers written and/or presented in 2007
Fund raising	Special projects	<ul style="list-style-type: none"> ▪ A minimum of 2 special project proposals written and submitted in 2007

CIAT C&W Project LogFrame (2005-2007)

Project: Communities and Watersheds

Manager: José Ignacio Sanz

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p>Goal: To improve water, food, and environmental quality and services through research on land-water-community interactions.</p>	<p>Water quantity and quality parameters Water efficiency (use and technologies) Farmer adoption of technologies / methods</p>	<p>Local research / monitoring networks Comparable indicators Watershed comparisons</p>	<p>The environmental, social, economic, and political conditions are maintained on a macro level.</p>
<p>Purpose: To strengthen local processes of watershed management and sustainable agricultural development in tropical regions based on the experiences of NRM at research watersheds.</p>	<p>Local capacity building – training programs Youth involvement in NRM Community-based involvement in watershed management</p>	<p>No. workshops conducted No. youth groups / projects Level of community participation in watershed management activities</p>	<p>Local partners continue project-related activities. Donors interested in the proposed project objectives and provide support.</p>
<p>Output 1 Improved watershed management based on knowledge of land-water interactions.</p>	<p>Land-water interactions: Water quantity and quality parameters Land use: management and change</p>	<p>Field research Monitoring networks Primary data collection Image analysis and field verification</p>	<p>Climate variability is normal. Donor support is obtained. Social stability</p>
<p>Output 2 More equitable highland-lowland resource (water) allocation.</p>	<p>Highland-lowland interactions: Water quality parameters Water quantity (drinking and irrigation) Water use (by sector)</p>	<p>Field research Monitoring networks Primary data collection Water use survey</p>	<p>Climate variability is normal. Donor support is obtained. Social stability</p>

Continued.

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Output 3 Provision of environmental services: water	Water: Water quality parameters Water quantity parameters Water use by sector Riparian buffers (type and quality)	Field research Monitoring networks Primary data collection Water use survey Riparian buffer inventory	Climate variability is normal. Donor support is obtained. Social stability
Output 4 Strengthened organizations: community and institutional capacity building	Training programs Youth group formation and activities Information dissemination (format and content) Partnerships	No. and type of workshops conducted No. youth groups / projects No. reports, CDs, Website links, papers, presentations No. and type of partners (GO, NGO, local, regional)	Donor support obtained. Social stability.
Output 5 Efficient use of project resources through participatory project management	Approved projects designed with partners and donors Partners participate in fieldwork Data sharing agreements Lessons learned by the project and its partners disseminated New projects adopt methods, techniques, and experiences generated by the project and its partners Alliances – strategic and special project	No. new projects funded No. and type partners and level of participation No. data sharing agreements No. papers, brochures, Website links, CD-ROMS, documentation of replication of methods and techniques No. and type of partners (GO, NGO, local, regional)	Institutional linkages are maintained. Donor support is obtained.