naturalia

SPRING 2008 NEWSLETTER OF THE FUNDACIÓN NATURA BOLIVIA

Contents

Fundación Natura Bolivia specializes in the development of financial mechanisms—such as compensation for environmental services—to sustainably conserve critical ecosystems and improve the wellbeing of the Bolivian population.

Dear Naturalia readers;

I'll allow myself to step outside the traditional norms of how to write an editorial, to take a moment at year's end to pass on our wishes to every one of you, hoping that this festive season may become an opportunity for family reunions, that the smile may return to the faces of our loved ones, that faith and hope for the things we love and the country we dream of may be renewed. Best wishes to all!!! A giant hug from the great family that is Fundación Natura Bolivia.

With the greeting over I now offer for your consideration the fourth edition of *Naturalia*. The newsletter has changed considerably since its first edition, elaborated in 2007 by Karla Torrico, to the version which you now have in your hands or in front of you on the computer screen. The changes to the newsletter—of style, form and content—are a reflection of the positive institutional changes taking place within Natura.

Naturalia is a publication born under the premise that "what is not published and shared doesn't exist". The stories told in each edition of the newsletter come from diverse actors: from simple farmers, who are changing their land-use practices in order to maintain the productivity of their properties for today and tomorrow; from rural landowners who have decided that the environmental services of their forests have value and so are willing to conserve them for their own benefit and that of society; and from municipal authorities, field technicians, our scientists and also public servants from the departmental government of Santa Cruz, as part of their efforts to propose a sustainable development model for the region and for the country, where the balance between local development, equity and conservation would be what unites us.

Best regards,

María Teresa Vargas
Executive Director

Less trees, more water? Different experiences of compensation for watershed services in South Africa, India, Ecuador and Bolivia

With the support of the Consultative Group for International Agricultural Research (CGIAR), the Fundación Natura Bolivia and the Center for International Forestry Research (CIFOR) and other local allied institutions are analyzing and sharing practical experiences of compensation for watershed services schemes (CWS) in three continents: Africa, Asia and Latin America. Our first stop will be to get to know and share with you the CWS programs of South Africa.

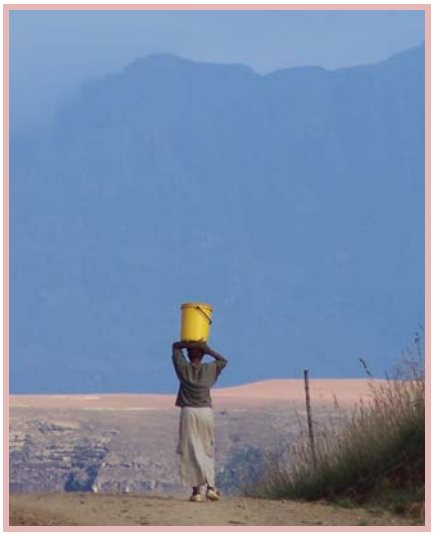
Unlike many countries where forests (natural or planted) play a central role in the provision of hydrological environmental services, in South Africa the forests formed by exotic species constitute a plague and consume enormous quantities of water (this in a country which on average has only 500 mm of rainfall per year, similar to the volume of water received by the Bolivian Chaco). In this case, what is needed is the removal of invasive species, but the strategic dilemma remains the same: How to incentivize the activities necessary to ensure the availability of the watershed service? Around the world, current incentive structures generally do not provide even a small part of the economic benefits enjoyed by society due to the availability of water, to those who assume the cost of protecting or increasing this environmental service. One solution in many cases could be compensation for watershed services (CWS) schemes, which seek to channel economic resources from the society which benefits from the service towards the groups or individuals who protect or increase said service.

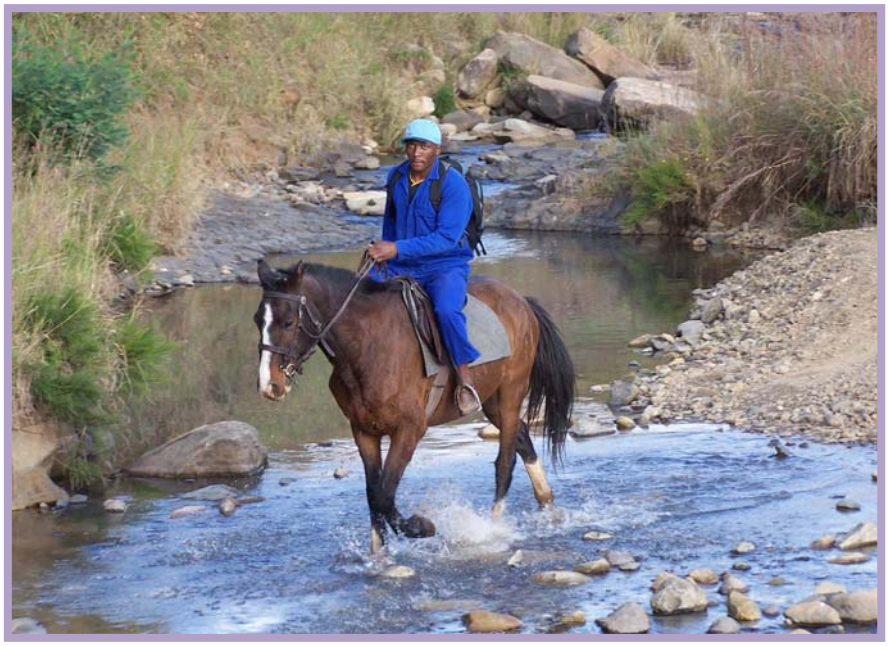
To gain a better understanding and diffusion of this conservation tool, a group of experts from Bolivia, South Africa, India and Ecuador are sharing their knowledge and experiences in order to generate an international public good: globally relevant best practices for large scale, incentive-based watershed management.

For this CGIAR-financed project, we will draw lessons from a wide range of relevant model examples, such as ICRAF-led hydrological research on watershed best practices in Asia, CIFOR expertise on small scale payments for watershed services schemes in Latin America and Asia, and interventions using direct incentive payments to improve natural resource management, including the Working for Water program and community-based natural resource management (CBNRM) in Africa. We will build on on-the-ground experiments in three continents, and use a comparative analysis to generate knowledge and capacity building tools that can be shared globally, including trying to explain the different degree of watershed payment schemes' development across the three tropical continents. In the case of Bolivia, the primary objective is to assist the Santa Cruz Departmental Government in their stated goal of developing a department-wide environmental services compensation system that will manage areas such as the 734,000 ha Río Grande middle watershed based on the environmental services it provides.

As part of the CGIAR initiative, in May 2008 nine experts from six countries met in South Africa to learn from that country's experience in the implementation of CWS schemes. South Africa is one of the world's driest countries. Much of the water from its rivers and ground water sources is already allocated, such that that water is increasingly the limiting resource for economic development. Water management is thus a major priority for the

South African government. Consequently, the government has established a 25 year program which aims to alleviate poverty through job generation and generate a public good or service through the removal of invasive or exotic species, thereby increasing the water flow in rivers. The country's CWS program has at its base decades of research into the relationships between land-use, land-use change and hydrology. Managers are often therefore able to predict, with a high degree of accuracy, the impact of a given land-use intervention on stream flow. This historically rich data set has also allowed identification of the most important water problems and potential solutions. For example, the current loss of usable water caused by invasions of natural systems is 695 million m^3 per year, or equivalent to 4% of the total registered water (Turpie et al. 2008). The national government is the largest CWS investor in South Africa. In 1995, through its Department of Water Affairs and Forestry (DWAF), the government launched the Working for Water (WfW) program. WfW was by 2001 an annual US$100 million investment in environmental services and poverty reduction. WfW is the umbrella program, with which other South African CWS initiatives are associated. The programs visited by the international group in May in the Baviaanskloof, Drakensburg and Tulbagh are all closely linked to WfW.





Compared with the experiences of other team members in Ecuador, Bolivia, India and Cambodia, the WfW program is far ahead of the rest of the world in terms of the size of the investments, the buy-in from government and civil society, the clarity of, and science behind the intervention strategy. WfW is not without room for improvement though, and smaller-scale experiences from Ecuador and Bolivia may help identify what may be the potential solutions. For example, WfW currently pays contractors a fixed fee for removing alien vegetation through a first clearing intervention and a series of follow-ups. Landowners play an effectively passive role in the process. The contracting of the landless (often) poor rather than the landowners themselves to undertake the work has significant income redistribution impact and was critical for garnering funding and political acceptance for WfW. However, the indirect result of this institutional mechanism is that no-one—neither government, nor contractor, nor landowner—has any incentive to ensure that clearing is undertaken in the most efficient, cost effective manner, or that re-invasion will not occur. Indeed, it would actually be in the contractor's interest to not do the job well, to ensure that he or she would need to be paid to come back to do the job again after the end of the current contract. WfW is already considering new types of contracts: perhaps changing to a concession system in which a contractor would be responsible for 20 years for clearing and/or maintaining a specific catchment. Such a concession system would allow contractors to experiment with different forms of clearing, and make their programs more efficient. For example, catching aliens early before they take hold, is not a priority in the current system, but if implemented could lead to important cost savings.

This was one of many issues considered during the visit to South Africa in May, during which it became apparent that there was high mutual benefit of discussing South Africa's CWS experiences in the context of each of the international team members' experiences. Each country has its own strengths and weaknesses. South Africa, for example, is strong on the science behind CWS, but has little experience in

experimenting with different institutional arrangements for protecting environmental services—all schemes are run through or by central government. In contrast, Bolivia's CWS schemes have relatively little science to justify them, but the institutional landscape is a melting pot of different schemes, often led locally with little input from national government. Rather than these differences being too great to bridge, the research team instead concluded that there was a lot to learn and benefit from the differences.

The trip to South Africa also helped to plan in greater detail the steps to follow for the development of the CGIAR project. There are implementation and policy/political entry points we can exploit, learn from and influence. For example, both regional and national governments in Bolivia are considering CWS legislation (as is the national government in Ecuador), while India has a million dollar fund that is ready to start disbursement of CWS-type funds, but managers don't know where and under what guidelines to begin. As previously mentioned, South Africa is considering a switch to concession-based rather than contract-based WfW. There are thus several in-country opportunities for the CGIAR project to contribute to and influence important policy debates.

During the first semester of 2009, project partners plan to realize a similar visit to Ecuador to learn from the new national CWS program "Socio-Bosque" ("Forest-Partner") and hopefully support and/or learn about the design and implementation of the program, taking into account the experiences of South Africa, Bolivia, India and the other countries participating in the CGIAR initiative. In future editions of Naturalia we will publish the results and findings of this visit to Ecuador and also the general advances in relation to this global project to analyze and share practical experiences of compensation for watershed services.

Comarapa water cooperative recognized as inclusive business in international conference in Colombia

From the 4th to the 6th of December, the city of Cartagena in Colombia played host to the fourth conference financed by the Interamerican Development Bank and the European Union, which had "inclusive businesses" as its central theme: initiatives which seek to improve the livelihoods of people with low incomes, via businesses which are economically profitable and at the same time environmentally and socially responsible. CARE, AVINA and Natura enabled Professor Marcelo Quemaya Rodríguez, President of the Caballero Public Services Cooperative Ltd. in Comarapa, to participate in this event. Representatives from cooperatives in Perú, Ecuador, El Salvador, Honduras and Argentina also took part in this conference, which was organized by CARE and FUNDES.

The mission of the organizers is to "*Strengthen community organizations in Latin American and the Carribean so that they can contribute, amplify and improve the quality of the potable water and sanitation service to their populations*". Consequently, the learning experience for the cooperatives and the exchange of international experiences for the development and implementation of inclusive businesses in their respective countries constituted an important outcome of the event. As part of the conference, Prof. Quemaya participated in a forum where the public had the chance to hear his responses to a series of questions about the experience of the Comarapa cooperative, particularly in relation to the creation and implementation of the local fund for the protection of the water sources, which has paved the way for sustainable long-term growth as a strategy to continue providing a high quality water service to the population.

The Bellagio Conversations

Nigel Asquith and Sven Wunder (eds)

The publication Payments for Watershed Services: the Bellagio Conversations (Asquith and Wunder, 2008) seeks to share lessons learned by implementers of payments for watershed services (PWS) initiatives worldwide. This is the third reduced excerpt to be published in the tri-monthly newsletters of Natura.

How much research is needed prior to and during PWS implementation? When and how does it make sense to minimize transaction costs?

Experience suggests a steep learning curve while implementing PWS schemes, especially user-financed pilots at a watershed scale. For those, it is advisable to not "let the perfect be the enemy of the good": rather than trying to architect all the details in advance, one can fine-tune the design and incorporate knowledge as they go along. For government-financed schemes, significant design adjustments over time may meet much more political opposition. Most existing PWS schemes are based on incomplete knowledge regarding the links between basic land use and hydrology.

Public perception about the links between forest conservation or reforestation and water flows are sometimes at odds with scientific findings. In addition to "getting the science right", PWS initiatives need to be based on what local stakeholders perceive to be logical, fair and feasible. Scientific knowledge should thus be integrated with indigenous knowledge systems. PWS implementation should always be accompanied by some measurement of the water services delivered, but it is vital to point out in advance that PWS schemes cannot assure a certain outcome at any point in time—be it improved water quality or higher water yields—because of the influence of third factors. Usually PWS schemes augment the probability of a desired service-delivery outcome.

Q1 Given that high quality research is costly, is it possible to initiate a PWS scheme with little or no scientific research, leaving critical studies for later?

As a PWS program matures, it may steadily require more sophisticated information and an engagement with complex issues, which will increasingly require more formal research tools. However, the initial need for most PWS schemes is simply sufficient knowledge to begin in a responsible way: this may not require complex, time-consuming studies. Indeed, it may well be feasible to get started on a watershed scale PWS scheme without spending large amounts of money or time. The type of PWS initiative to be implemented will largely determine research needs. See the text box on the following page for a guide to how much research is needed *a priori* for some common types of PWS schemes.

Q2 What is the minimum information needed to initiate a user-financed PWS scheme?

It is always important to have at least an initial understanding of the context of the watershed, even if this is based on little or no scientifically collected data. The extent to which new research is required to answer these questions will depend on the local context, resources available and pre-existing knowledge. Implementers should be able to answer a series of key questions using either the results of new research or with their best available knowledge:

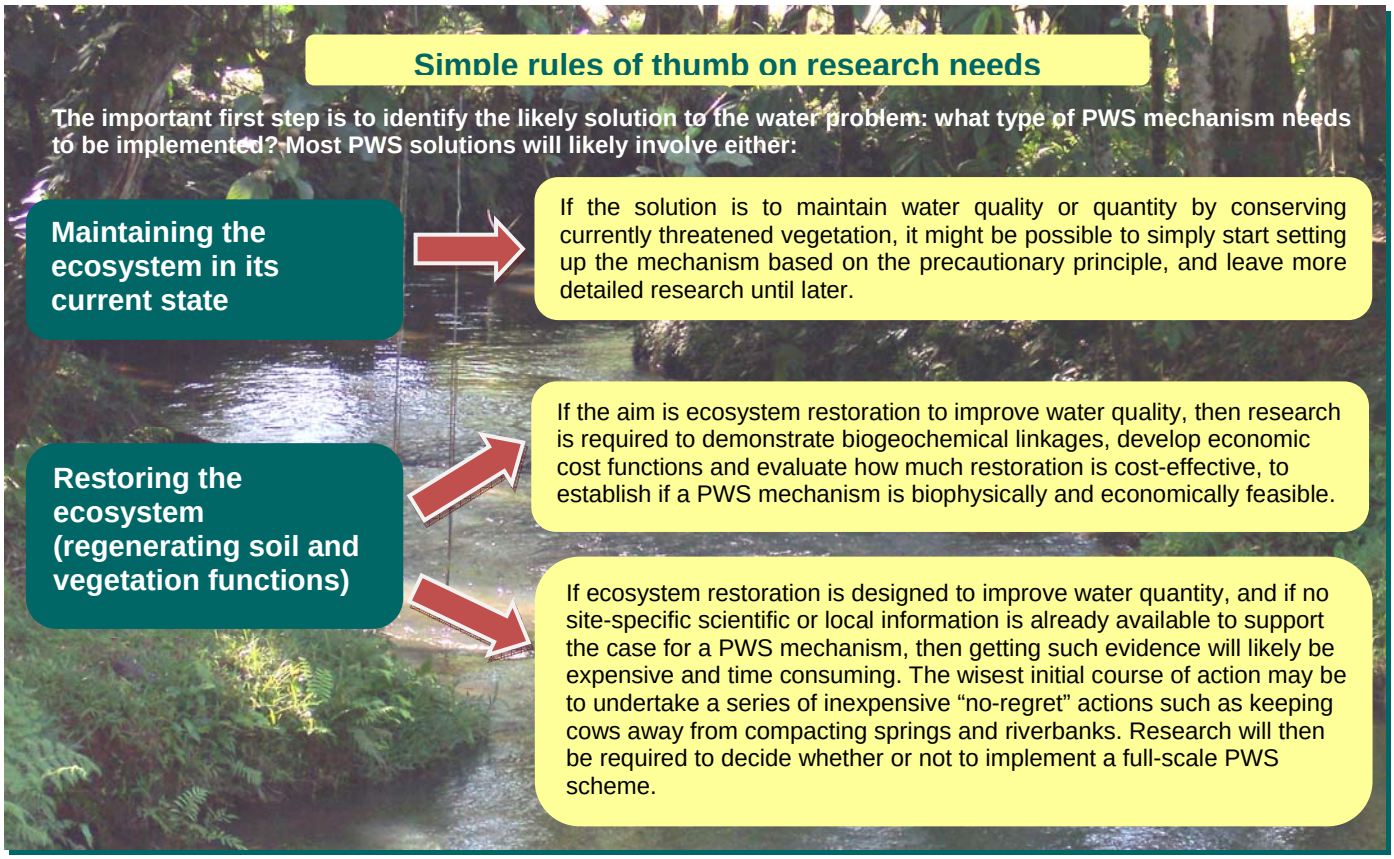
- Clarify the hydrological uses that potential buyers are interested in receiving
- Identify the specific hydrological service(s) upon which each service user depends
- Develop a baseline against which to broadly assess hydrological service delivery
- Scrutinize probable livelihood scenarios with and without PWS implementation
- Establish a basis for setting a price for the provision of the service
- Identify governance constraints and opportunities in the political environment

Q3 Are some hydrological rules scientifically proven?

The relationship between land use and hydrology is complex, and established wisdom about their nature can also change over time. However, some patterns are reasonably robust[1]:

- Intact natural vegetation cover guarantees optimum stream flow under given geo-climatic conditions. It also affords maximum soil protection and therefore provides optimum regulation of seasonal flows while moderating erosion and stream sediment loads.
- In addition, *montane cloud forests* and related cloud affected ecosystems such as *páramos* provide maximum amounts of stream flow due to a combination of high rainfall, extra inputs from cloud water capture by the vegetation, and low water use due to frequent occurrence of fog.

[1] These results draw heavily on the summary description in Bruijnzeel (2004).



Simple rules of thumb on research needs

The important first step is to identify the likely solution to the water problem: what type of PWS mechanism needs to be implemented? Most PWS solutions will likely involve either:

Maintaining the ecosystem in its current state → If the solution is to maintain water quality or quantity by conserving currently threatened vegetation, it might be possible to simply start setting up the mechanism based on the precautionary principle, and leave more detailed research until later.

Restoring the ecosystem (regenerating soil and vegetation functions) → If the aim is ecosystem restoration to improve water quality, then research is required to demonstrate biogeochemical linkages, develop economic cost functions and evaluate how much restoration is cost-effective, to establish if a PWS mechanism is biophysically and economically feasible.

→ If ecosystem restoration is designed to improve water quantity, and if no site-specific scientific or local information is already available to support the case for a PWS mechanism, then getting such evidence will likely be expensive and time consuming. The wisest initial course of action may be to undertake a series of inexpensive "no-regret" actions such as keeping cows away from compacting springs and riverbanks. Research will then be required to decide whether or not to implement a full-scale PWS scheme.

- Intact natural vegetation cover per se is no guarantee that floods or landslides will not occur, especially in large scale watersheds and under extreme weather events. Nevertheless, their frequency will be less with intact vegetation than is usually observed after conversion. For flooding, this is especially true in smaller-scale watersheds and for small and medium sized storm flow.
- Removal of old-growth forest at large scales (> 10,000 km²) in humid parts of the world reduces rainfall during the transition between the rainy and dry seasons.
- Removal of forest has an initial short-term effect of increasing annual water yield (100-800 mm for a 100% change in cover), with the size of change depending on rainfall and degree of surface disturbance. Subsequent water yield depends on the new land cover.
- Converting forest to non-forest cover increases low flows (as long as soil degradation is kept moderate and mean annual precipitation totals in excess of potential evaporation, i.e. ~ 1,500 mm or more).
- Converting forest to other uses is likely to lead to *reduced* low flows, if soil degradation has caused overland flow to exceed 15-20% of rainfall.
- Reforestation does not re-create the ecological conditions of old-growth forest within the lifespan of most PWS programs, due to the higher water use of the rapidly growing trees compared with that of the vegetation the trees are replacing.
- Reforestation is unlikely to reduce the risk of flooding to the same degree as the former old-growth forest because the recovery of degraded soils often takes decades. In addition, the impacts of development on drainage infrastructure are not undone by tree planting.
- Establishing forest on grasslands or degraded savannas leads to reductions in low flows when the trees´ increased water use is not offset by improved infiltration.

Q4 Who should bear the costs of gathering essential hydrological knowledge?

Generating the basic hydrological knowledge (including analyzing pre-existing data) can be very costly. In developing countries, these costs may often be too high to be internalized in user-financed PES schemes. In such cases, implementers might be able to bring in researchers from government-funded national and international scientific institutions. In other cases, external donors have been willing to support these costs especially during the start-up phase.

Q5 How can research costs be minimized?

Implementers should not necessarily be worried about high research costs, as long as buyers and sellers are happy with the result and cover the total bill. Obvious business practice is to seek the cheapest way of operation, but the balancing decision will hinge on the complexity of service delivery and stakeholder interests. Research costs may be reduced through diverse institutional arrangements that make information acquisition easier. These arrangements include centralizing operations, forming partnerships and networks, using intermediaries and brokers, learning-by-doing, and the formation and use of social capital (e.g. social norms and trust).

Q6 What have been the most important set-up costs in PWS experiences to date?

The cost of information acquisition by potential service suppliers has probably been central to most implemented PWS schemes. Because environmental services are a relative new type of service traded in the economy, part of the costs of building a transaction implies informing these potential suppliers of the things they need to do to provide and sell the service. This takes the form of proposals, training, technical assistance, etc. Most information required for the development of a PWS mechanism is part of what economists term transaction costs, defined as the:

- Search and information gathering costs, related to knowing what goods or services are being demanded, and at what price they can potentially be delivered.
- Negotiation and decision costs, related to crafting an acceptable agreement between parties, and converting this consensus into a contract agreeable to the parties.
- Monitoring and enforcement costs: actions that ensure the parties either comply with contracts, or face the penalties explicit in the contract, thus securing the conditionality and effectiveness of service provision under a PES scheme.

Q7 Why can we not depend on the market to minimize transaction costs?

In a normal market competition puts pressure on suppliers and consumers to find ways to minimize transaction costs. The PWS case is different: only exceptionally do PWS schemes work as competitive markets. There may be only one buyer or a few buyers downstream—and certainly for government-financed PWS the buyer function is concentrated. For upstream service providers, similar structural restrictions apply: one often has to work with a minimum share of all service providers for actions to have significant effects. Hence, normally we cannot rely on market forces to find the PWS arrangement with lowest transaction costs. Governments and other social actors need to act cooperatively to create cost-effective arrangements that eliminate excessive transaction costs. The needed institutional innovation may take the form of social capital, yet there is also place for new legal arrangements.

Q8 Do transaction costs decline over time or as PWS schemes get bigger?

Two things have the potential to lower transaction costs: time and size. A project manager can be confident that certain costs will decrease over time, just because of the learning-by-doing process reducing informational costs. As for size, a larger scale project can reasonably pay for more elaborate fixed transaction cost elements, such as more precise monitoring and less trust-intensive client verification. In principle, a smaller scale project could be more flexible, leaving all parties of the transaction sufficiently satisfied to continue with the deals.

Q9 How can transactions costs be lowered?

Some transaction costs will decrease simply as experience is gained and processes are improved. Collaborating in networks or using intermediaries or brokers can also reduce transaction costs. Local NGOs and government agencies can share knowledge and provide access to the technological or social capital that will reduce a particular project's costs. Sharing the knowledge generated by a particular experience or pilot project among peers can present options for how other projects can reduce their transaction costs. For example, after a meeting that described the PWS experiences in Bolivia's Los Negros valley, two other municipalities started their own, improved schemes. Project managers who have received donor money have a moral responsibility to voluntarily share acquired knowledge that helps others to reduce transaction costs.

Q10 Can monitoring and adaptive management improve the efficiency of PWS schemes?

As a PWS scheme becomes more mature, probably the knowledge base can be refined, and PWS design can be improved. Adaptive management is thus critical to PWS success. However, in order to manage adaptively, effective and efficient monitoring systems are required. While not all monitoring is research (and vice versa), data must be collected and studies undertaken while the scheme is operating in order to measure the impacts. Monitoring efforts should include a range of variables: monitoring of service provision is key, but livelihood impacts, scheme costs, or broader stakeholder satisfaction may also be processes to assess continuously. Managers should act based on monitoring results.

Perspectives: cooperatives give their opinion on the water funds

Interview with: José Luís Caballero Gonzáles, Administrative Manager

Institution: Los Negros Public Services Cooperative Ltd.

What do you think about the creation of a local fund to protect the watershed?
It's good for future generations: with the creation of the fund we will be able to conserve the forests and have better water in quality and quantity for our communities.

Do you think the percentage of the contribution (9%) in the monthly bill is appropriate?
Yes, because 9% of the total of the drinking water service is being contributed.

Do you think that the contributions will have an impact on the level of conservation upstream? Why?
Yes, because with the Money collected, as well as the contributions from the municipal government and the Fundación Natura, we will be able to achieve a good impact on upstream forest conservation.

Since 2003 have you seen any impact on water flows, particularly in the dry season?
Well, in the dry season the water flows were reduced to a minimum, but this year there was water for at least the basics (irrigation), so we are already feeling the conservation.

Do you believe that the landowners deserve compensation for leaving their forests standing? Why?
Yes, they have families and necessities the same as those downstream, if the don't make use of their properties due to conservation efforts, they should be compensated.

What do you think about the tripartite agreement between the cooperative, the municipal government and the Fundación Natura Bolivia to contribute to the fund during 10 years?
It's a good start, but more institutions should get involved.

Interview with: Marcial Rosales Callejas, President of the Administrative Council

Institution: Mairana Public Services Cooperative Ltd. (COOSMAI)

What do you think about the creation of a local fund to protect the watershed?
It's been of great benefit for Mairana, recently we have realized the great importance of our forests and that we ourselves have to cooperate to conserve the natural resources that we have.

Do you think the percentage of the contribution (7%) in the monthly bill is appropriate?
For now it is the most appropriate given the economic situation that we are living with currently, but later we will have to think about a re-adjustment to the tariff.

Do you think that the contributions will have an impact on the level of conservation upstream? Why?
As long as the contributions which are being made continue to be managed transparently as they have been until now, we will be able to achieve a significant impact upstream.

Have you seen any impact on water flows, particularly in the dry season?
Absolutely, before in the dry season a time would come when the current wasn't enough for even 10 families, but these days we can guarantee that our dry season current isn't reduced.

What do you think about the tripartite agreement between the cooperative, the municipal government and the Fundación Natura Bolivia to contribute to the fund during 10 years?
It's the most advisable [arrangement] because it involves local civil society actors and political authorities so that together with the cooperation from Natura, we can achieve the objective we are all seeking.

How do you think the money raised by the fund should be spent?
I agree with the way it is being done now, with an agreement between the parties that have formed the tripartite contract, always prioritizing the most necessary and urgent activities.

Conservation planning for the Río Grande-Valles Cruceños protected area

From the 29 to the 31 of October in the city of Vallegrande, the first of a series of workshops was realized with the aim to further the elaboration of the management plan for the new Río Grande-Valles Cruceños Natural Integrated Management Area (ANMI). This 734,000 hectare ANMI was created by the Santa Cruz Prefectural Government in 2007 and includes part of the territory of the Vallegrande, Pucará, Moro Moro, Postrervalle, Samaipata, Cabezas and Gutiérrez municipalities.

As shown in the summer edition of Naturalia, the Río Grande-Valles Cruceños ANMI is one of the most biodiverse areas in Bolivia, while the cloud forests of the region supply a very important environmental service with respect to the availability of water downstream and the mitigation of natural disasters such as floods.

The development and implementation of a management plan is one of the first steps towards the sustainable conservation of the ANMI, and currently the allied institutions that supported the creation of the area—among them the Prefecture, the seven municipal governments and the Fundación Natura—have entered a third phase; analyzing the information collected about the current situation of the protected area.

During the two and a half days of the Vallegrande workshop, Natura and the Prefecture presented the results of the biological, socioeconomic and tourism diagnostics, as well as the methodology from The Nature Conservancy (TNC) for the selection of conservation objects; a methodology that is being applied to the Río Grande-Valles Cruceños conservation initiative. Those present—approximately 50 people, among them researchers, local authorities and community representatives—had the opportunity to debate the diagnostic results and later were organized into four working groups (flora, fauna, ecosystems and environmental services) to identify the most important conservation objects for the ANMI. The objects selected were assigned a value based on the methodology de TNC and towards the end of the workshop each group presented their results. The eight conservation objects will be included in the management plan, which will be published during the first few months of 2009.

Getting to know the different faces of Natura…

Stephanie Secomb
Politics and Strategy Coordinator

Stephanie Secomb has an Honors degree in History from Monash University in Australia. She has worked in Australian government departments as a policy advisor for a diverse range of issues including the negotiation of bilateral treaties, sports anti-doping and the development of mobile communication networks. At Natura, Stephanie focuses on developing project and fund-raising proposals, maintaining donor relations, as well as writing, editing and translating documents and publications.

Claudia Jordán
Executive Assistant and Río Grande project support

Claudia Jordán has a biology degree from the Gabriel René Moreno Autonomous University. She has worked on issues surrounding the use of natural resources, focusing on ethnobotany in the Bajo Paragua and Santa Cruz valleys areas, territorial planning for a number of municipalities, plus studies of fauna (mammals and insects) and plants for the Bolivian checklist. Currently she works for the Fundación Natura as Executive Assistant and also supports Natura's projects within the Río Grande-Valles Cruceños Natural Integrated Management Area.

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