

Ecosystem Marketplace

State of Watershed Payments

An Emerging Marketplace



Report Summary

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State of Watershed Payments: An Emerging Marketplace

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Report Summary

THE KATOOMBA GROUP'S

Ecosystem Marketplace

www.ecosystemmarketplace.com

The Ecosystem Marketplace seeks to become the world's leading source of information on markets and payment schemes for ecosystem services (services such as water quality, carbon sequestration and biodiversity). We believe that by providing reliable information on prices, regulation, science, and other market-relevant factors, markets for ecosystem services will one day become a fundamental part of our economic system, helping give value to environmental services that, for too long, have been taken for granted. In providing useful market information, we hope not only to facilitate transactions (thereby lowering transaction costs), but also to catalyze new thinking, spur the development of new markets, and achieve effective and equitable nature conservation. The Ecosystem Marketplace is a project of Forest Trends.



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Forest Trends is an international, non-profit organization that focuses on market-based mechanisms because of their powerful and lasting means of: ensuring the maintenance of ecological functions and services provided by forests and other ecosystem services; generating economic benefits; and promoting the equitable distribution of benefits among diverse stakeholders. Our approach integrates the fundamental dimensions of ecology, economy, and equity because our goal is for impact of a scale that is meaningful globally.

Forest Trends, originally focused on forest ecosystems, now covers a broad range of ecosystem services, from forest carbon to biodiversity to watershed and most recently to marine environments. The Forest Trends family of initiatives all share in the vision to harness the power of markets as innovative financing mechanisms for conservation.

**the
katoomba
group**

www.katoombagroup.org

The Katoomba Group seeks to address key challenges for developing markets for ecosystem services, from enabling legislation to establishment of new market institutions, to strategies of pricing and marketing, and performance monitoring. It seeks to achieve the goal through strategic partnerships for analysis, information sharing, investment, market services and policy advocacy. The Katoomba Group includes over 180 experts and practitioners from around the world representing a unique range of experience in business finance, policy, research and advocacy.

Executive Summary



Background

Water, water, everywhere, but... We pay it lip-service as one of the most (if not THE most) essential chemical substance on the planet, but the truth is most of us take it entirely for granted. It has so little perceived value that in many parts of the world, people don't even pay for their water. Even in places where people do pay for water, they sometimes pay so little that they rarely give it a second thought. 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. Most parts of the world suffer from water problems. Water may make up more than two-thirds of our planet, but the truth is that the problem with water has never been solely about water quantity (i.e., how much water can be found in any given place), but rather mostly about economic access to water and water quality (about how much water can actually be used). The vast majority of the planet's water is found in the form of essentially unusable saltwater. Only about three percent of the water on Earth is freshwater, and most of that is locked up in ice. And the issue isn't just that we haven't found a way to economically and efficiently de-salinate water. A wide variety of water problems are emerging around the world. In parts of Africa, Asia, and Latin America, the main problem is economic access to freshwater. People can't afford to pay for clean water. Go to parts of Australia, the Middle East, and the Southwestern US, on the other hand, and the problem is very much about physical water scarcity and drought. Even if people can pay for it, the water can't be found. In most of the world's major river systems — in places where water shouldn't be a problem — from the Mississippi to the Mekong, we are beginning to see a pollution problem: water is being used as a convenient liquid conveyor belt for waste. Whether the pollutant is sewage and storm water runoff from our cities, chemicals from our industries, or excess fertilizers from agriculture, we are straining the planet's water resources past the breaking point.

So what is the answer? How do we ensure that humans, as well as the plants and animals on which we depend, have access to the quantity and quality of water they need to survive?

That, at its core, is what this report is about. It is about one of the tools that can (and will increasingly) be used to resolve our water problems: Payments for Watershed Services (PWS). While PWS may not be the ONLY solution, this document shows that in some parts of the world it can be part of the solution. In some cases, it can help change the way we value water, and it can generate the resources needed to remediate and protect our watersheds.

Overview of the Report

Using 2008 as the baseline year, a global research effort conducted by our Ecosystem Marketplace identified a total of approximately 288 PWS programs in varying stages of activity over the past 30 years. Far fewer programs recorded transaction activity in 2008, numbering about 127. The total

transaction value from all programs actively engaged in PWS and Water-Quality Trading in 2008 is estimated at US\$9.3 billion, which is most likely a conservative estimate, considering the number of programs where transaction activity could not be determined. Over the entire time span of recorded activity (late 1970s to 2008), total transaction value is estimated at just over US\$50 billion impacting some 3.24 billion hectares.

The scope of this report encompasses a wide view of PWS to include all efforts where an entity makes payments to a beneficiary for land management practices that address impacts on watershed services in both upstream and downstream areas of the watershed.

The research focused on two leading instruments for watershed protection:

- **Payments for Watershed Services (PWS) programs:** a mechanism, driven primarily by voluntary action at the national, regional, and local levels, that is used to provide financial or in-kind incentives to land managers and land stewards to adopt practices that can be linked to improvements of valuable watershed services.
- **Water-Quality Trading (WQT) programs:** initiatives driven by regulated standards and implemented at state/regional and local levels where water-quality goals are met by trading pollutant-reduction credits. These programs are developed as an alternative, and often more cost-effective, approach to meeting traditional command-and-control water-quality standards or in anticipation of regulatory requirements.

Our research found that program implementation is orchestrated by governments at all levels, the private sector, non-governmental organizations (NGO), and community groups—or some combination of these players. Not surprisingly, each program is unique to the local watershed conditions and shaped by the various political, cultural, and institutional arrangements that affect civil society. Transactions are not strictly limited to cash payments or the exchanges of pollution credits but also include other types of in-kind compensations supporting a range of activities from adjusting land management practices to improving and protecting water quality, flow and storage, as well as poverty alleviation, institutional capacity-building, technical assistance, and overall community development.

In all regions of the world, some level of activity was found that focuses on watershed services, although there are clear leaders, such as:

- Latin America in terms of longest running experience and the number of PWS programs,
- China in terms of scale of PWS programs underway,
- The United States in terms of water-quality trading experience.

Objectives of the Report

This report accomplishes three objectives: 1) to use project-level data to estimate the overall size and scope of the payments directed to protect or restore watershed services; 2) to account for the full spectrum of watershed services activities and track changes going forward; and 3) to look ahead at the opportunities and challenges based on the current level of transactions, experimentation, and lessons learned.

Overall Numbers

Active Programs

The table below shows the total number of programs and the total number of active programs by region for both types of payment mechanisms (PWS and WQT). We identified a total of 288 watershed protection programs in varying stages of activity ranging from those “in development,” to those actively engaged in transactions (“active”), to those no longer active (“inactive”); in a few cases, the status of activity could not be determined. As indicated by the numbers in the table, the number of active program is significantly less than the total identified. This difference can be explained by: programs that are “in development” and not yet actively making payments; others, while once active, are no longer making payments or exchanging credits due to a variety of factors such as lack of funding, lack of demand for pollution credits, having met program objectives or other reasons that could not be determined.

Summary of Transaction Data for 2008 and Historically						
By Region or Program	Programs Identified	Active Programs	Transactions 2008 (US\$ Million)	Hectares Protected in 2008 (million hectares)	Historical Transactions through 2008 (US\$ Million)	Hectares Protected Historically (million hectares)
Latin America	101	36	31	2.3	177.6	NA
Asia	33	9	1.8	.1	91	.2
China	47	47	7,800	270	40,800	270
Europe	5	1	NA	NA	30	.03
Africa	20	10	62.7	.2	570	.4
US	10	10	1,350	16.4	8,355	2,970
Water- Quality Trading	72	14	10.8	NA	52	NA
Totals:	288	127	9,256	289	50,100	3,240

Total Programs

- We tracked growth or decline in the number of active programs in most regions over the past decade as evidenced by the bulleted highlights below. PWS programs grew steadily in Latin America from 7 in 2000 to 36 in 2008;
- PWS programs grew in China from 10 in 2000 to 47 in 2008, with the most significant jump between 2004 and 2005, when roughly 11 new programs were initiated.
- PWS contracts with farmers in the US Wetland Reserve Program (WRP) actually declined from 808 in 2000 to 485 in 2008. However, in the US Conservation Reserve Program (CRP), contracts grew from 591,261 in 2002 to 766,723 in 2008.

We used the data about PWS and WQT programs to create Figures 1, 2, and 3 that show the distribution of PWS programs by region, the number of PWS programs compared to WQT programs, and the distribution of PWS programs driven by government, private, or a mix of agencies, respectively. These figures provide further details about the information gleaned from program-level investigation into who is involved and how PWS and WQT programs are being designed and implemented.

Figure 1: PWS by Region

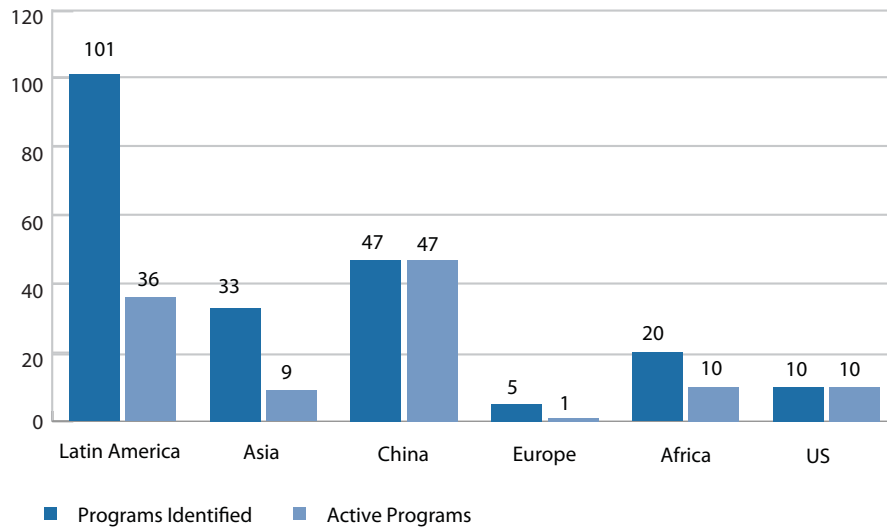


Figure 2: PWS vs Trading (# of Programs)

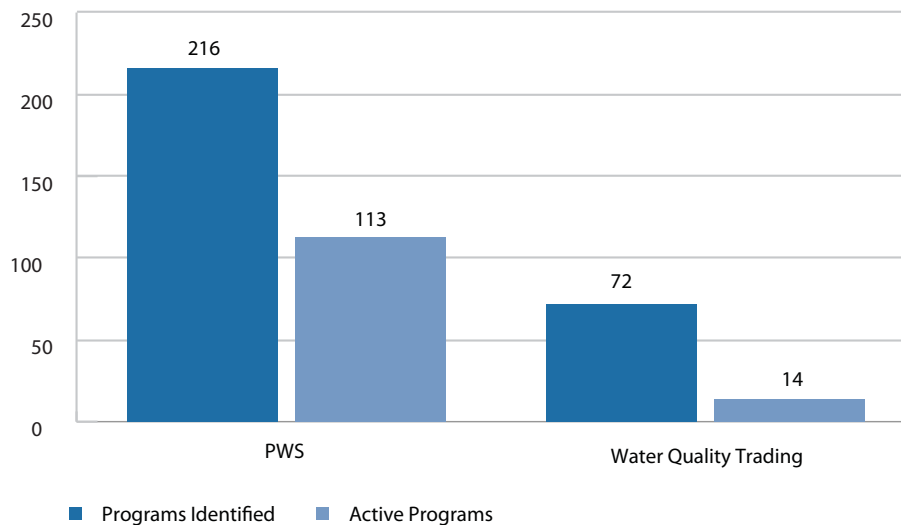
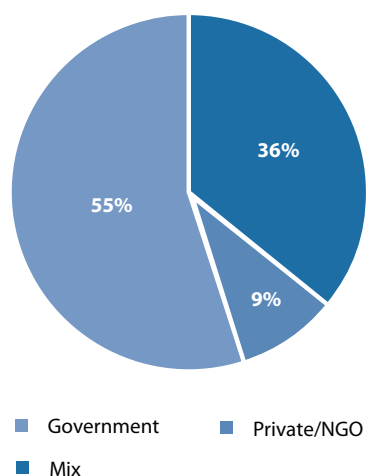


Figure 3: PWS Programs by Implementing Agency 2008



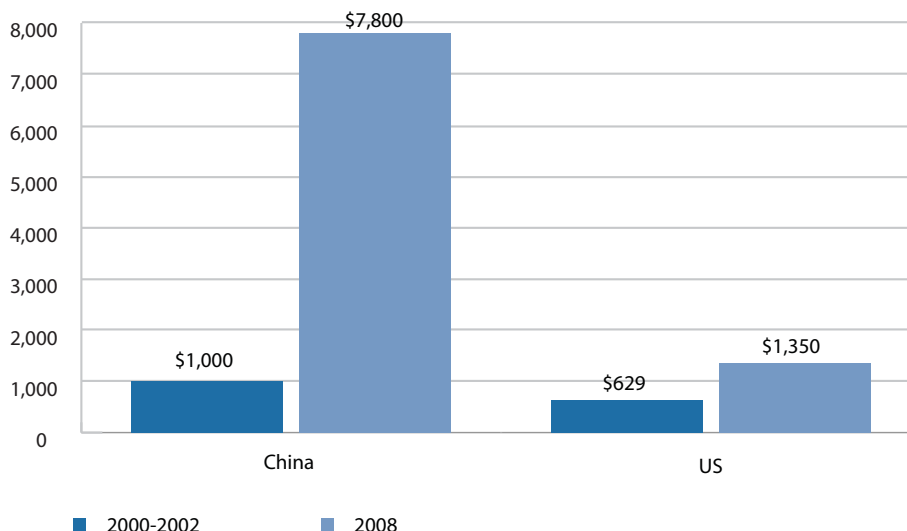
Total Transaction Values

The total transaction value from all programs actively engaged in PWS and WQT in 2008 is conservatively estimated at roughly US\$9.3 billion. Had program-level data been more complete and comprehensive, we are confident that this value would have been higher. Unfortunately, there were many programs where transaction activity could not be determined for 2008 or historically. That said, based on available data over the entire time span of recorded activity, total transaction value is estimated at just over US\$50 billion.

Similar to the growth of programs over time, we tracked the growth (or decline) in payments over time as noted by these highlights:

- Payments in China have grown from just over US\$1 billion in 2000 to an estimated US\$7.8 billion in 2008. From 2002 onward, around 50% or more of total transactions by value are under the Conversion of Cropland to Forests and Grassland program. In any given year during this period, China’s major forestry programs account for over 90% of total transactions by value.
- In the United States, PWS payments grew from US\$629 million in 2002 to US\$1,350 billion in 2008 (see Figure 4 below for a comparison of the growth in PWS in China and the US over much of the past decade).
- For 10 programs that were deemed to be active in Africa in 2008, payments totaled US\$62,684,000. Historical payments from these programs between 2000 and 2008 are estimated to total US\$507,668 million with a significant portion attributed to the Working for Water program supported by the government of South Africa.
- In 2008, the value of transactions from WQT registers at US\$10.8 million compared to US\$9.25 billion from all other PWS.

Figure 4: Change in PWS Investment (US\$ Million)



When compared to other environmental markets, the total value of PWS payments in 2008 is the second largest market in value, albeit dwarfed by the size of the regulated carbon market as shown in the table below.

Environmental Market	Market Value (2008)
Regulated Carbon	\$117,600,000,000
Watershed Payments	\$9,250,000,000
Biodiversity	\$2,900,000,000
Voluntary Carbon	\$705,000,000
Forest Carbon	\$149,000,000

Summary of Key Findings by Geography

From our global investigation of all **Payment for Watershed Services** programs, **Latin America** has emerged as a leader with a total of 101 payment schemes, 36 of which actively recorded transactions in 2008, contributing some US\$31 million to watershed-conservation measures and impacting 2.3 million hectares. Anchored by the development of Water Funds first in Ecuador, then Colombia, Brazil, and now Peru, the use of this tool to fund upstream conservation by downstream users is poised to spread in other parts of the region and serve as a model for replication in other ecosystem markets around the world.

The number and variety of PWS schemes in **China** have escalated in recent years, from around eight in 1999 to more than 47 in 2008, with an estimated transacted value of roughly US\$7.8 billion, impacting some 290 million hectares. Current watershed payment schemes in China are almost exclusively government-mediated, and many programs have been created in response to the central government's call to promote the development of and innovation in "eco-compensation mechanisms". Another potentially significant boost to PWS at both the provincial and national levels could come from a new water pollution emissions trading system. Activities on the ground, including the establishment of a pollution-permit trading platform, suggest that such a system may soon debut in various locations across the country.

The story in the rest of **Asia** is much less robust, although research identified a total of 33 programs, with nine classified as active in 2008 and some program activity dating as far back as the mid-1980s. Payments totaled US\$1.8 million in 2008, impacting nearly 110 thousand hectares. PWS activity across the region is anchored by projects created and supported by RUPES (Rewarding Upland Poor for Ecosystem Services), a research effort whose mission is to develop practical environmental services schemes throughout Southeast Asia.

PWS schemes totaled 20 in **Africa**, with roughly 10 identified as active in 2008, yielding a total payment value of US\$62.7 million on nearly 200,000 hectares. In most cases, watershed management activities in Africa are part of national ecosystem conservation programs that include investments in watershed service enhancement and rehabilitation, and in improvements of the capacity of local communities to identify, formulate, and implement integrated ecosystem management activities. In the future, we look for an increase in payment activity with new initiatives such as those funded by the World Wildlife

Fund (WWF) through the Table Mountain Fund in South Africa and the Green Water Credit program in Kenya.

Aside from the well-known Vittel PWS scheme in France, initiated in 1992, research in **Europe** yielded but four potential programs none of which reported actual transactions in 2008. The Vittel program, while still actively working with farmers in strategic areas of the catchment, registered the majority of payments, some US\$30 million, in the first seven years of operation (from 1992 to 1997). Little payment information is known beyond 2004, with no transaction activity found for 2008. The overarching developments regarding water quality in Europe have for the past decade been guided by the EU Water Framework Directive (WFD), which set an explicit timeline to achieve ‘good’ water-quality benchmarks across the continent’s freshwater resources by 2015. Implementation is left to each member country through the development of watershed management plans. While not active as of 2008, the World Wildlife Fund’s Danube Carpathian Project is one to watch for future activity in Europe.

The **U.S.** sports significant government-driven PWS activity in water-quality initiatives through five key federally funded conservation programs, one infrastructure grant program, and four local/municipal programs protecting drinking water sources, all totaling roughly US\$1.35 billion in 2008. Activities to develop and test market-based schemes are sure to increase with the creation of the Office of Environmental Markets within the U.S. Department of Agriculture. Coupled with a growing “community of practice” that is working to develop ecosystem markets from the Florida everglades to the vital salmon habitat in the Pacific Northwest to the adaptive management of forests in the Northeast, the U.S. government’s initiatives are poised to contribute heavily to new learning about the application of PWS tools for the management of water-related ecosystem services.

Water-Quality Trading Schemes are found in four countries: **Australia, Canada, New Zealand, and the U.S.** They span a total of 72 programs, with 14 identified as active in 2008, generating US\$10.8 million in transactions. The U.S. accounts for more than 85% of the total trading programs and while this may make the U.S. appear as the trend-setter, many programs are currently stuck in neutral, awaiting implementation of water-quality standards that set much-needed limits on nutrient loads. Absent this key driver of demand for water-quality credits, transaction activity has tapered off since it peaked in 2006.

Conclusion, Trends, and Outlook

What we discovered in the process of gathering and analyzing the data for this report is not necessarily what was expected at the outset. Rather than a traditional more cohesive market where players voluntarily pay for goods and services, we have unveiled what may better be described as a **water-quality marketplace**, comprised of a continuum of activities that include compliance-driven programs as well as a myriad of payments for watershed services on the part government, NGOs, and private organizations. All of the information, despite the many gaps, has contributed significantly to understanding the role of these market-based tools in addressing watershed-management challenges and provides vital insights about program structure, price discovery, transaction costs, drivers of demand, as well as monitoring and verification methodologies. These findings provide a baseline of data from which to track activity going forward; a vital step in the development of any market.

Research yielded rich information about ground-level experimentation and based on the growth in both number of programs and payment values over the past decade, the global trends point to continued expansion of these market-based mechanisms for use in the management of water resources and ever-threatened watershed services. Those working to promote and document the efficacy of these tools are all the while **grappling with issues of quality, transparency, improved accounting and reporting methodology, and the need for performance-based metrics to demonstrate real improvements in ecosystem health**. These fundamental features are sure to influence program design, implementation, and funding, and thus how this marketplace will evolve in the coming decade.

Much of the work documented in this report, and a major factor going forward in addressing water quality and overall watershed management, rests at the doorstep of government and the policies needed for these market tools to develop and flourish. The fact that water-quality trading registers transactions at just under US\$11 million dollars in 2008 is attributable to two key factors: 1) trading schemes flourish when driven by effective water-quality standards; in the absence of those standards, trading programs will flounder and fall short of performance requirements and market expectations; 2) transaction data from trading programs is not routinely or transparently reported, making the task of tallying transactions, such as for this report, a monumental task. **Government policy**, driven by strong political will, could and should work to remedy these and other issues affecting market-based tools for watershed management in the immediate future.

On the horizon is a growing constituency arguing for valuing water-related ecosystem services in the context of overall ecosystem health. That expanded lens would incorporate watershed services with other ecosystem services such as biodiversity, carbon sequestration, as well as those provided by coastal and marine environments, increasing the opportunities for markets to work for conservation, communities, and people.



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