

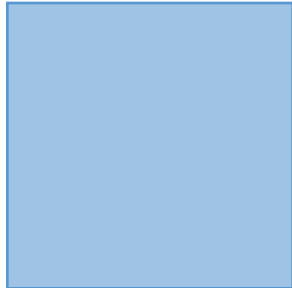
# MANAGING WATER

## *Potential Contributions of Investments in Watershed Services and Linkages to Poverty Reduction*

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**F O R E S T  
T R E N D S**



### **Introduction**

Water is one of the most essential elements to life on the planet, yet most of us take it for granted. We use it, misuse it, and waste it, as if it were not precious. Water has so little perceived value that in many parts of the world, people do not even pay for it. Even in places where people do pay for water, they sometimes pay so little that they rarely give it a second thought. For many, turn on the tap -- and there it is. Only in places where it is scarce, hard to get, or costly do people really appreciate water. Scarcity drives not just price, but perceived value. By this measure, the value of water looks set to continue rising.

Today, most parts of the world suffer from water problems. Water may make up more than two-thirds of our planet, but the problem with water has never been solely about water quantity. Rather, the issue is mostly one of economic access to water and water quality, or about how much water can be actually, feasibly used. In parts of Africa, Asia, and Latin America, many people cannot afford to pay for clean water. In Australia, the Middle East, and the Southwestern US, on the other hand, the problems are physical water scarcity and drought. Even for people who can pay for it, water cannot be found. In the world's major river systems, pollution is the problem, whether it is sewage and storm water runoff from our cities, chemicals from our industries, or excess fertilizers from agriculture.

In sum: We are facing a growing number, and increasing range, of water issues. As with climate change, when it comes to water, we are on an inevitable collision course with global disaster. So what is the answer?

One suite of tools that, in certain situations, could help to address water problems are watershed payments. Watershed payments provide financial or in-kind incentives to land managers and land stewards to adopt practices that can be linked to improvements in watershed services and may also be considered as investments in watershed services (IWS), or more commonly referred to as payments for watershed services (PWS). Programs are driven both by private interests (although their number is few) and government entities focused on influencing land-use practices that affect water quality and flow.

Specifically, investments in watershed services include:

- **Government payments for watershed services**
- **Private sector payments for watershed services**
- **Water Quality Trading**

1) **Government payments for watershed services** can be found in China, Mexico, Costa Rica, and the US. These are, in dollar terms, the largest flow of investments documented by us to date. In many cases, such as China's Eco-Compensation programs, the government bundles payments for watershed protection with other conservation goals. Still, they may well be the most important applications of these concepts in the short run, since they can be used, and are being used regularly, in developing countries. In addition, the way the government distributes its revenue, along with the sheer scale of payments, can have some far-reaching implications for people and watersheds.

The emerging leader in terms of experimentation with government investments in watershed services is Latin America. Real innovations are present in many countries in that region in terms of how payments are made as well as how their effects are measured, monitored, perfected, and replicated. Particularly innovative is the use of trust funds to channel money that is coming from both public and private sources.

2) **Private sector payments for watershed services** are fewer and farther between. While, relatively speaking, this type of payment is still small, this is perhaps one of the areas where we are likely to see growth in the years to come. Already, we are seeing mainstream names entering this field, with, for example, Coca-Cola announcing that it is working in various parts of the world to better understand, monitor, and help pay for the watershed services it utilizes.

3) **Water Quality Trading** is often aimed at curbing nitrogen pollution and is in some ways one of the most interesting payment schemes for market growth. After all, the world has seen pollution trading regimes operating on a massive scale (i.e., in carbon via the European Emissions Trading Scheme).

## Program Structure: How It Works

How do the players link up over the protection of watershed services? That answer depends almost entirely on who perceives there to be a problem that can be solved by an IWS or PWS and associated watershed protection program. The two most common drivers are:

1. **demand-driven**, where there are perceived water quality or flow problems that affect downstream users and are thought to be caused by land management practices upstream. In these cases, payments act as incentives to landowners to change land management practices.
2. **supply-driven**, where payments from water users are utilized to pay for improvements to watershed management practices that would otherwise be threatening watershed services.

To forge an agreement, a legal contract is often crafted that stipulates the conditions with which landowners have to abide, as well as the amount, timing, and form of payments. These agreements are established for a specified period of time and can be renewed. In some cases, contracts will establish sanctions for non-compliance for landowners, which entail a gradual evolution from an initial admonishment to their final separation from the IWS or PWS program, depending on the severity of the non-compliance and the frequency of occurrence.

Since watershed protection and management are long-term activities, endowments can be an effective way to oversee multiple agreements and ensure the transparent use of funds. To this end, there has been a growing interest in creating endowments or water protection trust funds, as is the case in Colombia and Peru, inspired by Ecuador's Quito Water Fund (FONAG) model.

### **Case Example - Water Trust Funds in Ecuador, Colombia, and Peru**

Urban and industrial water users in the Andean region have created Water Trust Funds, entities bound by a legal contract among founding members that are generally institutions or companies representing key water users. Such a contract designates an independent financial institution to manage the trust. A Governing Board provides oversight on compliance and guidance on resource use through an annual budget and operating plan. A Technical Secretariat is in charge of strategic and business planning as well as project management. Activities to improve land management are implemented through third parties to create local capacity and accountability.

The Quito Water Fund (FONAG) is an example of a water trust fund. The municipal drinking water and electrical utilities, a private brewery, and a water bottling company commit resources through a long-term financial mechanism, an 80-year trust fund. The returns from this investment leverage donations from international and local NGOs, governments, and Overseas Development Assistance. These funds, in turn, are invested in critical conservation projects that involve strengthening parks and protected areas, as well as supporting rural families to restore degraded lands, engage in sustainable farming practices, reforest, and educate children about sustainable water management.

Results to date include: FONAG has generated an endowment of more than US\$6 million from its members, which has enabled it to invest US\$2.3 million and leverage an additional US\$7 million to spend in key conservation activities. Watershed protection activities financed through FONAG from 2000 to 2008 amounted to US\$9.3 million. The Quito model is now being replicated in many other Andean cities (including Palmira, Bogotá, and Lima).

*Source: Marta Echavarría, EcoDecision*

### **Program Participants: Who's Playing?**

Key players, supporters, or funders of investment in or payment for watershed protection initiatives have been municipal governments that are responsible for protecting sources of drinking water, as well as drinking water companies and hydroelectric generators (both public and private) that have come to realize that investing in conservation of the habitat surrounding their catchment makes good business sense. Common to many larger watershed protection programs is also an administrator who helps design, promote, negotiate, track, and monitor the transactions.

The recipients of the payments are predominantly upstream landowners or those serving as informal stewards of the land. These may be individuals, indigenous groups, or rural communities. In a few cases, protected areas (national parks or private reserves) receive payments. For those programs newly forming, no matter who is driving the process, it is vital to involve all of the relevant stakeholders early in the negotiation process to ensure long-term success of the watershed payment program.

### **Current "State of Play" by Geography**

Latin America is the home of the highest number of identified programs, contributing some US\$31 million to watershed conservation measures across 2.3 million hectares. As of 2008, there were 36 active IWS and PWS programs in Latin America. Anchored by the development of Water Funds first in Ecuador, then Colombia and now Peru, the use of this tool to fund upstream conservation by downstream users can serve as a model for replication in other IWS and PWS agreements around the world.

### Case Example - Water Producers Program in Espirito Santo State, Brazil

As of 2009, the state of Espirito Santo in Brazil approved the Water Producers Program which aims to compensate landowners—many of whom are dairy producers—who own remnants of native forest in strategic hydrological areas to engage in practices that improve water quality and flow. These dairy producers are compensated based on the number of liters of milk they are unable to produce because they leave forested areas untouched and do not use them as pastures. The contracts are signed for three years and can be renewed for up to ten years. After one year of compliance, landowners receive an average of US\$74 (R\$135) for each protected hectare per year.

The Water Producers Program is a partnership between several state agencies, including the State Department of Agriculture (SEAG), the Development Bank of Espirito Santo (BANDES), the National Water Agency (ANA), and the Institute BioAtlântica (IBIO). Resources for this state-wide program come from water tariffs, as well as royalties from oil exploration (3 percent), natural gas (10 percent), and hydro-electric power production. Sixty percent of these resources are used to make payments to landowners.

Since March 2009, the project has benefited farmers from five cities in Espirito Santo (Afonso Cláudio, Alfredo Chaves, Alto Rio Novo, Brejetuba, and Mantenópolis) in three river basins (Benevente, Guandu, and São José).

*Source: Water Producers Program: Fernando Veiga, The Nature Conservancy Brazil*

In China, the number and variety of IWS and PWS agreements have increased in recent years, from around 8 in 1999 to more than 47 in 2008. Payments in China have grown from just over US\$1 billion in 2000 to an estimated US\$7.8 billion in 2008, covering some 290 million hectares. Current watershed payment schemes in China are almost exclusively government-mediated. Looking forward, another potentially significant boost to IWS and PWS at both the provincial and national levels could come from a new water pollution emissions trading system.

The picture in the rest of Asia is much less robust. Research identified a total of 33 programs, with 9 classified as active in 2008. Payments registered US\$1.8 million in 2008, covering nearly 110,000 hectares. IWS and PWS activity across the region is anchored by projects created and supported by Rewarding Upland Poor for Ecosystem Services (RUPES), a research effort whose mission is to develop practical environmental services schemes throughout Southeast Asia.

In Africa, IWS and PWS agreements totaled 20 in 2008, with roughly 10 identified as active, yielding a total payment value of US\$62.7 million on nearly 200,000 hectares. Payments from these programs for the years between 2000 and 2008 are estimated to total US\$507.7 million with a significant portion attributed to the Working for Water program supported by the government of South Africa. In most cases, watershed management activities in Africa are part of national ecosystem conservation programs that include investments in watershed service enhancement and rehabilitation, as well as improvements of the capacity of local communities to identify, formulate, and implement integrated ecosystem management activities.

### The Link to Poverty Alleviation

While Investments in and Payments for Watershed Services are not primarily designed to reduce poverty, they offer economic incentives to foster more sustainable use of ecosystem services. As a result, rural populations who earn their living from natural resource-based activities (such as forestry and farming) may use IWS and PWS mechanisms to earn money by restoring and conserving ecosystems. Participating in an IWS or PWS system may also enable landowners to receive access to technical assistance and needed raw materials, such as seedlings. The relationships between IWS/PWS and poverty reduction are further described in the following box.

### **Pro-Poor Payments for Watershed Services**

“Payments for Watershed Services (PWS) currently exist in Costa Rica, Ecuador, Bolivia, India, South Africa, Mexico, and the United States. In most of these cases, maximizing watershed services through payment systems has led to poverty reduction.

While there is clear potential for tradeoffs between poverty reduction and watershed services goals, practitioners and policymakers around the world have already shown that they can design and implement PWS programs that minimize these tradeoffs. Indeed, because PWS initiatives are (by definition) voluntary, because they involve transfers of wealth (often from wealthier urban areas to poorer rural areas) and because they can empower the poor by recognizing them as valued service deliverers, PWS schemes are actually more likely to have pro-poor impacts than most other environmental management interventions.”

*Source: N. Asquith and S. Wunder. 2008. Pagos por Servicios Hídricos: Las Conversaciones de Bellagio. Fundación Natura Bolivia: Santa Cruz de la Sierra*

### **Potential Benefits for the Rural Poor**

Investments in and Payments for Watershed Services have both short- and long-term benefits for rural populations.

#### **Short-term benefits:**

- Increased cash income for consumption or investment purposes (such as increased caloric intake for children, expanded access to education and health care, new products for sale, improved enterprise productivity, etc.)
- Expanded experience with external business activities through IWS- and PWS-related economic transactions and interactions with IWS- and PWS-relevant intermediaries
- Increased knowledge of sustainable resource-use practices through training and technical assistance associated with IWS and PWS deal implementation

#### **Long-term benefits:**

- Improved resilience of local ecosystems and flow of watershed ecosystem services
- Potential for higher-productivity land due to watershed ecosystem service investments

IWS and PWS deals can be structured for individuals, entire communities, or both. In any case, positive “ripple effects” can flow to a number of beneficiaries as, over the lifespan of agreements, communities are likely to derive additional indirect benefits from the regulating and supporting services these ecosystems deliver, such as water purification, natural hazard buffering, flood regulation, and others.

Since IWS and PWS agreements explicitly recognize the role of environmental stewards, they may also contribute to the formalization of resource tenure and the clarification of property rights and, as such, could strengthen rural peoples’ position in other resource-based negotiations.

Despite these potential benefits, it is essential to note that IWS and PWS agreements are not a panacea poverty reduction and that they need to happen in a context where institutional capacity and transparency as well as resource access are supportive of the process.

## Ideal Conditions for Payments for Watershed Service Projects

IWS and PWS agreements are most likely to flourish when and where:

- **Demand for ecosystem services is clear and financially valuable to one or more players.** IWS and PWS agreements are most likely to come together when there is at least one beneficiary of specific watershed services with both an incentive to invest in the maintenance of this service and available funds for doing so.
- **Supply is threatened.** If resources are clearly diminishing to the point of scarcity because of a declining ecosystem service, then an IWS or PWS deal holds potential.
- **Specific resource management actions have the potential to address supply constraints.** For IWS or PWS to be a viable option, it is essential to identify what resource management practices could be changed and what will ensure improvement of supply issues.
- **Effective brokers or intermediaries exist who can assist with documenting watershed conditions,** identifying specific resource management alternatives, aggregating multiple landowners/resource users (if needed), engaging and negotiating with prospective buyers, and taking on any other activities related to implementation (including monitoring, certification, verification, etc.).
- **Contract laws exist and are enforced, and resource tenure is clear.** The supplier must have control over the area where the IWS or PWS agreement is to be implemented, and the buyer must have assurance and recourse to ensure that contract provisions of the deal are secure.
- **Clear criteria for evaluating equitable outcomes across partners are established.** In cases where partnerships are formed to supply a watershed service, clear criteria of fairness need to be designed and agreed to.

It is also essential to note that potential risks exist for the rural poor when entering into IWS or PWS deals. Therefore, careful consideration should be taken of the following:

- **Full understanding of what is being bought and sold, and long-term implications for local livelihoods and resource rights.** The use of IWS and PWS implies a contractual focus on relatively abstract ecosystem services, which may contrast with cultural conceptions and economic models operating within traditional communities. It is important to identify and consider these potential issues and “friction” points prior to actively exploring an IWS or PWS deal.
- **Other opportunity costs.** The possible loss of other opportunities should be weighed against revenues from an IWS or PWS deal. For example, if a community enters into an IWS or PWS contract, donors and aid organizations may decide the community is less in need of their support. It is worth assessing whether any such potential opportunity costs are associated with an IWS or PWS deal.
- **Unfair outcomes.** There is a potential for unfair sharing of net revenues when rural communities form partnerships with business entities to supply ecosystem services, especially when there is asymmetric information on the demand market.
- **Loss of critically important ecosystem services.** In designing a project, the needs of the entire ecosystem must be taken into account. For example, watershed service projects that measure success in terms of water flow may create incentives to divert water from the irrigation of local crops to downstream water delivery in a drought year, jeopardizing subsistence farmers.

- **Performance risk and need for insurance.** Where payments are dependent upon delivery of specific watershed service outcomes, factors outside producers’ control may result in failure to achieve contractual obligations and, subsequently, non-payment. Therefore, ideally all participants in IWS or PWS agreements employ some type of insurance strategy. Unfortunately, formal insurance policies are rarely accessible at this time. If insurance is available, costs and who bears them are a key issue. It would be ideal, if a buyer is willing to pay for insurance. Alternatively, risk-sharing — between sellers and buyers—would be the next-best option.
- **Incompatibility of IWS or PWS with cultural values.** In some communities, investments in or payments for watershed ecosystem services transactions are viewed as a commoditization of services that should not have a price tag attached. Critics are also concerned that communities who are the custodians of those services or other poor “downstream” beneficiaries could themselves be made to pay for services as well.

Overall, prior to investing in an IWS or PWS deal, potential sellers and/or their partners should not only undertake a risk assessment, but also consider the context in which the agreement will be implemented.

### Limiting Factors to Proliferation of IWS and PWS Agreements & Opportunities for Support

At present, a range of limiting conditions inhibits the widespread application of IWS and PWS in rural communities, including:

- Limited access to information about investments in and payments for watershed services, the economics of land use, and downstream resource users or prospective buyers.
- Lack of financing for IWS or PWS assessment, start-up, and transaction costs.
- Limited bargaining power to influence, shape, or enforce rules and contracts; to resolve disputes; or to process grievances, particularly with private sector actors.
- Limited asset base to absorb risks, invest time and resources in management, or to weather periods of lower returns or higher labor requirements.
- Limited organization or outreach to aggregate the supply of services needed to attract a range of buyers.
- Lack of efficient intermediary institutions to reduce transaction costs along the value chain to buyers.
- Local priorities for meeting watershed service needs.

All of these challenges represent areas of opportunity for aid agencies interested in supporting IWS or PWS transactions.

## Conclusion

While IWS and PWS are definitively not the only solutions to water issues, they can be part of the response to water challenges in some parts of the world that have supporting legal, institutional, and governance conditions to support these agreements.<sup>1</sup> In some cases, they can help change the way we value water and can generate the resources needed to restore and protect our watersheds. They also have the potential to benefit the rural poor in numerous ways—financially as well as in terms of human health, agricultural productivity and other meaningful measures. Yet, without a dedicated effort, IWS and PWS will bypass the poor. Opportunities must therefore be carefully developed, nurtured and monitored to ensure that the benefits are realized by the people who need them most.

At its most basic level, IWS and PWS are mechanisms for collaborative action and change as the processes entail negotiations with multiple stakeholders, including: land stewards, water users, donors, and intermediaries. Negotiations among the different players have the potential to lead to more effective and sustainable agreements around natural resource management strategies.

With more reliably available and higher-quality water, the rural poor have the potential to realize greater agricultural productivity as well as health and sanitation benefits. The key is finding the appropriate sites, with the needed support to deliver on this set of ecological, economic, and social returns.<sup>2</sup>

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<sup>1</sup> For more details see “Laying the Foundation: An Analytical Tool for Assessing Legal and Institutional Readiness for PES” at [http://www.forest-trends.org/publication\\_details.php?publicationID=3014](http://www.forest-trends.org/publication_details.php?publicationID=3014).

<sup>2</sup> For guidance on deciding whether a site is appropriate for an IWS or PWS agreement, please see “Getting Started with PES” at [http://www.forest-trends.org/publication\\_details.php?publicationID=2347](http://www.forest-trends.org/publication_details.php?publicationID=2347).

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