Reciprocal agreements for watershed conservation in South America

Case study Module 2

Nigel Asquith

Author's affiliation: Natura Foundation, Bolivia.

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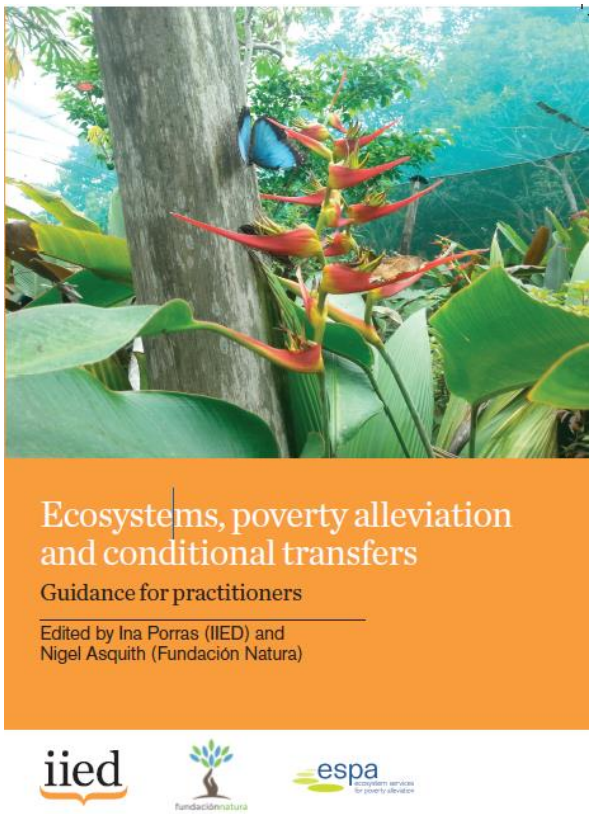


Evidence from the international research community shows that careful management of nature results in benefits to people's wellbeing. Poor people especially depend more heavily on the quality of the ecosystems and have less access to substitutes when they are degraded. Making meaningful impacts in the way ecosystems are managed requires governments to step in and scale up, but the evidence also shows that empowered communities can make strong calls to enact and implement change at the local level. Positive incentives like payments for ecosystem services (PES) and other forms of conditional transfers can provide important signals to enact this behavioural change into positive actions. Carefully designed, these incentives can also contribute to the wellbeing of people, especially poor and vulnerable groups. New tools emerge that can help with scaling up and dealing with inevitable trade-offs, but more efforts are needed to bring this information closer to those making decisions. This case study accompanies a Guidance for Practitioners that helps to bridge this space by: 1) making evidence accessible, bringing the latest evidence from research on PES in theory and practice with documented case studies written for practitioners; and 2) supporting capacity building to 'train the trainers', through teaching modules which can be used to promote capacity building of practitioners.

Reciprocal Watershed Agreements — known as 'Watershared' in South America — are simple grassroots versions of conditional transfers that help land managers located in upper watershed areas to sustainably manage their forest and water resources in ways that benefit both themselves and downstream water users. 'Watershared' agreements focus on changing behaviour through economic and non-economic incentives and building institutional capacity: in other words, on showing local authorities and water users that watershed protection is in their own interests, and then on helping to create the institutional framework needed to plan and implement it (Asquith, 2011).

Watershared agreements do not rely on extensive hydrological and economic studies to define `correct' payment levels. Nor do they focus on the opportunity cost of conservation as the primary driver of levels and types of compensation. Rather, they attempt to strengthen and formalise pro-conservation social norms, by publicly recognising individuals who contribute to the common good by conserving their 'water factories'. They respond to one of the key findings of behavioural economic experiments, that "money . . . is the most expensive way to motivate people. Social norms are not only cheaper, but often more effective as well" (Ariely, 2008, Mackenzie and Dwight, 2017). Watershared `compensations' are thus tokens of appreciation rather than economic transactions and can comprise much lower amounts than neoclassical economic theory would predict.

In areas such as Bolivia's Los Negros valley, where the Andes meets the Amazon, extensive cattle grazing is the primary threat to forest cover and hence to the quality and quantity of downstream water. Cows enter forests, especially along riverbanks, to drink and graze. They defecate and urinate in streams, graze seedlings and compact soil; as a result, levels of faecal coliforms in the water increase, vegetation regeneration is reduced, and rainfall runs off compacted soils more rapidly. This leads to increases in flooding and sedimentation and decreases in dry season water flows and water quality. As a result, agricultural production, incomes and quality of life decrease.

The original Watershared agreement in Los Negros tried to reverse this vicious cycle (Asquith *et al*., 2008). Upstream forests were protected from cattle incursion by landowners, who were compensated for their conservation efforts. Downstream water users provided alternative development tools, such as beehives, fruit tree seedlings and irrigation tubes. Biodiversity was protected, the quality and quantity of water increased, and livelihoods improved, with clear benefits downstream (more/cleaner water) and upstream (landowners had new development alternatives).

Political support

The first Watershared agreement in Los Negros was born out of conflict (Asquith, 2013). Downstream water users had long complained that upstream deforestation was reducing the overall flow in the Los Negros River. This disagreement boiled over when Los Negros irrigators, armed with sticks, travelled upstream to confront their neighbours. Ten years later the same irrigators were contributing around US$3,000 a year to help the same farmers they had attacked to protect 3,000 ha of forest 'water factories'.

In Cuenca, Ecuador, the city water provider (Empresa de Telecomunicaciones, Agua Potable, Alcantarillado y saneamiento de Cuenca, ETAPA) had for decades been working to protect the upper Yanuncay watershed. However, in the upstream Soldados town, villagers were viscerally opposed to ETAPA, going as far as to kidnap company staff. Downstream, demand was exceeding supply in the dry season, but city users were wasting water. A two-pronged public awareness campaign, called `Pride for Watershared Agreements' was able to calm tensions upstream and promote a 'shorter showers' initiative downstream to voluntarily reduce water demand, thereby resolving both of ETAPA's major problems in one go. With the conflicts resolved, and a clear local mechanism of co-operation visible to all, ETAPA was then able to contract 22 Watershared agreements in the middle watershed, putting 1,341 ha under conservation.

Because Watershared is a co-operative community-based process, it can help resolve conflicts. Indeed, the Watershared message — that everyone in a watershed is part of the same problem and so can be part of the same solution — is a low-cost, local mechanism for conflict resolution.

Sustainable financing

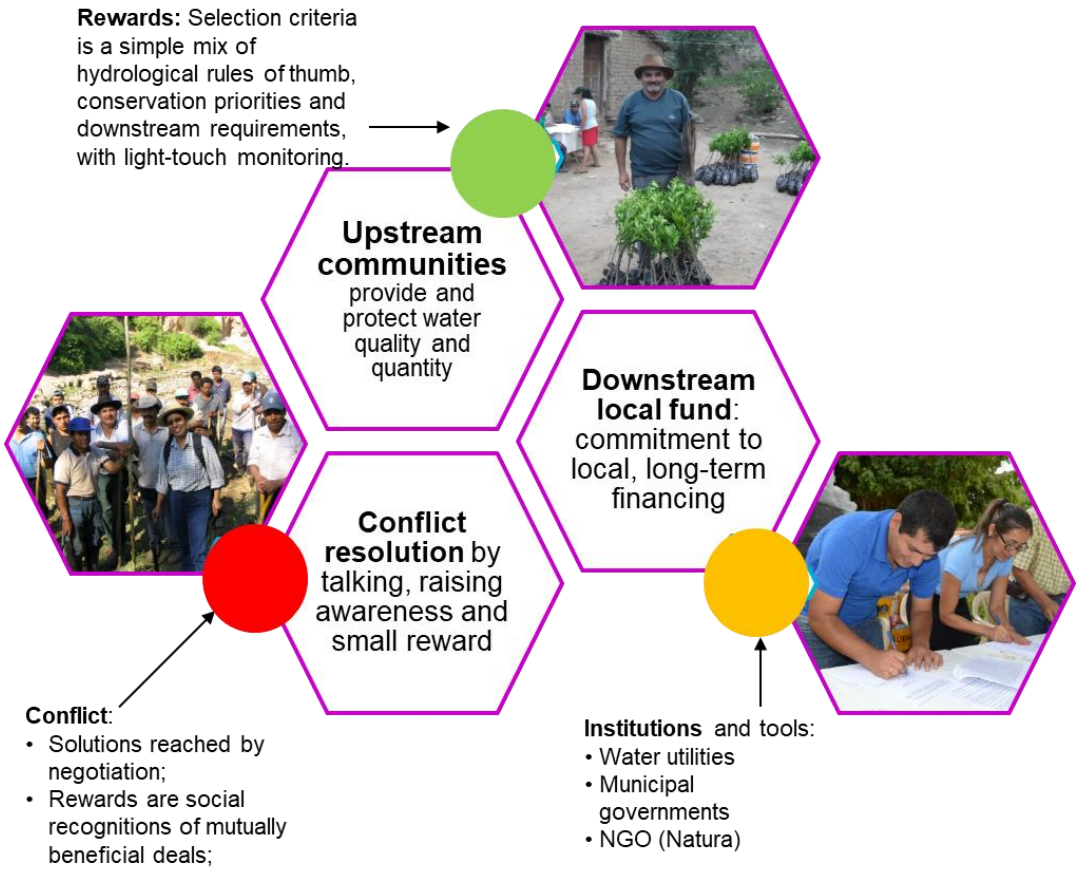
A number of characteristics of Watershared appear to promote efficiency, including the principle of subsidiarity. The schemes seem to work best when they are designed, managed and monitored locally, and are nested in and co-ordinated with relevant regional and national government policies. Indeed, Watershared rules are, by definition, developed locally. Local people were instrumental in originating the model and designing the first agreement.

The cost of protecting 1 ha of forest, including the payment and transaction costs, under a Watershared agreement is a fraction of the cost of alternatives. Ecuador's national Sociobosque scheme pays up to US$60 per ha, while Ecuadorian Watershared programmes in Cuenca and Loja cost around US$20 per ha. In Bolivia, Watershared costs as little as US$1.7 per ha. Most importantly, Watershared funds are sourced locally: by more than 40 independent institutions, or from hundreds of thousands of individual water users. Thus, unlike national PES schemes that are funded from the general treasury, Watershared spreads risk and is less susceptible to political and macroeconomic volatility (Asquith, 2013).The next section discusses in more detail some of the financial and institutional arrangements currently in use.

Institutional set-up

The underlying philosophy of Watershared is the same everywhere: "people who produce water, share it; people who use water, share the benefits" (see Figure 1). Local implementation, however, varies significantly.

Figure 1. The principles of Watershared agreements



Source: Author's own.

Fundamental to the Watershared model is an inherent flexibility that allows local participants to design, adapt and refine programmes based on realities on the ground, rather than being bound by national policy or legal frameworks. In Mairana, Bolivia, leaders decided to make strategic land purchases in addition to entering standard reciprocal watershed agreements. In Guasca, Colombia, landowners were

asked to make voluntary commitments to land set-asides before engaging in discussions on compensation.

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Indeed, Watershared rules are, by definition, developed locally. Local people were instrumental in originating the model and designing the first agreement. The model requires and facilitates a local, long-term financial commitment to conservation: municipal governments and water users' associations must commit funds before the facilitating non-governmental organisations (NGOs) provide start-up funding.

In a number of municipalities, such as Comarapa, Bolivia, and Guasca, Colombia, landowners changed their behaviour simply on the basis of what they learned during the Watershared development process, without any compensation. Changing the social norms that affect conservation is the key to a successful reciprocal watershed agreement. Watershared's success, therefore, may be **because** the model sidesteps discussion about the value and opportunity costs of conservation, rather than **in spite of** this.

Systems and tools for effective implementation

Land tenure arrangements are highly informal in much of the Andes. Few landowners have government-approved titles, but rather rely on signed purchase contracts, some of which are generations old, as proof of possession. In general, PES schemes, especially government schemes such as those in Costa Rica and Ecuador, do not accept these informal `titles'. Many landowners (often the poorest) therefore cannot enter the schemes (Botazzi *et al*., forthcoming, 2018).

In contrast, reciprocal watershed agreements do not require formal land titles but instead rely on locally accepted definitions of who owns and controls, or grants access to, watershed forests. In Bolivia, tenure is confirmed, and agreements are signed based on simple assurances from neighbours and the village chief that a piece of land belongs to an individual. Watershared ownership decisions are thus based on local consensus, and although such tenure does not necessarily have *de jure* recognition, the *de facto* definition of boundaries used by participants in the Watershared scheme is often stronger.

Selection of upstream areas use the following checklist (Asquith and Vargas, 2007):

- *Watershed is in or close to an important conservation area* (such as a protected area, or an important bird area, etc). This criterion ensures that selected sites are globally important for conservation.
- *A hydrological service is being provided.* This is often complex to prove, as most hydrological relationships are site-specific. It is therefore difficult, *a priori*, to state that protecting forest in any given area will actually provide the desired hydrological service, unless complete hydrological studies have been completed (Le Tellier *et al.,* 2009). However, there are two important exceptions: cloud forests, where it is almost always true that deforestation will reduce dry season flows, and forests, where cattle range freely and where keeping cattle out will improve water quality. Municipal governments can be sure that, in these cases, upstream conservation interventions will help protect watershed services, without a need for detailed and costly hydrological assessments.
- *Watersheds should be small and simple.* Hydrology is complex, and the larger and more complex the hydrological system, the more difficult it is to successfully identify the level of service provided, and to identify and negotiate with the real suppliers and beneficiaries. The smaller the watershed, the more likely that upstream actions can be directly linked to hydrological benefits downstream, and land managers and water users can be more clearly identified. Furthermore, the smaller the watershed, the more likely that actions upstream actually do affect downstream users.

The **cost effectiveness** of Watershared increases if there are only a few, motivated stakeholders involved. Two criteria can thus maximise the economic efficiency of Watershared:

- *Some but few downstream water users:* Schemes where there are a few major downstream stakeholders, such as a drink bottling company or a hydroelectric plant, are more likely to succeed

than if project managers must negotiate with hundreds of independent farmers. On the contrary, if there are no water users, there will likely be no long-term interest in upstream conservation.

- *Local perception of forest water links:* Success is more likely where local stakeholders already perceive and understand the connection between forest management and the maintenance of healthy freshwater ecosystems, so costly public education programmes are not needed.

Clear, demand-led rewards: Downstream water users provide upstream landowners with alternative development tools, such as beehives, fruit tree seedlings and irrigation tubes. The content of the compensation packages is defined by beneficiaries based on their needs, but usually comprise alternative livelihood options that can diversify income sources, have a multiplier effect, and reduce farmers' susceptibility to climate change. Given local capital and transport constraints, there is also a huge added value of compensation packages being `delivered to the farm gate' by project implementers.

Ability to demonstrate impact

High potential for scaling-out: By 2017, 50 Bolivian municipalities had appropriated and adapted the Watershared model and had changed the behaviour of more than 250,000 people: 5,635 upstream farmers were conserving 272,000 ha of water-producing forest, and 245,000 downstream users were paying them approximately US$500,000 a year to do so. The success of this model paved the way for scaling out these local reciprocal agreements (Asquith, 2016).

Evidence of local investment capacity: Given that a local financial commitment, requiring public money, is required for programme initiation, local officials take great interest in designing the schemes. At new Watershared sites in Bolivia, such as Cuevo, local finance comprises up to 90 per cent of the water funds' capital, so the mayor's office has needed to be fully involved in the process. At the ten pilot Watershared sites in Colombia, Ecuador and Peru, donors put very little cash into the water funds, so local institutions, such as those in San Ignacio, had to contribute. This has increased the sense of local ownership and thus the potential for sustainability.

In Colombia, although the Roncesvalles reciprocal watershed agreement scheme depended on voluntary contributions, the Queremal and San Vicente schemes accessed municipal and other local funds. Interestingly, in Guasca, the regional government body responsible for conservation — the Corporacíon Autónomia Regional del Guavio — worked with municipal authorities to set up a fund that has great potential for sustainability: of the 1 per cent of municipal incomes that legally must be allocated to upper watershed protection, the water fund is guaranteed to receive 1 per cent. It took almost three years of intensive effort to achieve this consensus and negotiate the legal maze that stood in its way, but the resources deployed were minimal compared with those used by previous donor-led projects.

Similarly, in Peru, the Catholic charity Caritas-Jaen developed a Watershared scheme in which the San Ignacio government invested US$28,000 to create a Watershed Management Division. More than 30 landowners are being compensated from a municipal water fund capitalised by municipal taxes (*arbitrios*).

Changing society perceptions by raising awareness: In response to the question "What are the impacts of deforestation?", more than 70 per cent of respondents associated with Watershared schemes noted the deterioration of water quality and/or quantity and other changes in the hydrological cycle, while only 45 per cent of respondents associated with local and national PES schemes made these connections (CDKN, 2016). More than 10 per cent of respondents linked to PES mentioned that deforestation had positive effects, whereas fewer than 2 per cent of Watershared respondents did so. This testifies to the awareness-building aspect of Watershared.

Indeed, many individuals and institutions assert that Watershared has profoundly changed their perceptions of the role of forests in providing water. The mayor of Zumba, Ecuador, asserted, "people have changed their perception about water". These changed perceptions not only facilitated the collection of downstream payments, but also changed upstream behaviour, even before any incentives were paid.

Securing land tenure: Watershared agreements can also have other societal impacts. For example, Watershared can help secure land tenure, which in general is highly informal in much of the Andes.

Few landowners have government-approved titles, but rather rely on signed purchase contracts, some of which are generations old, as proof of possession. Such proofs are locally accepted for plots that are actively managed.

However, landless immigrants view forested areas not delimited by barbed wire as available for colonisation. Many new immigrants thus clear land illegally or `informally' on land owned by other farmers or within a national park, for example, and establish possession without any supporting documentation. Watershared, which provides landowners with a map of their land, and sometimes provides barbed wire as part of the compensation package, often help strengthen landowners' tenure security.

Gender impacts: Many upstream women own land, but cultural and economic forces prevent them from using their land effectively. Traditional development activities that focus on improving crop yields and productivity invariably benefit men. Watershared, as a form of incentive-based conservation, provides an innovative option, because:

i) Women landowners can benefit from compensation payments directly: land itself, becomes a revenue-generating asset.

ii) Watershared can target compensation forms that benefit women. For example, honey production is traditionally a female activity in the Andes, so having beehives as compensation increases income-generating opportunities for women.

Watershared can thus transform forests into cash without the need for hard (often male) labour. For example, in the Bolivian community of Huantas, eight families joined the Watershared programme in 2016, signing contracts to conserve 160 ha of forest. In return for their commitments, the families (five led by women, three led by men) received compensation packages of apple and plum tree seedlings and barbed wire worth a total of US$977, with an average value of US$122 per family. In an eroded landscape where average annual incomes are less than US$1,500, such deals are clearly having a positive impact.

Conditionality: The small-scale and high participation levels of these deals means that the they are largely self-monitoring. Most importantly, the proximity of service users and providers can promote strong `conditionality', if the landowner cuts his forest, it will be quickly obvious to his downstream counterparts.

Lessons

The Watershared model has been replicated remarkably quickly. In Bolivia, Watershared promoters first arrived in Cuevo municipality in March 2012. Less than 11 months later, the local government had committed to investing US$2,289 and was signing its first Watershared deal with 54 families, who received 46 rolls of barbed wire and wire staples in exchange for signing contracts to conserve 1,905 ha of forest for three years. In San Ignacio, Peru, authorities created a fully functioning Watershed Management Department in the municipal government within three years, even though funding from a supporting local NGO came to an end.

Watershared is so simple that a number of municipalities have been able to develop programmes of their own. Such is the case in the Bolivian municipality of Pasorapa, where the mayor set up a Watershared fund with virtually no outside help. The community received a donation of 9 ha of land above their water supply, and used funds raised by the water co-operative to fence out cattle from this area. The Pasorapa Fund is about to pay to conserve another 200 ha with its own money, none of which has been provided by Natura. In Ecuador, as a direct result of participating in the school in Loja, the community of Guachanamá set up a Watershared model to provide three landowners with barbed wired, plastic tubing and a drinking trough for cattle in return for the conservation of 200 ha. Meanwhile the Ecuadorian community of Pozul has set up a water fund that is raising US$350 a month, destined to buy the land around the water source.

The high level of local involvement is very similar to that of India's Mahatma Gandhi National Rural Employment Guarantee Act (MGRNEGA), where local implementation of job investments is determined by community institutions (*Panchayat*). The lessons from Watershared can help MGRNEGA improve their environmental targeting and look at options to secure the long-term environmental impacts of these investments. Mahatma Gandhi National Rural. Employment Guarantee Act

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