

# THE CONTEXT AND THE CASE FOR MARKETS FOR WATERSHED PROTECTION SERVICES AND IMPROVED LIVELIHOODS IN BOLIVIA

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## Justification<sup>1</sup>

*There is a clear need for a new way of thinking for managing Bolivian water resources. Despite numerous attempts at integrated watershed management, there have been few successes. Projects have invariably focused on increasing or managing supply through construction of dams and other infrastructure, and have rarely focused on improving efficiency or managing demand. At the national level, management has usually been through top down laws and regulations, few of which have succeeded. Although Bolivia is one of the countries with the most water per capita in the world, and demand is ~ 1% of supply, localized water scarcity continues to breed conflicts. Irrigated agriculture accounts for 80% of Bolivia's water demand, yet irrigators pay low water tariffs, often less than 1% of what the peri-urban poor pay.*

*The concept of using market mechanisms for watershed management is innovative. Much of the fear around the subject is based on the Cochabamba water war and the concept of privatization. Case studies show there are clear opportunities for developing market mechanisms for watershed management: small-scale projects can be feasible regardless of political, legal and institutional winds. If the price is right; if the concept has been socialized; and landowners are comfortable with the idea; even theoretically insuperable problems, such as lack of government-approved tenure—can be overcome.*

*Some conditions are necessary before even beginning such projects: a good diagnostic and local knowledge is critical; local government must be convinced of the project's value; and the project must be locally "owned", signifying that socialization is invaluable. In many ways, small, localized projects can "fly under the radar" and not be concerned with national cultural or institutional issues. While this is a strength of such projects, it is also their fundamental weakness: they are unlikely to influence government policies*

*For large-scale projects, there is far greater potential for success at leveraging laws, but also greater likelihood of difficulties. Large-scale interventions thus require far more work at the national scale. Institutions, cultures, laws, education, and ways of thinking must be changed before market mechanisms for watershed management could begin to systematically improve Bolivian livelihoods. But this is how such initiatives can have a fundamental impact on policy: helping institutions leverage change at a national level.*

*This preliminary pre-diagnostic analysis has shown that there is great potential for promoting market mechanisms for watershed management that improve rural livelihoods. In 2005, the work team will develop the research and actions that are necessary to further guide the process. These actions are detailed in this work plan.*

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<sup>1</sup> Thus justification is a summarized, translated version of the abstract of the final pre-diagnostic report "Prediagnostico del estudio sobre mecanismos del mercado para servicios ambientales". After review by the Bolivian work team, this report will be translated and disseminated as the official pre-diagnostic report.

## Introduction

This work plan is based on the results of a pre-diagnostic analysis comprising a literature review and documents presented at, and ideas discussed during the meetings “*Experiences of Compensation for Environmental Services Provided by Ecosystems: The Case of Water*” held in Santa Cruz in October 2004, and “*Improving Bolivian Water Management: Incentives to Promote Sustainable Watershed Management that Improves Rural Livelihoods*” held in La Paz in November 2004. These meetings brought together a range of stakeholders, government officials and NGOs to initiate the Bolivian component of the project, “*Policy Learning in Action: Developing Markets for Watershed Protection Services and Improved Livelihoods*” supported by the International Institute for Environment and Development.

The purpose of IIED’s global project is “to increase understanding of the role of market mechanisms in the provision of watershed services to improve livelihoods”. For the Bolivian component, the question answered in the pre-diagnostic phase of this project was whether market mechanisms can usefully be applied in Bolivia to both protect the environment and reduce poverty<sup>2</sup>. For ease of analysis we divided this question into two components:

- What is the current context in Bolivia for watershed management?
- What is the case in Bolivia for market mechanisms for the provision of watershed services that improve livelihoods?

To address these two components, workshop participants asked and answered a number of questions in commissioned documents and presentations. The 8-person work team then discussed these, and a draft work plan was prepared for the diagnostic phase. The pre-diagnostic analysis provided a first assessment of the Bolivian context and case for market mechanisms for the provision of watershed services that improve livelihoods. Based on the results of the pre-diagnostic, the work team and learning group<sup>3</sup> jointly identified six priority research themes, and a diffusion/awareness-raising component, outlined below.

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<sup>2</sup> In this 2005/6 work plan we will continue the analysis to assess: “What is needed for the development of markets for watershed services in Bolivia?” and “What is needed to ensure that these market mechanisms improve livelihoods and contribute to poverty reduction?” in addition to undertaking feasibility studies for implementation of market mechanisms for protection of two watersheds.

<sup>3</sup> The project work team (“expert group”) comprises eight individual experts from practitioner institutions (FAN, PROMETA, ICO, ICEA), the national government water advisory committee (CONIAG), and academia. The learning group comprises a range of actors such as: municipal government leaders around practitioner projects (Tarija and Santa Cruz), prefectural government representatives, NGO leaders (Foro Agua Bolivia, WWF, CI, TNC, SAVIA), bilateral and multilateral donors, such as DFID and the World Bank, USAID and national decision makers (Forestry Superintendent, Minister of Agriculture) and political leaders.

## Bolivia Diagnostic Work Plan 2005<sup>4</sup>

Based on the pre-diagnostic analysis, we will focus the diagnostic research on the following themes as well as continuing appropriate awareness-raising and diffusion activities:

### *A) Build awareness and diffuse project concept*

Research themes:

- 1) *Assess laws/national policies, and map institutional landscape*
- 2) *Detail the state of hydrological science in Bolivia:*
- 3) *Review poverty, land use and livelihood issues including the role of property rights in constraining and promoting market development and improved livelihoods:*
- 4) *Assess watershed management experiences, both of existing markets and other mechanisms such as integrated watershed management:*
- 5) *Assess feasibility of selected study sites*
- 6) *Undertake stakeholder and actor analyses at the watershed level.*

The activities are discussed in detail below and in the log frame table:

*A) Build awareness and diffuse project concept:* The purpose of this project is to “increase understanding of the role of market mechanisms in the provision of watershed services to improve livelihoods”. To this end we will devote significant resources to building awareness about the project and diffusing project ideas, concepts and results. We will be unable to convince society that there can be a role for market-based mechanisms in conservation and development unless we can gain significant buy-in and participation from stakeholders at the start of the project. Our deliberations, discussions, and data collection will therefore be undertaken in a participative, transparent manner, our plans and results will be discussed in a series of open meetings, and project developments will be presented on a interactive website.

### *Activities*

- A.1 Hold periodic meetings to consolidate the expert group and the learning group to study and analyze the results of the project
- A.2 Define the coordination of the expert and learning groups and how they will operationally function
- A.3 Expand the learning group as a means to diffuse project results
- A.4 Develop a web page about market mechanisms for water management
- A.5 Hold one international meeting about market mechanisms
- A.6 Hold final meetings to disseminate results, in La Paz, Santa Cruz, and the 2 watersheds
- A.7 Undertake integrative analysis and write and circulate final report.

*1) Assess laws/national policies and map institutions:* The focus of this analysis will be at the national and regional level. Research will further assess whether, and which current laws and policies are appropriate and sufficient for the development of markets for watershed services. We will map the current policies, institutions, incentives and markets influencing watershed land use (including forest and tree use), water use, and watershed-linked livelihoods and the links, conflicts and synergies between them. We will also explore the possibilities of new regulations within various laws to support markets for environmental services initiatives. One of our first tasks will be a to develop an institutional analysis and map of who is, or who could be involved

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<sup>4</sup> This work plan was adapted from the draft 18-month work plan submitted to IIED, and connects what was our then-theoretical approach with the reality of what we have learned over the last five months. The following log frame and budget sections provide more details of each activity.

with water management and markets for watershed services at the national level. However, our a priori hypothesis is that Bolivian central government is too weak to really influence market development as fast as is necessary. We therefore expect that while our initial analysis will be national, we will soon have to refocus on departmental or even municipal governments as levers of change. Though we will begin our work at the national scale we expect that it will be more effective to develop local institutional capacity for managing markets.

#### *Activities*

- 1.1 Evaluate the institutional and legal setting to assess whether existing institutions and laws are sufficient and appropriate to develop market mechanisms for watershed management.
- 1.2 Undertake stakeholder analysis at the national scale to understand connections and relationships that can influence watershed management
- 1.3 Evaluate the potential role of municipalities and the decentralization model in the promotion of the development of local watershed management initiatives. We intend to evaluate the actual and potential role of municipalities in local reciprocal agreements.

#### *Specific sub activities*

Evaluate the laws and policies about forest, land uses and water, and threats and opportunities for incentive systems. How do policies of access, use and management of land and forest promote or restrict sustainable watershed management? Identify existing policy and legislative evaluations, such as those done by CONIAG, CGIAB, Sociedad Boliviana de Derecho Ambiental, ICEA, Lidema (legal analysis) and Fobomade. Complement the analysis from the perspective of incentives in the Mining Code, and the Environmental, Electricity, Hydrocarbon and Decentralization Laws. Identify opportunities and threats within these laws for promoting incentives for watershed management. Identify institutional actors at the national, departmental and local level and check the CONIAG and Alberto Crespo studies. Assess the SIRENARE study (about how to regulate environmental services laws). Assess role of the Centro Agua and CGIAB (studies of Tiquipaya case). Analyze other studies including those by Pronar (Irrigation program), CARE, SERNAP, and REDESMA.

*2) Detail the state of hydrological science in Bolivia:* Research will focus at a national level in order to identify potential sites for the feasibility analysis. We will ascertain questions such as: what data exists or is routinely collected? Which watersheds have been most studied? What are the main threats to watersheds? What are potential strategies for providing watershed services i.e. prevention investment versus cleaning costs? Local-level analysis will be focused on assessing Bolivian hydrological knowledge at specific sites and will guide the selection process for the feasibility analysis (section 5).

#### *Activities*

- 2.1 Detail about the state of the art for hydrology, especially forest/water relationships. The investigation will be developed at the national level with special focus on 12 watersheds where the Bolivian government is undertaking watershed management plans. We will also undertake an in-depth national diagnostic of hydrological resources.
- 2.2 We will undertake in-depth local analysis of the state of the art for hydrology in two watersheds that have the potential for supporting markets for watershed services. Watersheds will be chosen based on existing knowledge and ease of access, and will likely be those chosen for more in-depth feasibility analysis. Data collected in the hydrological studies will guide the site selection process.

#### *Specific sub activities*

The national level evaluation will respond to the following questions: What information (data) exists and is routinely collected? Which watersheds are the most studied and have the most complete data sets? What are the principal threats for these watersheds? What could be potential strategies for the provision of hydrological services in these watersheds and what role could land management play? Locally we will assess the water supply and simulate the impact of land use change on stream flows.

At the national level, we will also assess the importance of forest/vegetation cover in the provision of hydrological services. This assessment will include a prioritization of watersheds for further study. At the local level, we will identify two watersheds to undertake more in-depth studies. Selection criteria will likely include biophysical, social, and economic factors. Both investigations will assess: What information already exists that can be used for the study? What information do we need to collect? What are the principal threats to these watersheds?

3) *Review poverty, landuse, livelihoods, and property rights issues:* We will review government policies relating to poverty reduction and landuse, and determine ways in which watershed service can help to sustain livelihoods. We will also draw lessons from ongoing Bolivian initiatives—both watershed and non-watershed markets—to assess their impacts on the poor and constraints. We will also assess the likelihood of situations in which the users are poorer than the suppliers, and the impact of this on equity, and will assess the role of property rights in constraining market development and improving livelihoods. We expect that some resolution of the issue of property rights will be required before markets can truly take off in Bolivia, especially if the poor are to benefit from such markets. Research will assess available options.

#### *Activities*

- 3.1 Review government policies that relate to poverty reduction to assess how they could link with markets for watershed service provision, and analyze the current legal/policy framework to assess how employment is generated, especially in rural areas. Evaluate potential synergies with programs such as those linked to the Highly Indebted Poor Countries initiative, Poverty Reduction Strategy Papers, etc. Derive lessons from existing PES being implemented in Bolivia, in terms of their impact on poverty reduction.
- 3.2 Analyze the drivers of land use change focusing on relationships between and results of laws, legal norms, institutions and actors. Special attention will be paid to land use, forest and water policies. Analyze the impact of underlying factors on land use change such as trade liberalization, exchange rates, diesel subsidies, infrastructure projects, etc. and the impact of these policies on different returns to land use.
- 3.3 Evaluate role of property rights in restricting/promoting market mechanisms. What is state of property rights in Bolivia? What are the constraints to gaining formal land title, and how can they be overcome? What is impact of these constraints on market mechanisms for watershed management in terms of security of service provision and community perceptions? Would communities be less/more likely to join payments systems if property rights are unclear? Could alternative approaches to demonstrating land rights be effective in addressing these concerns?

#### *Specific sub activities*

Review domestic and donor-driven policies and initiatives for poverty reduction in Bolivia. Analyze the legal framework and how it contributes to rural employment. What types of initiatives are necessary to promote market based mechanisms for watershed protection and improved livelihoods, such as agricultural reform? What policies have been factors in poverty reduction and what multiplier effects can be derived from incentive programs? Analyze the impact of programs such as HIPC, poverty reduction strategies, agreements etc. Examine how these policies can be connected to market based management systems? Is there space for such schemes? To what extent can poverty reduction policies and market mechanisms for watershed services be mutually supportive?

Solicit INRA's land use plans. Undertake analysis of diverse indicators such as, for example, the rate/extent of land titling without papers, land titling of squatters/informal landholders, small property owners and communities. Case studies of particular watersheds: how have land-titling problems been resolved? Did the downstream and upstream communities under analysis use property rights issues to influence implementation of compensation and market initiatives for watershed services? What are the barriers facing landholders with informal tenure in securing their formal property rights, and how can we ensure that such people participate in the compensation/ incentives process?

4) *Watershed management experiences*. It is clear that Bolivia has extensive experience in watershed management, from government-led, donor funded integrated projects, to locally developed, administered and managed “reciprocal agreements”. We will invest project time and resources learning from this wealth of experience about what management tools do and don’t work in the Bolivian context and the implications for design of market mechanisms to link land management practice to hydrological services.

#### *Activities*

- 4.1 Analyze market initiatives and other similar experiences in Bolivia. We will detail cases that have market characteristics such as cooperatives, irrigators, solidarity arrangements, etc., undertake detailed case studies of 2-3 projects, focusing on equity and benefit distribution, and evaluate the potential of the cases to act as learning sites.
- 4.2 Undertake 3 case studies of communal watershed management schemes, identifying the instruments applied. What can we learn about the diverse management forms? What does a “solidarity”- or “reciprocal” agreement actually involve? What have been the factors that catalyze such arrangements? How are the schemes evolving and what are the threats if any to their continued operation? To what extent are these schemes or elements of them replicable in other areas and contexts? What lessons can these schemes provide for initiatives to develop market mechanisms for watershed services?
- 4.3 Evaluate 3 (of the Programa Nacional de Cuencas’ 12) integrated water management projects and their impact on the provision of environmental services local development. Consider the role and impact of incentives and other measures to influence land management practices in these projects.

#### *Specific sub activities*

Analyze the social, economic and environmental impacts, and the cultural effects, in communities/ watersheds with agreements. Assess equity in benefit distribution at the family and community level. What is the level of equity in the distribution of resources in these cases?

Questions will include: What management instruments in the solidarity or reciprocal arrangements have been implemented in Bolivia? What are the advantages of each? What can we learn from the diverse forms of local watershed management? What is the culture (instruments and knowledge) of water management? What are the catalytic factors that have allowed development of incentives or reciprocal mechanisms for sustainable watershed management? How has decentralization affected the promotion of incentives? To what extent do these initiatives address land management practices

Analyze institutional actors at the Prefectural, municipal, sectoral and water user levels. At specific sites, what are the municipalities actually doing? How have they developed incentives, and what have been the relations and conditions under which they have successfully realized mechanisms of incentives or reciprocity. What do the actors directly involved consider to be important in the social consultation and decision-making process?

In all of the initiatives assessed we will evaluate their impact in terms of integrated ecosystem management (i.e. leakage, perverse incentives and additionality). Have projects led to increases in water quality, improved management of water or other natural resources, or more environmentally friendly activities. We will consider the lessons that can be drawn from these initiatives for the feasibility and design of compensation and market mechanisms for watershed services.

5) *Assess Feasibility of Selected Study Sites*: The specific procedures of how we will select sites, and then undertake feasibility studies at these sites will be decided in consultation with the work team. However, they will likely include: analysis of the stakeholders in the watershed, and assessment of the main threats to the watershed, an analysis of the supply of watershed services, including the main land uses and land management practices, and returns to different land uses, and analyses of the demand for watershed services, the policy and legal context, and local institutional capacity. The expert group has already advanced in identifying criteria for watershed selection and will apply these criteria in the field to make final selection decisions.

#### *Activities*

5.1 Develop site selection criteria

5.2 Identify, with expert group, the two watersheds where we will undertake detailed analyses.

Undertake detailed analysis of:

5.3 Socio economics for two watersheds.

5.4 Threats.

5.5 Land use and land users.

5.6 Demand estimates.

5.7 Local legal and political trends and influences.

5.8 Local capacity for project design and implementation

5.9 Integrate analyses to assess potential for market mechanisms in selected watersheds

#### *Specific sub activities*

Select watersheds for study sites, and undertake analyses as appropriate at the local scale.

Likely criteria are that the watershed:

- Is an important water source
- Has a need for management (demand is high relative to supply, or there are conflicts)
- Is potentially important for biodiversity
- Is a “study-able” size
- There is a local, well known, capable partner
- Study costs are manageable
- Inhabitants are vulnerable/poor.

Potential sites could include:

- Comarapa
- La Victoria and Tolomosa (Reserva del Sama)
- Tiquipaya
- Irupana
- Tributaries of the Pirai watershed
- Arroyo Bahia (Cobija)
- El Nueve (Bermejo)

A number of these potential sites are study/implementation watersheds for the Programa Nacional de Cuencas.

We will undertake case studies and meetings in the upper watershed and with water users, e.g. farmer, water utilities, irrigators, industry local government institution, municipality etc., and compile information about case studies in representative watersheds (zones of traditional use, transition/immigration zones, arid areas, and areas with different intensities of water/land use.

We will also identify existing systems of compensation in the selected sites; willingness to pay studies, cases of infrastructure co financing e.g. dams, irrigation canals

### ***Stakeholder consultations – key actors and their motivations***

6) *Undertake Stakeholder analyses at the watershed level.* Key stakeholders will be consulted in order to assess the potential for introducing market-based mechanisms for watershed services. This assessment will complement the national level institutional analysis undertaken in section 1. For purpose of the analysis and consultations, key actors will be divided into broad categories: land use decision makers (farmers, campesinos, national parks, private large landowners, etc); water users (hydroelectricity, cities); environmental and development NGOs, government agencies and policy makers. The results of consultations will enable stakeholders to engage in equity discussions. We will also look into ways of increasing willingness to pay for services and ask: Who should pay? How can they be engaged from the beginning? What's their point of view?

#### *Activities*

- 6.1 Identify the main players at local level in each watershed selected (see section 5 for watershed selection process/criteria). Who takes decisions and how do investments flow? Describe the role of influences and relationships between these actors, identify their motivation to work on watershed issues, discuss actors' agenda and the potential for their support for markets for watershed services.
- 6.2 In selected watersheds bring the principal actors, particularly suppliers and demanders of environmental services together to present the options that have been analyzed discussed and debated at the national scale

#### *Specific sub activities*

Identify direct and indirect actors in each watershed. Make a list of the institutions and actors at the national level and watershed specific: this needs to be a concrete map with actors and their responsibilities and competencies formally defined. Join the actors' - and institutional- map. Identify the users concerned about water (farmers, water cooperatives, municipalities, communities, businesses) and understand their concerns and ideas for possible solutions. Characterize donor interests, through interviews with NGOs, environmentalists and development cooperation.

## BOLIVIA DIAGNOSTIC LOGICAL FRAMEWORK

**Study objectives:** Promote maintenance and protection of watersheds' environmental services and improve livelihoods of local residents, with particular emphasis on the poor and vulnerable

**Purpose:** Increase understanding of the potential role of market instruments in the promotion and provision of environmental services from watersheds and improving rural livelihoods.

### Central questions

I. What is necessary to develop markets for the provision of watershed services in Bolivia?

II. What is necessary to ensure that such mechanisms improve livelihoods and contribute to poverty reduction?

	Objectives and indicators	Means of verification	Assumptions
<p><b>A. National mechanisms for diffusion and learning about markets for watershed management in Bolivia consolidated and functioning.</b></p> <p>Actors participate effectively, know opportunities of compensation mechanisms, and trust that they are ready to help in the development of such initiatives where pertinent and adequate</p>	<p>A.1 Hold periodic meetings to consolidate the expert group and the learning group to study and analyze the results of the project (March, June, Dec 2005).</p> <p>A.2 Define the coordination of the expert and learning groups and how they will operationally function (March 05).</p> <p>A.3 Expand the learning group as a means to diffuse project results (throughout year).</p> <p>A.4 Develop a web page about market mechanisms for water management (January-March 2005).</p> <p>A.5 Hold one international meeting about market mechanisms (mid-June 2005).</p> <p>A.6 Hold final meetings to disseminate results, in La Paz, Santa Cruz, and the 2 watersheds (Nov-Dec 2005).</p> <p>A.7. Undertake integrative analysis and write and circulate final report (November and December 2005).</p>	<p>List of permanent participants</p> <p>Number of meetings (in person or electronic) of expert and learning groups</p> <p>Web page</p> <p>List of meeting participants</p> <p>Meeting notes</p>	<p>Public and private actors are interested in participating</p> <p>A national organization takes on coordination of experts and learning groups.</p> <p>Key actor such as NGOs, municipalities, irrigators and others are able to commit to long term learning process.</p>

<p><b>1. LAWS AND INSTITUTIONS</b></p> <p><b>Institutional and legal setting and the role of major policies and trends in the development of market mechanisms for watershed management assessed.</b></p> <p>Evaluate the potential role of decentralization (to prefectures and municipalities) in the promotion of local initiatives for watershed management</p>	<p>At the national Level</p> <p>1.1 Evaluate the institutional and legal setting to assess whether existing institutions and laws are sufficient and appropriate to develop market mechanisms for watershed management (Jan–March 2005).</p> <p>1.2 Undertake stakeholder analysis at the national scale to understand connections and relationships that can influence watershed management (Feb-March 2005).</p> <p>1.3 Evaluate the role of municipalities and the decentralization model in the promotion of the development of local watershed management initiatives. We intend to evaluate the actual and potential role of municipalities in local reciprocal agreements (Feb-March 2005).</p>	<p>Study of policies, institutions and laws</p> <p>Map of national organizations</p> <p>Study of municipalities and prefectures and local incentives for watershed management.</p>	<p>Information is available</p>
<p><b>2. HYDROLOGY</b></p> <p><b>Hydrological state of the art in Bolivia and appropriate watersheds assessed.</b></p>	<p>2.1 At the national level detail about the state of the art for hydrology, especially forest/water relationships. The investigation will be developed and the national level with special focus on 12 watersheds where the Bolivian government is undertaking watershed management plans. We will also undertake an in-depth national diagnostic of hydrological resources (April-May 2005).</p> <p>2.2 At the local level, we will undertake an in-depth analysis of the state of the art for hydrology in two watersheds that have the potential for supporting markets for watershed services. We will focus on watersheds that are already well known, such as Comarapa, Piraí, Tiquipaya, Choqueyapu, etc. Watersheds will be chosen based on existing knowledge and ease of access (Please see section 6 for more details about the site-based research) (May-Jul 05 for watershed I and Aug-Oct 05 for watershed II).</p>	<p>Consultant in hydrology contracted</p> <p>Document about hydrological evaluation</p>	<p>There exist valuation and quantification methods to assess hydrological potential and its relation to land use and vegetation cover.</p> <p>There are personnel trained and capable of undertaking such an evaluation.</p> <p>Data are sufficient and available.</p>

<p><b>3. POVERTY, LANDUSE AND PROPERTY RIGHTS</b></p> <p><b>Policies of poverty reduction, land use and landuse change, and the impact of current structure of property on livelihoods revised and analyzed.</b></p> <p>What are the policies and initiatives for poverty reduction, land use and land use changes that can help reduce poverty and promote or constrain market mechanisms for watershed Services?</p> <p><b>The role of property rights in restricting or promoting market mechanism evaluated.</b> What is the state of property rights in Bolivia? Are they a bottleneck for the development of Market initiatives? How can this be resolved?</p>	<p>At the national level</p> <p>3.1 Review government policies that relate to poverty reduction to assess how they could link with markets for watershed service provision, and analyze the current legal legal/policy framework to assess how employment is generated, especially in rural areas. Evaluate potential synergies with programs such as those linked to the Highly Indebted Poor Countries initiative, Poverty Reduction Strategy Papers, etc. Derive lessons from existing PES being implemented in Bolivia, in terms of their impact on poverty reduction (May-Jul 05).</p> <p>3.2 Analyze the drivers of land use change focusing on the relationships between and results of laws, legal norms, institutions and actors that affect land use. Special attention will be paid to land use, forest and water policies. Analyze the impact of underlying factors on land use change such as trade liberalization, exchange rates, diesel subsidies, infrastructure projects, etc and the impact of these policies on different returns to land use (Aug-Sep 2005).</p> <p>3.3 Evaluate role of property rights in restricting/promoting market mechanisms. What is state of property rights in Bolivia? What are limitations to gaining title, and how can they be overcome? What is impact of barriers on market mechanisms for watershed management? Would communities be less/more likely to join payments systems if property rights are unclear? (August-October 2005).</p>	<p>Policy studies completed</p> <p>Land use policy study completed.</p> <p>Study on returns of different land uses completed</p> <p>Property rights document completed.</p>	<p>Data exist and are available</p> <p>Public officers of the agriculture and land use regime are available and willing to cooperate in providing relevant information</p>
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<p><b>4. WATERSHED MANAGEMENT EXPERIENCES</b></p> <p><b>The social, economic and environmental impact of prior management experiences in Bolivian watersheds assessed and evaluated</b></p> <p>What has been learned from prior experiences?</p>	<p>Site specific analyses:</p> <p>4.1 Analyze market initiatives and other similar experiences in Bolivia. Wunder &amp; Robertson (CIFOR) have identified some of these examples, but we will detail cases missed by CIFOR that have market characteristics such as cooperatives, irrigators, solidarity arrangements, etc., undertake detailed case studies of 2-3 projects, focusing on equity and benefit distribution and evaluate the potential of the cases to act as learning sites (April–May 05).</p> <p>4.2 Undertake 3 case studies of communal watershed management schemes, identifying the instruments applied. What can we learn about the diverse management forms? What does a “solidarity”- or “reciprocal” agreement actually involve? What have been the factors that catalyze such arrangements? (August–November 2005).</p> <p>4.3 Evaluate 3 integrated water management projects and their impact on the provision of environmental services and local development (September – December 2005).</p>	<p>Market mechanism case study documents</p> <p>Case study documents about local water management Studies of Integrated Watershed Management Projects</p>	<p>There is sufficient experience in market mechanisms and other watershed management initiatives in Bolivia to learn lessons</p>
<p><b>5.SITE-BASED WORK</b></p> <p><b>Two strategic watersheds selected and social, economic, environmental and hydrological analyses undertaken</b></p>	<p>5.1 Develop site selection criteria (January 2005)</p> <p>5.2 Identify, with expert group, the two watersheds where we will undertake detailed analyses (Feb–March 2005).</p> <p>Detailed analysis of:</p> <p>5.3 Socio economics for two watersheds (Apr–May 2005).</p> <p>5.4 Threats (Jun–Jul 2005).</p> <p>5.5 Land use and land users (Jul–Aug 2005).</p> <p>5.6 Demand estimates (Aug–Sep 2005).</p> <p>5.7 Local legal and political trends and influences (Oct–Nov 2005).</p> <p>5.8 Local capacity for project design and implementation (Oct–Nov 2005)</p> <p>5.9 Integrate analyses to assess potential for market mechanisms in selected watersheds (Oct 2005–Dec 2005)</p>	<p>Documents that justify selection of watersheds</p> <p>Analysis documents</p> <p>Integrative report that assesses potential for market mechanisms in selected watersheds</p>	<p>Methods exist for the evaluation of environmental services from the biophysical and economic perspective.</p> <p>Human resources are locally available to each watershed to undertake analyses</p>

<p><b>6. LOCAL ACTORS &amp; THEIR PERCEPTIONS</b></p> <p><b>The motivations and needs of direct stakeholders within watersheds, and of the indirect actors, such as NGOs and donors available to facilitate projects, identified and understood</b></p> <p>Identify and analyze suppliers and demanders that would be willing to participate in a PES system</p>	<p>6.1 Identify the main players at local level in each watershed selected. Who takes decisions and how do investments flow? Describe the role of influences and relationships between these actors, identify their motivation to work on watershed issues, discuss actors' agenda and the potential for their support for markets for watershed services (Aug and Sep 2005).</p> <p>6.2 In selected watersheds (see below), bring the principal actors, particularly suppliers and demanders of environmental services together to present the options that have been analyzed discussed and debated at the national scale (Sep 2005).</p>	<p>Document that provides this analysis</p> <p>Meeting notes</p> <p>Result focus group analysis</p> <p>List of workshop participants</p>	<p>There is interest and demand from key actors and local institutions to learn about the potential for market mechanisms.</p>
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## IIED BOLIVIA COMPONENT LOGICAL FRAMEWORK

This table takes the Bolivia major research themes (i.e. numbers 1-6 in the previous table) and maps them onto IIED's log frame and narrative summary for the global project "*Policy Learning in Action: Developing Markets for Watershed Protection Services and Improved Livelihoods*".

IIED Narrative summary	Bolivia Component Objectively verifiable indicators (numbers refer to the research themes identified in the previous section)	Means of verification	Assumptions
<p>2.3 Hydrology evaluated, livelihoods and market potential assessed.</p>	<p>2) Detail the state of hydrological science in Bolivia: Research will focus at a national level to identify sites for the feasibility analysis in the next stage, and will ascertain: what data exists or is routinely collected? Which watersheds have been most studied? What are the main threats to watersheds? What are potential strategies for providing watershed services?</p> <p>3) Review poverty and livelihood issues: Review of government policies relating to poverty reduction, to determine ways in which watershed service can help to sustain livelihoods. Lessons drawn from other ongoing Bolivian initiatives to assess their impacts on the poor and constraints.</p> <p><i>Preparatory Scoping Analysis.</i> Work Team members have already detailed the processes and impacts of cases with which they are familiar. It is already clear that there is great potential for markets for watershed services and these markets, if developed appropriately, have potential for improving rural livelihoods.</p>	<p>Hydrological consultancy study report.</p> <p>Livelihoods consultancy study report.</p> <p>This draft document, final Spanish language pre-diagnostic report, Case study reports</p>	<p>Data are available</p> <p>There is sufficient experience/interest in market mechanisms in Bolivia</p>
<p>2.3 Institutional and capacity needs assessed.</p>	<p>3) Assess the role of property rights in constraining market development and improving livelihoods: Research will assess the different options available for some resolution of the issue of property rights required before markets can take off.</p> <p>1) Institutional analysis and mapping. Analysis of who is or could be involved with national markets for watershed services, and their strengths and weaknesses.</p>	<p>Consultancy reports</p> <p>Analysis report</p>	<p>Property rights issues are a big constraint, but can be overcome.</p>

<p>2.4 Stakeholders engaged and aware of issues and opportunities for intervention, and the confidence and preparedness to proceed to supporting market development.</p>	<p>A) The project inception workshop has already raised consciousness, and our next international meeting in La Paz will continue socialization of the process, as will development of a project website.</p> <p>6) Stakeholder analyses at the watershed level will contribute institutional analysis at the national level (1). Key actors will be divided into broad categories and consulted to assess the potential for introducing market-based mechanisms for watershed services.</p> <p>A) The project conclusion workshop will disseminate our concepts and results.</p>	<p>Inception and other meeting/ workshop reports.</p> <p>National and watershed-level meeting reports.</p> <p>Website</p> <p>Conclusion workshop report.</p>	<p>Interest and demand for action learning from stakeholders and local partners can be converted into readiness and capacity to engage with it.</p>
<p>2.5 Options to shape markets developed.</p>	<p>5) Sites selected and feasibility studies undertaken that will include: local stakeholder analysis, assessment of main threats, analysis of the supply of watershed services, returns to different land uses, and analyses of the demand for watershed services, the policy and legal context, and local institutional capacity.</p>	<p>Reports of how/why feasibility studies chose specific sites, and the possibilities and options identified.</p>	<p>Sites exist where markets for watershed services could be developed.</p>
<p>2.6 Negotiations on options completed, detailed plans made, and the means for institutional support of these plans secured.</p>	<p>6) We will bring together stakeholders in the two selected watersheds, particularly the suppliers and buyers/users of watershed services, to discuss the options that have been analyzed, discussed and debated at the national and local level. We will hold workshops where we present these results to stakeholders and then try to develop a joint, "plausible" scenario that would increase the support of the stakeholders involved.</p>	<p>Plans, meeting reports, requests from stakeholders for institutional support, institutional responses.</p>	<p>Interest and demand for action learning from stakeholders and local partners can be converted into readiness and capacity to engage with it.</p>