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State of Watershed Payments
An Emerging Marketplace

Executive Summary

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Acknowledgments:

This report is a compilation of information and insights from a wide range of individuals across the globe. It would not be possible without the dozens of individuals who shared valuable information about their programs.

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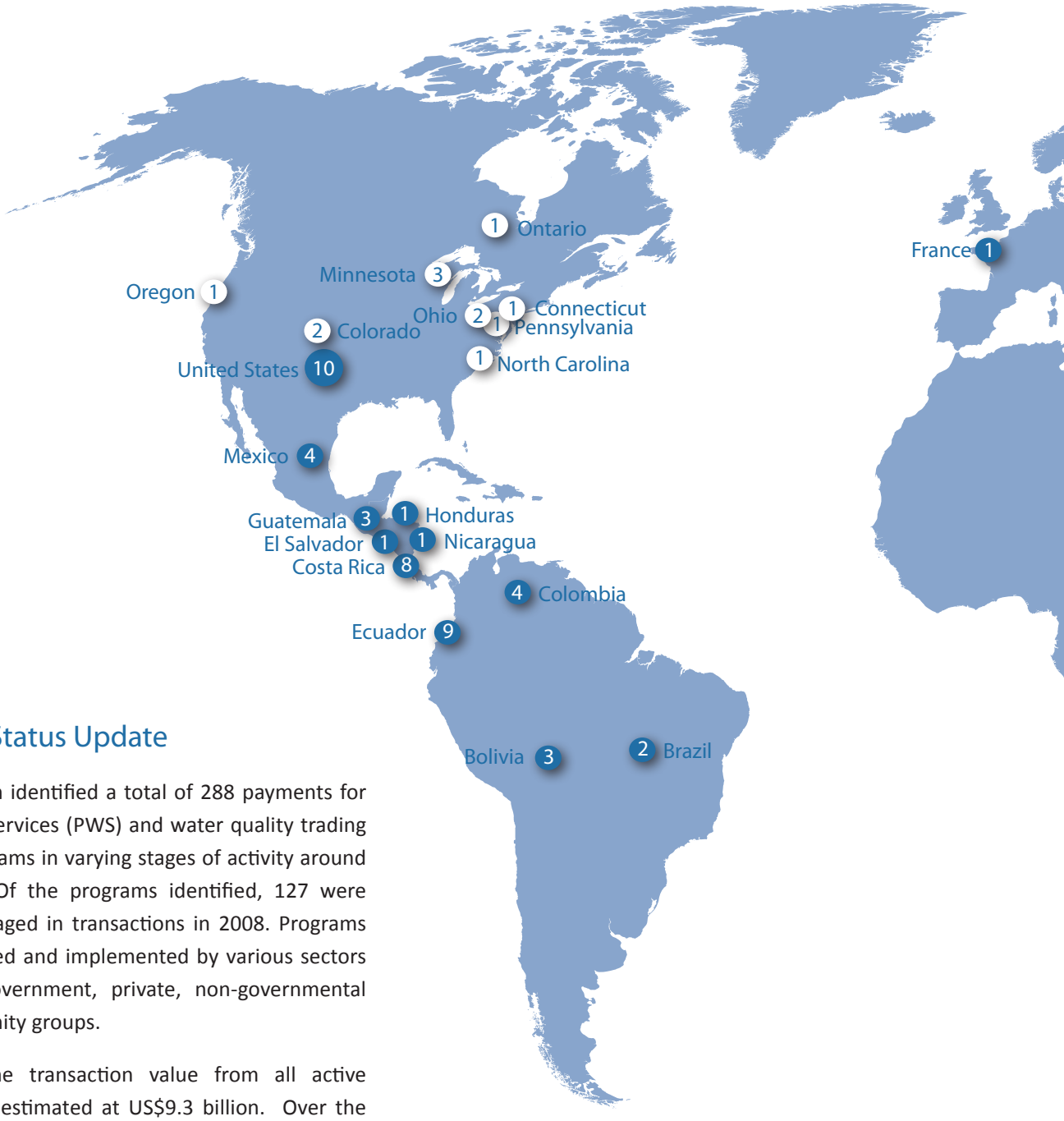
Ecosystem Marketplace

Ecosystem Marketplace, a project of the non-profit organization Forest Trends, is a leading source of information on environmental markets and payments for ecosystem services. Our publicly available information sources include annual reports, quantitative market tracking, weekly articles, daily news, and newsletters designed for different payments for ecosystem services stakeholders. We believe that by providing solid and trustworthy information on prices, regulation, science, and other market-relevant issues, we can help payments for ecosystem services and incentives for reducing pollution become a fundamental part of our economic and environmental systems, helping make the priceless valuable.

Forest Trends' mission is to maintain, restore, and enhance forests and connected natural ecosystems, life-sustaining processes, by promoting incentives stemming from a broad range of ecosystem services and products. Specifically, Forest Trends seeks to catalyze the development of integrated carbon, water, and biodiversity incentives that deliver real conservation outcomes and benefits to local communities and other stewards of our natural resources.

Mapping Watershed Protection Programs



General Status Update

Our research identified a total of 288 payments for watershed services (PWS) and water quality trading (WQT) programs in varying stages of activity around the world. Of the programs identified, 127 were actively engaged in transactions in 2008. Programs are developed and implemented by various sectors including government, private, non-governmental and community groups.

In 2008, the transaction value from all active programs is estimated at US$9.3 billion. Over the entire span of recorded activity, total transaction value is estimated at slightly more than US$50 billion, impacting some 3.24 billion hectares.

Summary of Active Watershed Protection Programs (2008)	
Active Water Quality Trading Programs:	14
Active Payments for Watershed Services Programs:	113
Total Active Programs	127
Value of Transactions	US$9.256 billion
Hectares Protected	50.1 billion ha

Executive Summary

Overview of the Report

A global research effort conducted by Ecosystem Marketplace identified a total of approximately 288 payments for watershed services (PWS) and water quality trading (WQT) programs in varying stages of activity over the past 30 years. In 2008, the baseline year, about 127 programs were actively receiving payments or transacting credits. The total transaction value from all programs actively engaged in 2008 is estimated at US$9.3 billion. Over the entire time span of recorded activity, total transaction value is estimated at slightly more than US$50 billion, impacting some 3.24 billion hectares.

Objectives and Scope of the Report

This report aims: 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.

The scope of this report encompasses a wide view of watershed payments to include all efforts where an entity makes payments to a beneficiary for management practices that address impacts on watershed services in both upstream and downstream areas of the watershed. Our research focused on two leading instruments for watershed protection:

- **Payments for Watershed Services** (PWS): initiatives driven primarily by voluntary action at the national, regional, and local levels, 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): 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.

Analysis of transactions are not strictly limited to cash payments or the exchanges of pollution credits, but also include in-kind compensations supporting a range of activities such as adjusting land management practices, poverty alleviation, institutional capacity-building, technical assistance, and overall community development.

Overall Numbers

We identified a total of 288 payment for watershed protection programs in varying stages of activity. Of the programs identified, 127 were actively engaged in transactions in 2008. The 161 inactive programs include those "in development" and not yet actively making payments or selling credits and others that, while once active, are no longer making payments or exchanging credits due to a variety of factors (lack of funding, lack of demand for pollution credits, having met program objectives or other reasons that could not be determined). Overall, the number of programs has continued to grow in recent years; from 51 to 288 between 2000 and 2008.

The bulk of programs, 216, identified are PWS. Such programs vary widely in structure and are located in 24 different countries. This inventory includes payments for environmental services programs with an emphasis on water, such as national programs in Costa Rica and China. Separating such programs, where water payments are bundled with other environmental services, the total number of exclusively PWS programs drops to around 200. PWS program implementation is orchestrated by various sectors: governments, the private sector, non-governmental organizations (NGO), and community groups or some combination of these players. However, as illustrated by Figure 2, governments manage over half of programs and, by far, are the source of the bulk of payments

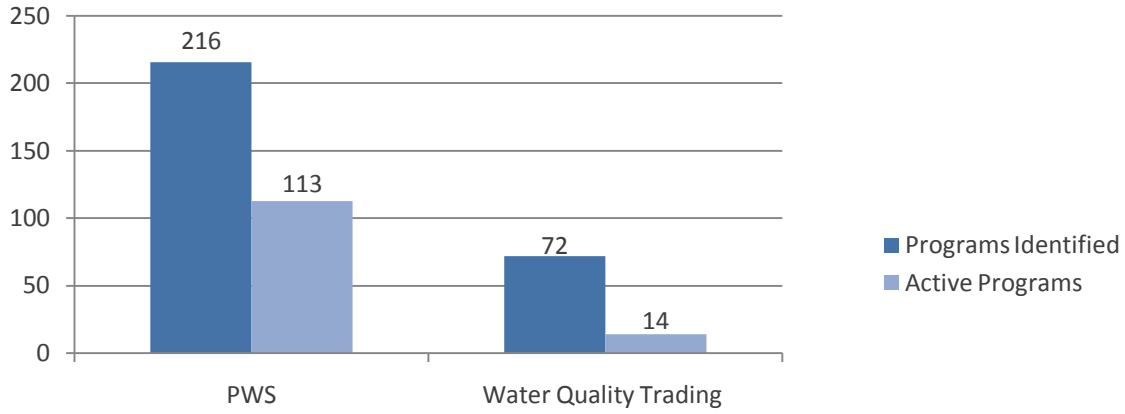
Across the globe there are far fewer, 72, WQT programs and only 14 of the programs were classified as active in 2008. Currently, the geographical range of WQT is quite limited with most programs based in the United States and a handful in Australia, Canada, and New Zealand.

Table 1. Summary of Transaction Data for 2008 and Historically

	Programs Identified	Active Programs	Transactions 2008 (US$ Million)	Hectares Protected 2008 (million ha)	Historical Transactions through 2008 (US$ Million)	Hectares Protected Historically
Latin America	101	36	31	2.3	177.6	NA
Asia	33	9	1.8	0.1	91	0.2
China*	47	47	7,800	270	40,800	270
Europe	5	1	NA	NA	30	0.03
Africa	20	10	62.7	0.2	570	0.4
United States	10	10	1,350	16.4	8,355	2,970
Total PWS	216	113	9,245	289	50,048	3,240
Water Quality Trading	72	14	10.8	NA	52	NA
Totals	**288**	**127**	**9,256**	**289**	**50,100**	**3,240**

* Note: We separate China from the rest of Asia given the level of activity.

Figure 1: PWS vs. Trading (Number of Programs)



The total transaction value from all programs actively engaged in PWS and WQT in 2008 is conservatively estimated at US$9.3 billion. 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.

Many of these payments are part of PES programs emphasizing water. The total value of payments from programs focused exclusively on PWS is much lower with at least US$8.1 billion in total and US$1.3 billion in 2008. In 2008, the value of transactions from WQT registers at US$10.8 million compared to US$9.25 billion from all other PWS.

When compared to other environmental markets, the total value of PWS and WQT payments in 2008 is the second largest market in value, albeit dwarfed by the size of the regulated carbon market as shown in Table 2 on the following page.

Figure 2: Sector Managing Programs PWS 2008

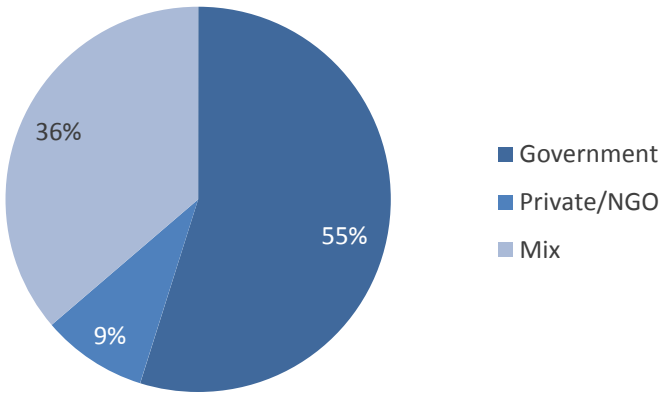


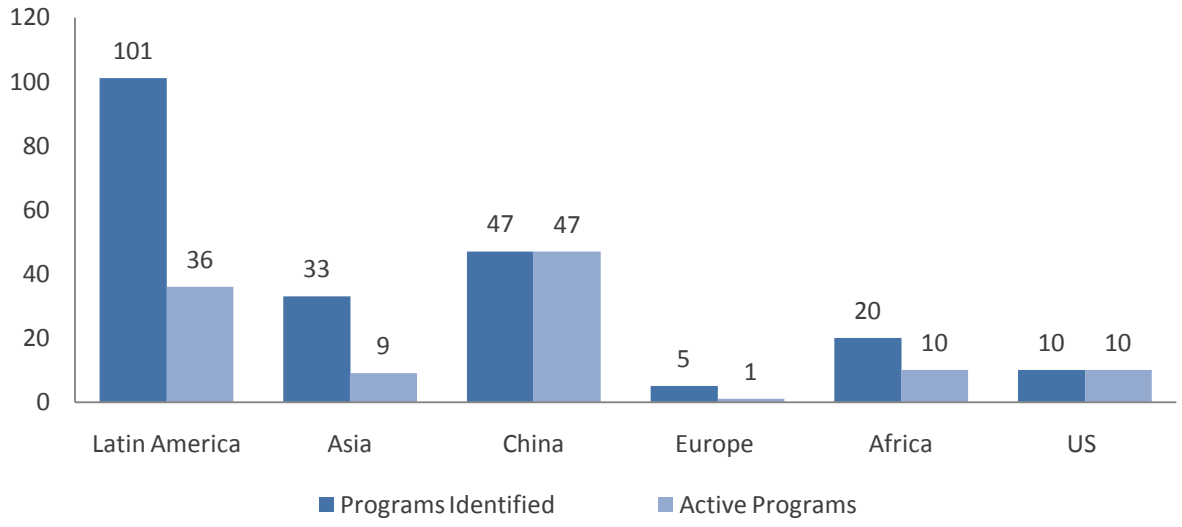
Table 2. Market Value of Environmental Markets	
Environmental Market	Market Value (2008)
Regulated Carbon	$117,600,000,000
Water Quality	$9,250,000,000
Biodiversity	$2,900,000,000
Voluntary Carbon	$705,000,000
Forest Carbon	$37,100,000

Sources: World Bank. "State and Trends of the Carbon Markets: 2010." Ecosystem Marketplace Reports: "Building Bridges: State of the Voluntary Carbon Markets 2010" and "State of Biodiversity Markets: Offset and Compensation Programs Worldwide".

Key Findings by Geography

From our global investigation of all **Payment for Watershed Services** programs**, Latin America** is the home of the highest number of indentified programs, contributing some US$31 million to watershed-conservation measures impacting 2.3 million hectares. PWS programs grew steadily in Latin America from seven in 2000 to 36 active programs in 2008. 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 serves as a model for replication in other ecosystem markets around the world.

Figure 3: PWS by Region[i]



[i] China and the US are listed specifically because of the large number of programs in these countries.

The number and variety of PWS schemes in **China** have escalated in recent years, from around 8 in 1999 to more than 47 in 2008. The total estimated transaction value is roughly US$7.8 billion, impacting some 290 million hectares. Payments in China have grown from just over US$1 billion in 2000 to an estimated US$7.8 billion in 2008. In 2008, China's major forestry programs account for over 90 percent of total PWS payments. 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." For example, from 2002 onward, around 50 percent or more of total transactions by value are under the Conversion of Cropland to Forests and Grassland program. Another potentially significant boost to 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, and some program activity dating as far back as the mid-1980s. Payments register US$1.8 million in 2008 impacting nearly 110,000 hectares. 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.

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 Historical payments from these programs 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, 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.

In **Europe** we identified five potential programs, none of which reported actual transactions in 2008. A private sector driven set of payments by Vittel (Nestlé Waters), initiated in 1992, registered the majority of payments, some US$30 million, in the first five years of operation (1992-1997). Little payment information is known beyond 2004, with no transaction activity found for 2008. While not active as of 2008, the World Wildlife Fund's Danube Carpathian Project is one to watch for future activity in Europe.

The **US** 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. Over the past decade, sources of payments have shifted. PWS contracts from the federal government to farmers in the US Wetland Reserve Program (WRP) actually declined from 808 in 2000 to 485 in 2008. In turn, the US Conservation Reserve Program (CRP), contracts grew from 591,261 in 2002 to 766,723 in 2008. Overall, payments in the United States have increased from US$629 million in 2002 to US$1,350 billion in 2008. In 2008, the concept of PES was given a boost with the creation of the Office of Environmental Markets within the US Department of Agriculture.

The US accounts for more than 85 percent of the total water quality trading programs, and while this may make the US 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.

We did not identify any PWS programs in **Oceania**. However, the region was home to five WQT programs. Australia is the home of four of these efforts including two unique salinity trading programs for the Hunter River and the Murray-Darling Basin. New Zealand's Lake Taupo Trading Program is part of an initiative to reduce nitrogen flowing into the lake by 20 percent through a mix of land retirement, land conversion, and purchasing allowances that result in permanent reductions of nitrogen.

Conclusion, Trends, and Outlook

This water quality marketplace is comprised of a myriad of payments for watershed services and protection on the part of government, NGOs, and private organizations. Our aim is that, despite many gaps, this research will provide a baseline of data from which to track activity going forward, a vital step in the development of any market, as well as contribute to understanding the role of these market-based tools in addressing watershed management challenges.

Research yielded rich information about ground-level experimentation. Considering 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, as well as with 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.

To further develop this marketplace will need to overcome a variety of hurdles including connecting demand with payments, developing standards- especially in the context of WQT- and increasing transparency. Many of these issues rest at the doorstep of government and with the policies needed for these market tools to develop and flourish. **Government policy**, driven by strong political, will is critical in addressing these and other issues affecting market-based tools for watershed management in the immediate future.

Water quality and quantity is one of the most pressing concerns facing citizens across the globe. In response, there is a growing constituency arguing for valuing water-related ecosystem services in the context of overall ecosystem health. An 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.

FOREST TRENDS

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