

## DOCUMENTOS DE TRABAJO RIMISP

Documento de Trabajo N° 29  
Serie Estudios Territoriales

# **Comparison of policies, legislation, institutions and stakeholders in water strategies for two case studies in Colombia and Ecuador**

Macarena Dagnino, Germán Escobar y Emilie Béland

Programa Agua de los Andes

Diciembre 2013

# Comparison of policies, legislation, institutions and stakeholders in water strategies for two case studies in Colombia and Ecuador




Este documento es el resultado del programa Agua en Los Andes, coordinado por Rimisp – Centro Latinoamericano para el Desarrollo Rural. Se autoriza la reproducción parcial o total y la difusión del documento sin fines de lucro y sujeta a que se cite la fuente.

This document is a product of the Agua en Los Andes, coordinated by Rimisp – Latin American Center for Rural Development. We authorize the non-for-profit partial or full reproduction and dissemination of this document, subject to the source being properly acknowledged.

Citación / Cita:

Dagnino, M. Escobar, G. y Béland, E.; 2013. "Comparison of policies, legislation, institutions and stakeholders in water strategies for two case studies in Colombia and Ecuador". Documento de Trabajo N°29. Serie Estudios Territoriales. Programa Agua en Los Andes. Rimisp, Santiago, Chile.



La serie Documentos de Trabajo es una publicación de Rimisp – Centro Latinoamericano para el Desarrollo Rural, que divulga trabajos de investigación, de carácter preliminar, realizados por profesionales de esta institución.

Su objetivo es aportar al debate de tópicos que apoyen el desarrollo rural latinoamericano.

Tanto el contenido de los Documentos de Trabajo, como también los análisis y conclusiones que de ellos se deriven, son de exclusiva responsabilidad de su(s) autor(es).

---

Documentos de Trabajo de Rimisp  
Working Papers of Rimisp

Chile: Huelén 10, piso 6, Providencia. Santiago, Chile · Código Postal 7500617 · Teléfono: +56-2-22364557 · Fax: +56-2-22364558

Ecuador: Pasaje Guayas E3-130 (esquina Amazonas), edificio Pastor, primer piso. Quito, Ecuador · Teléfonos: +59-3-2-2273870 · 2273991

México: Yosemite 13 Colonia Nápoles Delegación Benito Juárez, México, Distrito Federal · Tel/Fax +52-55-50966592

# Comparison of policies, legislation, institutions and stakeholders in water strategies for two case studies in Colombia and Ecuador

**AUTHORS:** Macarena Dagnino, Germán Escobar y Emilie Béland <sup>1</sup>

## SUMMARY

In 2010, the Challenge Program for Water and Food (CPWF) and the Latin American Center for Rural Development (RIMISP) agreed to collaborate towards the implementation of the project “Andes: Benefit-sharing mechanisms to improve water productivity and reduce water-related conflicts in selected basins”, which has three objectives: improving livelihoods, increasing access to water, and reducing the number of conflicts related to water allocation and the consequent benefits for upstream catchments in the Andes region. The project aims to identify the variables and indicators required for the design of Benefit-Sharing Mechanisms (BSM). The results are expected to make significant contributions in current efforts towards rural poverty alleviation and reduction of environmental degradation.

In order to achieve the objectives detailed above, RIMISP selected two project sites in Colombia and one in Ecuador: the aim was to further understand their institutional planning schemes, in which water plays a leading role and conditions for social involvement exist through stakeholder participation, with clearly defined compensation mechanisms, and where a proper system of positive incentives has been created to improve the use, allocation and overall preservation of this resource.

It is expected that this project will contribute to understanding current policies and the elements that lead to good water management decisions, particularly as an ultimate goal to observe the conditions and incentives for the design and operation of BSM based on existing data from the areas of study (High Andes Basins). Overall, it is expected that the results will not only provide better policy formulation at the sites, but can also be later extrapolated and applied to other places throughout the Andean Basin. This analysis will be coordinated with and complemented by CPWF project AN2 in the Andean basin. It is believed that policy legislation and government decrees would set the “rules of the game” for

---

<sup>1</sup> Macarena A. Dagnino, Independent consultant in Land and Water Development [madagnino@gmail.com](mailto:madagnino@gmail.com); Germán Escobar, Investigator [gescobar@rimisp.org](mailto:gescobar@rimisp.org) y Emilie Béland, Research Assistant [belandemilie@gmail.com](mailto:belandemilie@gmail.com)

water allocation and management in Colombia and Ecuador, where the AN1 project carries out research in specific areas.

This paper will compare, analyze and review the water policies of Colombia and Ecuador based on a relative recent historical evolution of strategies and national policies, the latter in a macro context that includes objectives, principles, and milestones of development plans. This will include formal water governance management paths in Chinchiná, Colombia and the Ambato basin in Ecuador, with focus placed on environmental service policies and their impact on rural development and the improvement of livelihoods. An assessment of current working water policies has also been undertaken, through consultation of the main related stakeholders.

**Key words:** water policy, water management, payments for environmental services, poverty alleviation

**Palabras claves:** políticas del recurso hídrico, manejo del recurso hídrico, pagos por servicios ambientales, reducción de la pobreza

## INDEX

1. Introduction .....	1
2. Water-related ecosystem services in the High Andes.....	3
3. General overview of PES mechanisms.....	8
3.1 Actors involved in PES schemes .....	8
3.2 PES compensation mechanisms .....	9
3.3 PES types: public and private .....	11
4. Conceptual approaches and core principles of water governance.....	12
5. National PES-related legislations.....	14
5.1 Constitution review .....	15
5.2 National PES specific legislations and general environmental laws .....	21
5.3 Protected areas and Forestry .....	27
5.4 Energy Sector .....	31
5.5 Mining sector .....	33
5.6 Water and sanitation sector (WASH) .....	34
5.7 Irrigation sector .....	38
5.8 Land tenure and property rights .....	39
6. Institutional Framework.....	42
6.1. Colombia.....	43
6.2 Ecuador .....	44
7. Criteria on good water governance.....	46
7.1 Public participation.....	46
7.2 Transparency and access to information .....	47
7.3 Certainty .....	48
7.4 Accountability.....	51
8. Main Recommendations .....	52
9. Bibliography .....	56

# 1. Introduction

With the increasing pressure placed on the wilderness and natural habitats by the impacts of climate change, a growing global population and polluting or energy-consuming economic activities, environmental services (ES) are becoming increasingly threatened. This emerging scarcity makes them potentially subject to trade and calls for an increasing implementation of payments for environmental services (PES) (Wunder, 2005: 1). In the Andes, the provision of hydrological services is at risk due to changes in land use and inadequate management of the ecosystem that modify the quality and quantity of water resources (Celleri et al., 2010: 26).

This paper seeks to describe how current national legislations either allow or impede the introduction of PES mechanisms in the two countries of implementation, Colombia and Ecuador, of the AN1 project – On designing and implementing benefit-sharing mechanisms, supported by the Consultative Group on International Agriculture Research (CGIAR). In a first instance, this paper will present a review of the literature on PES mechanisms and the main elements that characterize such mechanisms, that is the actors involved (providers, beneficiaries, stakeholders), the nature of the ecosystem provided, payment mechanisms, and the scale of the scheme – and how all these influence the achievement of the objectives of natural conservation and the improvement of quality of life pursued by the implementation of PES in the context of the AN1 project.

Secondly, the paper will use the requirements for good water governance identified in the literature, such as clearly defined objectives and policies, well-defined attributions, responsibilities, and organization of the institutions and adequate instruments of management, especially a transparent legal framework (GWP, 2003) to present a review of the main national PES-related legislations, along with policies introduced in the two countries (Colombia and Ecuador) where project activities are being implemented. This scoping will identify how the legal and institutional context of these countries either limit or encourage the negotiation and implementation of PES deals and the participation of productive sectors (energy, mining, agriculture) in such initiatives, and how current legislation regulates mandatory compensations for environmental conservation stemming from these sectors. The paper will also focus on a presentation of the institutions involved in the management of water resources and how they apply the objectives and guidelines set by relevant legislations and policies, largely inspired by the principles established in the management framework of Integrated Water Resource Management (IWRM).

The conclusion will present recommendations on possible changes in water regulations, policies and implementation activities to increase the capacity towards better water management, as derived from this analysis. Different policies and proposals will be suggested to reinforce laws, norms and decrees, identifying the pertinent hierarchical level of lawmaking.



## **2. Water-related ecosystem services in the High Andes**

The basic principle of PES is the utilization of a market mechanism to regulate the use of natural resources, in which users will compensate providers through a transaction in order to secure ecosystem conservation and restoration and seek to reconcile conflicting uses of ES through compensation (Wunder, 2005: 1).

Water-related ecosystem services can be defined as the benefits to nature and human welfare provided by ecosystems within a watershed (IUCN, 2009: 5). The basin, or watershed, has been recognized as a standard and practical hydrological unit on which to base water resources management. GWP and INBO (2009) defines rivers or lake basins as “the area bounded by the watersheds of a system of streams and rivers that flow towards the same outlet [...] A groundwater basin or aquifer is a discrete body of underground water” (GWP and INBO, 2009: 9).

In the high Andes, it is possible to identify territories with abundant water availability as a natural endowment. These are areas where the amount of available water exceeds the utilization capacity of the territory, leaving significant amounts of water for utilization in lowlands for either production or human consumption (Escobar and Estrada, 2011: 3). Benefits generated by hydrological environmental services in the Andes include: regulation of the hydrological cycle; high water yields; maintenance of water quality; and groundwater recharge (Celleri, 2010: 26).

To ensure sustainability of hydrological services by providers, water users should pay for services in order to transfer a proportion of this payment to the water provider territory, through institutional arrangements capable of directing funds to satisfy basic needs and guarantee family incomes above the poverty line. Decisions on payments and compensations are usually subject to negotiations, which go beyond imputed prices, particularly when water uses do not create a perceived externality due to the available volume (Escobar and Estrada, 2011). As such, for a PES scheme to be sustainable, the compensation received by upper land tenants for changes in land use has to be superior to what can be achieved through their own productivity. According to this approach, it is socially more efficient for upper land tenants in highland areas to produce positive environmental externalities, rather than maintaining their original agriculture production level (Estrada et al., 2010). The AN1 project seeks the identification of socioeconomic hydrological response units (SEHR) to select working sites in identified Andean countries, an approach based on the assumption that territories and watersheds exist in the Andes with the adequate

conditions for generating water benefits that produce economic, environmental, and social externalities.

## **Project Description**

Starting in July 2010, RIMISP (Latin American Center for Rural Development) began the implementation of the project “Andes: Benefit-sharing mechanisms to improve water productivity and reduce water-related conflicts in selected basins” – Project AN1b: On designing and implementing benefit-sharing mechanisms. This project was made possible by a grant provided by CGIAR’s Challenge Program on Water & Food.

The project deals with approaches to improving water usage in order to increase productivity and alternative water allocation, so creating the conditions necessary for designing and operating Benefit-Sharing Mechanisms (BSMs) among water users in watersheds in the Andean Basin. Methodologically, the initiative proposes the identification of socioeconomic hydrological response units (SEHR) to select working sites in Colombia, Ecuador and Bolivia. This approach is based on the assumption that territories and watersheds exist in the Andes with the required conditions for generating water benefits, either by modifying the use of land/water to increase water surplus for other users, or by creating positive externalities that can be appropriated by water users in different sites of these territories. It is expected that any surplus will benefit the poor in the watershed areas as part of an effort to alleviate poverty.

One of the key objectives of the AN1 project is to increase knowledge and elements for policy formulation on BSMs with poverty alleviation impacts at basin and watershed levels. This will be done by reviewing and linking concepts, definitions and processes of the current strategy of legal water policies in Colombia and Ecuador, particularly in terms of established regulations, rights and obligations for the use of water, as well as the promotion and incentives in policies for PES and BSM mechanisms present in the study area. This report focuses on the achievement of the following specific objectives as determined by the CPWF:

- i. Review current capacities on water governance institutions, associations and groups in the region through available information and literature review.
- ii. Compare key pillars of national water policies for each country and how weaknesses in key technical or institutional aspects could generate possible conflicts in water management
- iii. Analyze if good criteria of water governance (participation, transparency, certainty and accountability) are covered by the current

PES and BSM existing in the area of study, and what weaknesses and loopholes in regulations are present therein.

In this report the terms PES and BSMs will be used indiscriminately, although the two differ in their focus. While PES mainly refers to the existence of trade-offs between productivity and water use, BSMs seem to place more emphasis on payment for the environmental service rather than the trade-off between productivity and water use, and more equitable distribution of benefits (Submission document, project AN1<sup>2</sup>). De Brière (2013) defines BSMs as the following: Collective action processes based on fair agreements/negotiations among actors of the watershed aiming at satisfying a common interest need to improve water productivity and use for food production, livelihood, and sustainability. This has to be undertaken in such a way so as not to damage natural resources, and with the objective of improving living conditions (De Brière, 2013).

### **Geographical focus**

The SEHR analysis was applied to the Andes region with the objective of identifying territories with water externalities capable of having a positive impact on poverty. The results show that the most promising conditions to achieve this particular objective in the Andes are associated with the presence of benefits derived from conservation of *páramos* areas, changes in productivity and the presence of water as natural capital. These conditions were found in Tungurahua, Ecuador (conservation of *páramo* areas), the Chinchiná watershed area, Colombia (water as a natural capital) and the department of Nariño, Colombia (changes in productivity). The main geographical and hydrological characteristics of these sites are presented below.

### **Colombia**

Colombia has a surface water supply of around 2.000 km<sup>3</sup>. Approximately 36% of its territory has groundwater savings facilities, and of the total main river basin of the country, 40% is currently vulnerable to environmental damage. High levels of pollution and environmental degradation are concentrated in low developed areas, generating significant impacts on the population (DNP, 2011).

The territory of the Chinchiná basin has an extension of 113.264 ha (20% of the total area of the Department of Caldas) and covers five municipalities: Manizales, Chinchiná, Neira, Palestina, and Villamaría. Together these municipalities concentrate 56.7% of the department's population, the majority in

---

<sup>2</sup> Available at:  
[http://cgspace.cgiar.org/bitstream/handle/10568/12548/A1\\_RIMISP\\_Project%20description.pdf?sequence=1](http://cgspace.cgiar.org/bitstream/handle/10568/12548/A1_RIMISP_Project%20description.pdf?sequence=1)

urban areas (86.6%). Manizales (368,433 inhabitants) is considered the most important municipality in social, economic and environmental terms.

Geographically, Caldas has one of the most mountainous reliefs of the country, including the Nevado Arenas and El Cisne volcanoes with elevations of up to 5400 masl and 5200 masl, respectively. The Chinchiná river, as part of the basin system, runs through Palestina, Chinchiná and Villamaria. The local project team in Chinchiná seeks to implement programs to facilitate access to financial and technical assistance to small farmers who are exposed to situations of water deficit, thus increasing agricultural productivity and rural family incomes in the Chinchiná river basin. Both public and private sectors are involved in a fund to alleviate poverty among the 1,600 families previously identified by the Colombian government.

## **Ecuador**

Water is abundant in Ecuador, and the country's water reserves are one of the largest in Latin America, with a total of 79 watersheds and 2262 micro-watersheds: the total water resource available is estimated at 432,000 hm<sup>3</sup> per year (CNRH, 2006). A large portion (80%) of the superficial water is currently being used for irrigation, while the amount used for domestic consumption stands at 12.3%, with industry using 3%. In addition, water in Ecuador is a fundamental source of energy: 70% of the nation's electric power is provided by hydroelectric generation (UNDP, 2009).

The AN1 project has selected the Tungurahua province as its working site in Ecuador. Geographically, Tungurahua is located in the mountain range system in the center of the country. It is the second smallest department in Ecuador, with an area of 3.370 km<sup>2</sup> and a population of 500.000, and a population density of 151 inhabitants/km<sup>2</sup>, three times above the national average. According to data from the 2011 Census, 59,3% of the population lives in rural areas, and 40,73% lives in urban areas. Nine cantons, 19 parishes in urban units and 44 parishes in rural units make up the whole county.

The Ambato canton concentrates most of the population of Tungurahua. It has 329.856 inhabitants, distributed over 130,000 hectares, and who depend on the moorland ecosystem and conservation of natural resources. This area has a large potential for agricultural activities and payments for environmental services, as it presents important quantities of natural resources and water, demand for which is increasing. Social water demand totals 1930 million m<sup>3</sup>/year and exceeds the available supply of 1156 million m<sup>3</sup>/year in the dry season: 80% of this demand is allocated to irrigation.

The implementation of BSM mechanisms in Tungurahua appears to be an adequate response to the valuation of water benefits, which should be attractive enough to generate the need for preservation, improvement, and the allocation of substantial funds to make such compensation possible. Within the framework of the AN1 project, this mechanism enhances the discussion of diversity of water-based benefits in the high Andes. The most important BSM initiative in the area is the Moorland Fund and Poverty Reduction in Tungurahua (FMPLPT), which finances programs for the conservation of moorlands to improve the quantity and quality of water, among other services focused on rural development.

### **3. General overview of PES mechanisms**

Although PES implementation has become widespread and economists and international agencies have pointed out their merits, it has proven elusive to agree on an accepted definition for these mechanisms. Wunder (2007) describes PES in terms of five characteristics that are commonly cited as the basic elements of conservation payments mechanisms:

1. A well-defined environmental service (e.g., specific changes in peak- or dry-season stream flow at the outlet of a watershed) or a suitable proxy for this service (e.g., hectares reforested).
2. There is at least one buyer of this service or proxy.
3. There is at least one seller as well.
4. Transactions between buyer(s) and seller(s) are voluntary.
5. Payments are conditional on contracted environmental services or proxies for same actually being supplied (Wunder, 2007).

Transactions over ecosystem services tend to fall into the categories of private PES schemes, open trading of environmental credits, and public PES schemes. Typical private PES mechanisms for watershed services involve direct payments by service beneficiaries to service providers for the protection or restoration of hydrological services. Many of these schemes take place at the local level and do not require a specific legal framework beyond a contract between the two parties (IUCN, 2009). Large geographical-scale schemes, on the other hand, are generally public funded with governments acting on behalf of large numbers of beneficiaries to ensure them access to ecosystem services (WWF, 2010).

The nature of the ecosystem services being provided and their quantification, the potential beneficiaries, the involved stakeholders, the payment scheme, the PES execution mechanisms and their sustainability and monitoring system (IUCN, 2009; WWF, 2010) are all factors that “dictate the ways in which an effective payment scheme for water-related ecosystem services may be structured” (IUCN, 2009: 10). The following sections present a corresponding review.

#### **3.1 Actors involved in PES schemes**

General criteria of PES schemes vary according to the service provided. Suppliers of water-related ecosystem services should be actors in a position to

safeguard ecosystem services, such as private landowners, communal landholders, private reserves, governments or non-governmental organizations, and informal occupiers of public lands (IUCN, 2009: 8; WWF, 2010: 20). Actors purchasing services may contribute to PES funding as a direct beneficiary of ecosystem services, or on behalf of a group of beneficiaries or society at large, e.g. a government may wish to fund a national PES scheme on behalf of its constituents. Examples of potential beneficiaries or purchasers of watershed services are governments, industry, downstream users of watershed services, agricultural water users, municipal water utilities, and hydroelectric power generators (WWF, 2010:12).

In the case of schemes focusing on poverty alleviation, PES managers will particularly seek participation of poor rural households, small farmers and populations at risk from flooding, which are disproportionately represented among the poor. In mountainous areas such as the High Andes, most of the poor tend to be located in marginal lands such as the steep slopes of upper watersheds (Pagiola et al., 2005: 240). However, local conditions can vary and therefore not create the necessary settings for the implementation of PES focused on poverty alleviation, for example, the lack of downstream water users, the absence of water shortage and low poverty levels.

To effectively select a site and ensure participation in the scheme, selection should be based on the externalities available and the possibility for service providers of being paid for the environmental services they provide. As stated by Escobar and Estrada (2011), for a PES scheme to be sustainable, the compensation received by upper land tenants for changes in land use has to be superior to that which can be achieved through their own productivity. Common instruments used to finance payments for hydrological services are: charges for water use; retributive charges for water pollution; the obligation to invest in environmental conservation; transfers to environmental authorities and municipalities under whose jurisdiction hydropower projects are developed; and the obligation of municipalities to invest in areas of land to ensure water supply for aqueducts services (WWF, 2010).

### **3.2 PES compensation mechanisms**

Wunder (2005) identifies four terms describing PES remuneration mechanisms: payments; markets (competitive interaction between multiple agents); rewards (just and equitable premiums for services rendered); and compensation (the recompense for a cost the service supplier has suffered) (Wunder, 2005: 4). However, the terms used can also trigger different political and ideological associations, which in turn can influence whether the mechanism is implemented or not (Wunder, 2005: 4).

Market mechanisms for environmental services involve a prime role for economic incentives, and generally multiple actors, choices, and competition to some degree (Wunder, 2005). In the case of watershed services, market-based mechanisms attempt to reconcile resource disputes by compensating upstream environmental service providers for maintaining a socially optimal level of services, as demanded by downstream users (OAS, 2006). These markets usually do not involve the trading of commodities such as the quantity or quality of water, but rather financing land uses that generate watershed benefits (OAS, 2006).

However, there are general challenges associated with the implementation of PES mechanisms, regardless of whatever service compensation is based. One of these is related to the nature of PES mechanisms *per se*, which involves regulating access to open resources. As Stated by BSR (2007): “The fact that environmental services often constitute a public good – enjoyed by many users – has led to a perception that they should be free or at least government-funded” (BSR, 2007: 20). Furthermore, and although general understanding of environmental services has greatly increased in the last decade, the impact of the general practices of companies or land users on the dynamics of environmental services is still being studied in many areas. As a result of this uncertainty, it may be hard for PES users to identify themselves as such (BSR, 2007: 20).

Other possible restrictions on the application of market mechanisms identified by Wunder (2005) are the localized nature of ecosystem services that can limit competition, although single buyer and seller schemes might be attractive to reduce high transaction costs. On the supply side, the provision of watershed services by a single group of upstream land users is likely to create a monopoly of supplier although on the beneficiary side single-buyer schemes are common when negotiating with water companies, electricity firms, or tourism operators (Wunder, 2005: 5).

The presence or absence of regulatory measures is also likely to influence transaction costs by controlling the flow of comprehensive, up-to-date information and standards. In regulated markets, information disclosure is controlled by law and official regulations, while in voluntary markets it can come from requests or independent information searched for by users or offered by suppliers or independent information providers (BSR, 2007: 20). Strong regulatory regimes, enforceability of contracts and clarity on property rights are essential to the implementation of PES schemes, along with criteria of transparency (BSR, 2007: 20).

Some critics claim that PES schemes will lead to the privatization of natural resources and limit the access of the poor to assets such as land and water,



along with representing a system that could lead to complacency or absolve “climate guilt” while forestalling the necessary commitments to new behaviors, policies and business practices (BSR, 2007). One way to overcome such criticisms is to provide compensation for environmental services focused on poverty relief. An effective compensation to ES providers would bear the costs of the transaction and provide sellers with a surplus – gains from the transaction that exceed their costs and thus leave them better off. “In a strict sense, cost compensation alone would barely have any poverty-alleviation impact on PES recipients” (BSR, 2007). In some settings, non-cash incentives such as facilities for the community, access to land and tenure rights, loans, project support or access to equipment might be socially more appropriate than some form of economic compensation. Other benefits that could be provided by environmental conservation through the implementation of PES mechanisms are: increased resilience and ability to adapt to climate change; knowledge sharing; skills transfer; participatory planning; strengthening of community structures and financial networks; reduced dependency on aid and government support; and greater ability to pay for education and access to healthcare (WWF, 2010: 15).

### **3.3 PES types: public and private**

Available literature distinguishes three types of PES scheme, whether they take place in the context of a market or not: public, private, and cap and trade.

**Public payments:** have been created to encourage natural resource management practices that maintain or enhance environmental services, through government payments and government tax programs: 1) Government payments: The most widespread form of direct environmental service payments are from government to property owners who agree to adopt particular land management practices associated with the production of environmental services; 2) Government tax programs: Another common approach to providing incentives for the conservation of environmental services is through income tax credits and property tax reductions for a change of practice that is beneficial to the environment (BSR, 2007).

**Private transactions:** IUCN (2009) describes private transactions for ES as self-organized schemes between private entities which involve: direct payments by service beneficiaries to service providers for the protection or restoration of watershed services; cost-sharing among involved private parties; purchase of land and lease back to former owners with the objective to ensure watershed services originating from the land in question; and the purchase of development rights to areas of land that are separated from property rights (IUCN, 2009).

**Cap and trade:** establish a cap (an aggregate maximum amount) for water pollution or extractions; allocate pollution or extraction permits which divide the allowable overall total among water users; and allow trading of permits between those who do not need permits and those who need more than their allocation (IUCN, 2009).

#### **4. Conceptual approaches and core principles of water governance**

If appropriately drafted, the legal and institutional framework of a country can enable the successful development and implementation of watershed schemes. On the other hand, incoherent legislation, lack of clear criteria for interpreting relevant provisions, as well as lack of implementation regulations can often discourage the adoption of PES in practice (IUCN, 2009: 15).

A comprehensive legal and institutional framework for payments for hydrological services will consider the general requirements established in the definition of water governance, which involve: “the formulation, establishment and implementation of water policies, legislation and institutions; the clarification of the roles of government, civil society and the private sector and their responsibilities regarding ownership, management and administration of water resources and services” (UNDP, 2013).

Nowadays, the Integrated Water Resources Management (IWRM) model has established itself as a worldwide prevailing framework for policies and legislation related to water governance. IWRM was designed as a response to water scarcity and quality at all levels – global, national, regional – and how this situation affects poverty levels. The Global Water Partnership (2000) defines IWRM as: “a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems” (GWP, 2000:22).

IWRM was formulated in accordance with the Dublin Principles, which emanated from the International Conference on Water and the Environment in Dublin in 1992. The four Dublin Principles aim to promote changes in those concepts and practices which are considered fundamental to improved water resources management: 1) Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment; 2) Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels; 3) Women play a central part in the provision, management and safeguarding of water; 4) Water

has an economic value in all its competing uses and should be recognized as an economic good (GWP, 2000: 14).

The basin, or watershed, has been recognized as a practical hydrological unit for water resource management under the IWRM approach. Catchment and basin level management is not only important as a means of integrating land use and water issues, but it is also critical in managing the relationships between quantity and quality and between upstream and downstream water interests (GWP, 2000: 24). An important challenge posed by IWRM is the integration of land management policies, which cover sectors such as forestry, industry, agriculture and the environment, to water management policies, two complementary sectors that are usually not connected and fall under distinct regulations (GWP, 2009).

According to UNDP (2008), in order to avoid conflict and ensure a socially and environmentally sustainable use of hydrological resources, water management should take a holistic approach that looks both at the whole hydrological cycle, and the interaction of water with other natural and socio-economic systems. Good principles of water management should also take into account “multiple water users, multiple purposes and conflicting needs; consider interdependence of land, water and ecosystems; and address the role of water within the context of social and economic development and environmental sustainability” (UNDP, 2008: 7).

## 5. National PES-related legislations

Legal frameworks that regulate the implementation of PES services are: the respective constitutions of national countries, which have a great potential to recognize the value of nature and/or ecosystem services; specific PES legislations, which, although not common, can take the form of National Strategies on PES or specific policies at different levels of government; general environmental and biodiversity laws, which regulate environmental protection and nature conservation in general; and indirectly relevant legislation on natural resource management or financial issues, such as agricultural laws, mining laws, planning or land development, and land laws. In some countries, the existing regulatory frameworks might already include certain provisions that can be interpreted as accepting and promoting PES as an instrument. However, the introduction of PES-related provisions can lead to conflicts with existing legislation and therefore should include a provision that determines which law prevails in cases of conflict or inconsistency between legal texts (IUCN, 2009).

This section will compare, analyze and review the water policies of Colombia and Ecuador based on a relatively recent historical evolution of strategies and national policies in a macro context that includes objectives, principles, and milestones of development plans. This will include formal water governance management paths in Chinchiná, Colombia and the Ambato Basin in Ecuador focused on environmental service policies and their impact on rural development and improvement of livelihoods. An assessment of the current working water policies was made through consultations with the main related stakeholders. The presence, absence or incoherence of water policies and regulations has a direct influence on the capacity to implement BSMs and their sustainability over time. It is essential to determine whether the policies applied are consistent with the current legislation that regulates the use, distribution and conservation of water resources (IUCN, 2009).

## 5.1 Constitution review

**Table 1. Comparison of environmental and water dispositions present in the Constitution**

	Colombia	Ecuador
Environmental provisions	<ul style="list-style-type: none"> <li>- Natural resources are considered public goods.</li> <li>- Establishes the framework for the creation of the National Environmental System (SINA).</li> </ul>	<ul style="list-style-type: none"> <li>- Natural resources are considered public goods</li> <li>- First country to recognize ecosystem rights</li> </ul>
Dispositions on conservation and use of water resources	<ul style="list-style-type: none"> <li>- Maintaining and preserving natural and water resources at all levels</li> <li>- It is a basic objective of the State activity to address unsatisfied potable water needs</li> </ul>	<ul style="list-style-type: none"> <li>- Right to water and provision of derived public services (water and sanitation, electric power, roadways, ports and others of a similar nature).</li> <li>- The Constitution establishes priorities for water uses: human consumption, irrigation to guarantee food sovereignty, environmental flow, and productive activities<sup>3</sup>.</li> </ul>
Privatization of water services	<ul style="list-style-type: none"> <li>- Public and private initiatives allowed</li> </ul>	<ul style="list-style-type: none"> <li>- Forbidden. The State is responsible for the provision of WASH services<sup>4</sup>.</li> <li>- Private and mixed companies provide these services through concessions, associations, capitalizations, and transfers of shared ownership or any other form according to the law.</li> </ul>
Principles for the introduction of financial mechanisms (PES and BSM, for instance)	<ul style="list-style-type: none"> <li>- Creation of a National Endowment Fund whose resources will be assigned to the territorial entities for the promotion of mining, the preservation of the environment, and regional development projects (Article 361).</li> <li>- Environmental protection of natural resources is seen as a constitutional goal and a joint obligation of citizens.</li> <li>- The State is responsible for providing a healthy environment, which is a right of all citizens.</li> </ul>	<ul style="list-style-type: none"> <li>- The State is the sole provider of ecosystem services and regulates all transactions on environmental services.</li> </ul>

Source: Authors (2012), the Constitutions of Colombia (1998) and Ecuador (2008)

### 5.1.1. Colombia

**Constitution of 1991:** The Colombian Constitution of 1991 and the later creation of the National Environmental System (SINA), through the Environmental Act, Law 99 of 1993, enabled the Ministry of the Environment

<sup>3</sup> Article 318 of the Ecuadorian Constitution establishes: "State authorization will be required for the use of water for productive purposes by public, private and grassroots solidarity sectors, pursuant to the law".

<sup>4</sup> *Ibid*, the State as the main authority in water management and directly responsible for water management planning, establishing the priority order for water usage, and the non-privatization of water: "... The public service of sanitation and the supply of drinking and irrigation water shall be provided only by legal entities of the State or communities. The State shall bolster the management and operating of community initiatives with regard to the management of water and provision of public services, by encouraging alliances between public and community bodies for the provision of services".

(now renamed the Ministry of Environment and Sustainable Development – MADS) to create opportunities for a sustainable management model on water resources.

The Constitution integrates a number of environmental provisions: it recognizes a healthy environment as a collective right, and establishes several dispositions on the protection of diversity and integrity of the environment, commitment to sustainability and economic efficiency, fiscal control, public participation, and respect for the cultural heritage of indigenous and other ethnic groups. Article 366 recognizes as a basic objective of the State's activity the fulfillment of unsatisfied public health, educational, environmental, and potable water needs. Article 366 States that for this purpose "public social expenditures will have priority over any other allocation in the plans and budgets of the nation and of the territorial entities" (Law 1999 of 1993, Article 366).

According to the Constitution, the protection of the environment is placed upon the authorities and the population and citizens can intervene in the Colombian courts to protect the environment. Specific mechanisms for public participation include the right to petition public authorities, public hearings, open meetings, referendums, and standard participation in elections (Art. 103) (Blackman et al., 2005: 32-33).

Although Article 8 establishes that natural resources and the ecosystem services they provide are property of the State, this does not prevent the implementation of PES schemes, as payments are made for activities or land uses that have a direct impact on ecosystem services and not for the natural resources or ecosystem services *per se*. According to this legal framework "the State as the owner of the ecosystem services plays a key role in the development of PES schemes, but is not necessarily the only seller of the services" (IUCN, 2009: 197).

Furthermore, Colombia presents excellent opportunities to implement PES and BSM, as there is a joint conservation effort by the State, civil society and the private sector to preserve natural water resources (IUCN, 2009). This collaboration is reinforced by three important principles Stated in the country's Constitution: 1) Environmental protection as a constitutional goal and joint obligation of the State and citizens; 2) A healthy environment as a basic right of citizens; and 3) Public participation as a procedural requirement. The State has the legal obligation to define the required PES mechanisms for conservation and restoration of natural resources (IUCN, 2009: 197-198). Public funding for PES mechanisms and other environmental conservation measures will come from the tax levied on the exploitation of nonrenewable resources that sustains the National Endowment Fund.

**National Development Plan:** The 1991 Constitution requires the president to draft a National Development Plan (NDP). “The territorial governments are also required to develop plans in consultation with the national government under the advice of the Territorial Planning Councils” (Art. 339) (Blackman et al., 2005: 31). The NDP presents the government orientations on the social, economic, and environmental sectors that will guide the definition of public policies during each presidential term.

The most recent NDP, the “National Development Plan 2011-2014 Prosperity for all” is built around ten pillars: convergence and regional development; growth and competitiveness; job creation; equal opportunities; innovation; environmental sustainability; good government; and international relevance. The plan also establishes environmental sustainability as a guiding principle of environmental policies and a cross-cutting issue affecting all spheres of national life. To develop these pillars, the government is fostering five main economic engines of growth: 1) economic sectors based on innovation, 2) agriculture and rural development, 3) housing and friendly cities, 4) mining-energy expansion, and 5) infrastructure and transportation (DNP, 2011).

Problems associated with changing risk-scenarios, environmental degradation and global warming, such as the heavy flooding that has affected the population and economic activities since the second half of 2010, are highlighted by the plan. The Colombian government embedded within this plan the opportunity to improve living standards for those families affected by the flooding, and the expansion of jobs and investments, stemming from capital injections used for rehabilitation and reconstruction projects (DNP, 2011).

In order to strengthen the governmental approach on IWRM, the 2010-2014 NDP suggests the following: increasing knowledge on offer and demand; raising the watershed as the main instrument to progress on environmental management and planning; making an efficient use of water and economic instruments by implementing programs to increase efficiency and conservation of water use in water services, sewage, irrigation districts, and hydropower production; developing and adjusting economic instruments that provide incentives for conservation and efficient water use; and encouraging investments from the private and public sectors in water resource supply (DNP, 2011).

### **5.1.2. Ecuador**

**Constitution of the Republic of Ecuador, 2008:** The Constitution of the Republic of Ecuador, approved in 2008, is the first one at the international level to recognize the inalienable rights of nature, or ecosystem rights, which include the right to water. These rights are part of a comprehensive and integrated

system of rights linked in an appropriate way to: the right to life, to health, to education, to a healthy environment, communication, collective rights, and cultural rights, among others. The principles set forth by the Constitution recognize nature not just as a provider of resources to be appropriated and exploited by people, but “as a right-bearing entity that should be treated as such” (IUCN, 2011: 97).

The Constitution States that in case of doubt about the scope of legal provisions for environmental issues, these will be applied in the most favorable way to protect nature. Therefore, there is a contextualization of preservation, conservation and sustainable management of environmental resources, natural heritage and marine biodiversity by the Constitution (IUNC, 2011: 97).

Article 1 of the Constitution recognizes the human right to water as “...fundamental and non-waivable. Water constitutes a national strategic asset for use by the public and it is unalienable, not subject to a statute of limitations, immune from seizure and essential for life” (Constitution of Ecuador, 2008). These attributes influence regulations on water access and the right to make transactions on its use by prohibiting the possibility to acquire water rights, particularly property rights, and by forbidding transactions based on those rights. The latter is reinforced by Article 74 of the Ecuadorian Constitution which States that “Environmental services shall not be subject to appropriation; their production, delivery, use, and development shall be regulated by the State”. The State becomes the main actor to fund the payment schemes for environmental water services. This complicates the development of PES or other types of environmental services due to contradictory paragraphs in the law; however, there are certain mechanisms or incentives that can be supported legally as there is still some uncertainty about specific statements. For example, Article 74 of the Constitution establishes the obligation of the State to generate incentives for the conservation of the ecosystems that ensure the hydrological offer (Blanco et al., 2010: 122).

Another central provision of the Constitution is the recognition in Article 318 of the State as the unique water authority, directly responsible for the management of hydrological resources, human or domestic consumption priming over all other uses. Other recognized uses of water are food sovereignty, hydrological flow and productive activity. However, the Constitution also encourages shared management of water resources by establishing that the “State will encourage natural and juridical persons and collective groups to protect nature [...] (Constitution of Ecuador, 2008)”. According to Blanco et al. (2010), this new constitutional framework acknowledges the obligation of the State to generate incentives for the conservation of ecosystems to ensure the hydrological offer. It also establishes the prohibition of private PES payment



mechanisms without State regulation over the transaction (Blanco et al., 2010: 122).

**National Plan for Good Living:** The ratification of the 2008 Constitution, promoting the gradual construction of a Plurinational and Intercultural State, created the basis for the adoption of a new National Development Plan, the "National Plan for Good Living 2009-2013" (*Plan Nacional para el Buenvivir*), which supports the new social contract defined by the Law.

This plan contemplates aspects such as: constitutional and democratic; ethical; economic, productive and agrarian; social; and integrative and defensive of the sovereignty of Latin American dignity. The sovereign principle is based on the person, which means their volunteering is fundamental for the authority. This principle is exercised through public bodies of power, and a direct form of participation prevails in the Constitution (SENPLADES, 2009).

Objective 4 of the plan seeks to guarantee the rights of nature and promote a healthy and sustainable environment. The instrumentalization of concepts of environmental sustainability has to integrate other axes of the plan such as gender, generational factors, and intercultural and territorial equality, for which the achievement of each of the specific objectives requires a great deal of coordination and articulation between diverse sectors of the society and government institutions (SENPLADES, 2009).

Through the Good Living plan, the Ecuadorian government seeks to mark a change to the traditional vision of natural resources at the service of development, expansion of agricultural lands and intensive exploitation of mineral resources and fisheries, in accordance with the new constitutional framework and the institutionalization of concepts of prevention and mitigation.

The responsibility to position water and biodiversity as strategic assets is an important challenge for policy-makers and public institutions. In accordance to this new approach, the National Secretariat for Planning and Development (*Secretaría Nacional de Planificación y Desarrollo*) has developed seven guidelines to steer public policies that regulate the use of natural resources. According to this new framework, water management requires an integrated approach by basin, with a strategic participation of the State and socio-cultural and environmental assessment. It is the responsibility of the government to "design and implement structural reforms intended to strengthen the regulation, access, quality and recovery of water resources and implement decentralization processes articulated to the planning processes at all levels of government" (*Ibid*). Policy 4.2 promotes community management and the strengthening of peasant organizations and establishes the obligation to develop and implement programs that promote sustainable production systems. The government has

also set as a general objective the mainstreaming of the environmental approach in social, economic, and cultural processes that define public management.

The *Good Living* plan also includes other objectives related to social and economic development based on the exploitation of water resources. For example, to avoid periodic electric power shortages, the State seeks to increase power generation through hydroelectric and other renewable sources. The integral management vision put forward by the plan emphasizes floods and drought risk prevention through adequate inter-institutional management and the satisfactory management of hydrographic basins, taking into consideration the diverse usages and users. Another objective is to increase and provide basic sanitation for all. The coverage and quality of water and sanitation services is below the national average in some poor areas of the provinces of intervention, with large gaps in the coverage and services between rural and urban areas (SENPLADES, 2009).

## 5.2 National PES specific legislations and general environmental laws

**Table 2. Comparison of national environmental and PES-related legislations**

	<b>Colombia</b>	<b>Ecuador</b>
General legislations on environmental services	National Policy for the Management of Biodiversity and Ecosystem Services	National Biodiversity Strategy ( <i>Ley que protege la biodiversidad</i> /Law that protects biodiversity)
Environmental legal compensation mechanisms	Environmental Act 99 of 1993 promotes the use of a variety of compliance tools and instruments, such as economic incentives, tax reductions, and compensation mechanisms. It establishes the legal obligation for all projects that make use of water resources to invest 1% of the total investment in hydrological preservation.	Ecuador has worked with PES mechanisms since 2001, but the concept is referred to as “compensation mechanisms”. This is the case in Tungurahua, where no specific payment system or administrative entity validates the use of PES or BSM.
Ecological importance of the conservation of moorland ecosystems	The Environmental Act of 1993 defines moorlands as restricted zones due to the particularities of their ecosystems and their high value as a source of water supply for cities. In moorland ecosystems, exploration or exploitation activities (agricultural, oil industry and/or mining) are not allowed.	The importance of conservation of moorland areas is established in the Constitution. The National System of Protected Areas (SNAP) includes 19% of the territory (4.8 million ha). The area covered by the SNAP contains multiple indigenous groups, villages and Afro-Ecuadorian populations that represent a significant cultural diversity.
PES or BSM present in the environmental policy	The acquisition of areas of interest for municipal aqueducts <sup>5</sup> supports the development and implementation of PES schemes as it regulates legislative authorization to allocate budgets for water PES initiatives <sup>6</sup> .	Mechanisms for PES programs implemented in Ecuador have developed at the municipal level, where urban water users pay monthly fees to entities that distribute the payments to properties in the areas that protect the headwaters on river basins that supply water to urban areas. The most representative case reproduced in other provinces is FONAG.
Environmental regulations on moorland	Resolutions 0769 of 2002 and 0839 of 2003 <sup>7</sup> regulate legal frameworks on ecosystems. The	Trust funds such as FONAG allocate resources to the families in the rural sector and improve livelihoods, thus

<sup>5</sup> Article 210 of Law 1450 of 2011 - by which the National Development Plan is issued (2010-2014), shows a modification of Article 111 of the Environmental Act 99 of 1993, which declares as public interest strategic areas of water resources that supply municipal, district or regional aqueducts.

<sup>6</sup> The law demands that municipalities and departments are compelled to invest no less than 1% of their ordinary income in the acquisition and maintenance of important zones of water supply for municipal or district aqueducts, or to finance payment for environmental service schemes for resilience and preservation of natural water resources. This mandate represents the concept of acquiring funding for regional environmental authorities, and to invest in financial environmental mechanisms.

<sup>7</sup> Table 5 annex 1.

ecosystems in function of PES and BSM mechanisms	approval of the National High Mountain Ecosystem (moorlands) program defined the necessary activities to elaborate and update the accounting and assessment of moorlands in Colombia <sup>8</sup>	representing a leading initiative to fight poverty. In general, trust funds increase the participation of civil society and the private sector in the management of the basins, through environmental education programs, and capacity building activities.
Presence of environmental laws and policies on financing PES and BSM	Law 1151 of 2007 indicates that resources of the so-called “General system of participation from departments, districts and municipalities” will have priority in the financing of public services in water and basic sanitation, health, education and expanding coverage for poor people.	The AP system areas receives funds from different sources, such as the State, projects and programs of international cooperation, resources coming from debt swap through the Protected Areas Fund, agreements for services, and auto-management of resources.

### 5.2.1 Colombia

**Creation of SINA:** Law 99 of 1993 defines SINA as a “set of orientations, norms, activities, resources, programs and institutions that allow the implementation of general environmental principles” based around a model of sustainable development (Law 99 of 1993). Guiding concepts are in accordance with the principles set forth in the Constitution: biodiversity protection, the right to a healthy environment, priority given to human consumption over other water uses, and decentralized and participatory environmental management. However, as Stated by Blackman et al. (2005), the application of such principles can be conflicting. For example, biodiversity protection is given priority, but the law also States that human consumption has priority over all other uses of water. “The statute of the resolution gives little guidance regarding resolution of conflicts” over water use (Blackman et al., 2005: 35).

Article 360 establishes that “The law will determine the conditions for the exploitation of nonrenewable natural resources as well as the rights of the territorial entities over them”. Article 23 creates the Autonomous Regional Corporations (CARs). Other key environmental authorities are: the National Park System, territorial authorities, and other governmental institutions with environmental responsibilities (Blackman et al., 2005: 34). Law 99 also provides for the creation of IDEAM (*Institute of Meteorology and Environmental Studies*) a public institution attached to the Ministry of the Environment. IDEAM is responsible for the coordination of the Colombian Environmental Information System and meteorology, hydrology and related environmental studies (Art. 17).

<sup>8</sup> These regulations introduced environmental planning instruments (Environmental Management Plans) developed by regional environmental authorities. The instruments identify priorities that can implement water-related PES or BSM initiatives and support technical measures proposed in the management plans to provide better quality water.

Furthermore, the Law rules on the collection of retributive rates for direct and indirect use of the atmosphere, water and soil resources, and the discharge of pollutants from human or economic activities. It is also established that a fixed fee for water use (no less than 1% of total investment) will be charged to natural and juridical persons, public or private, to cover expenses for protection and renovation of water resources. Collection of those fees is CARs' responsibility.

**National Policy for the Management of Biodiversity and Ecosystem Services:** In July 2012, the Ministry of the Environment of Colombia adopted the National Policy for the Management of Biodiversity and Ecosystem Services (*Política Nacional para la Gestión Integral de la Biodiversidad y sus Servicios Ecosistémicos* – PNGIBSE for its Spanish acronym), replacing the National Policy on Biodiversity.

The original aim of the creation of a national strategy on environmental services was to “introduce PES as a tool to achieve the objectives of environmental policies and promote their articulation with existing technical, economic, and legal instruments” (MADS, 2012: 9). The PNGIBSE ensures the conservation and fair and equitable sharing of benefits derived from biodiversity in a way that could contribute to improving the quality of life of the Colombian population. Its main objective is to promote the integrated management of biodiversity and ecosystem services in order to preserve and improve socio-ecological systems at the national, regional, and local levels (MADS, 2012: 89). This shall be done by harmonizing this policy with other instruments of sectoral policies, among them the National Water Policy, so conservation measures are incorporated into sectoral regulations of productive activities. The incorporation of such measures is fundamental to protecting biodiversity and reducing sectoral vulnerability to shortages of ecosystem services.

The policy implementation strategy includes six thematic objectives and their respective strategic guidelines: 1) Biodiversity, conservation and environmental care – preservation of flora and fauna, resilience of socio-ecological systems, supply of ecosystem services; 2) Biodiversity, governance and creation of public value – value ecosystem services to promote their participative management, which involves strengthening mechanisms of governance, intra- and inter-institutional articulation and increased management capacity for public institutions; 3) Biodiversity, economic development, competitiveness and quality of life – Incorporation of biodiversity and the provision of eco-systemic services in planning and sectorial decision-making to maintain the sustainability of productive activities and improve quality of life at the national, regional, and local levels; 4) Biodiversity, knowledge management, technology, and information; 5) Biodiversity, risk management, provision of eco-systemic services; 6) Biodiversity, co-responsibility, and global engagements (MADS, 2012).

The policy implementation guidelines State that the Regional Action Plans on Biodiversity (PARGIBSE) will guide the formulation of actions focused on biodiversity management and ecosystem services, including activities for the preservation of water quality and availability, developed in regional planning instruments elaborated by the Autonomous Regional Corporations (CARs), Sustainable Development Corporations (CDS), and Urban Environmental Authorities (AAU).

**National Water Policy:** The National Water Policy emerged from the guidelines established by the general framework on IWRM, adapted to the Colombian context by IDEAM. The National Policy for the Integrated Water Resources Management (IWRM) – PNGIRH for its acronym in Spanish – was adopted in 2010 and has been planned over a twelve year time horizon (until 2022).

The PNGIRH establishes main strategies, goals, indicators and guidelines designed to guarantee the sustainability of the resource, from a basic understanding that water management stems from the hydrological cycle and is linked to a chain of interrelations between natural and anthropic components (MAVDT, 2010). The main objective of the policy is to guarantee the sustainability of water resources through an efficient and effective use of water articulated to land use planning and ecosystems conservation policies that regulate water supply. Water is therefore considered important for economic development and social welfare, and the policy seeks the implementation of equitable and inclusive processes of public participation in water management (MAVDT, 2010).

The policy is built around six specific objectives:

- 1) Supply: conservation of ecosystems and hydrological processes on which water availability in the country depends;
- 2) Demand: characterize, quantify and optimize water demand;
- 3) Quality: improve quality and minimize contamination of water;
- 4) Risk management: develop integrated management of risks associated with water for sale and its availability;
- 5) Institutional strengthening: create the conditions for institutional strengthening of IWRM; and
- 6) Water governance: consolidation and strengthening of governance structures for IWRM.

### 5.2.2 Ecuador

The first comprehensive environmental legislation of Ecuador, the Environmental Management Act, was adopted in 1998 based on the constitutional Statement that “the State has an obligation to protect the environment” (IUCN, 2011: 97). The provision of environmental services is also regulated by various sectoral environmental legislations.

**Environmental Management Act:** The Environmental Management Act (*Ley de Gestión Ambiental*), adopted in 1999, establishes the authority of the Ministry of the Environment to coordinate and regulate the decentralized system of Environmental Management, without prejudice to the competences legally granted to the other institutions of the State (Environmental Management Act, Art. 8). The global decentralization process promoted by the Ecuadorian government at that time led to the development and implementation of secondary legislation regarding environmental management, along with providing the framework for several national strategies, such as the 2000 National Strategy for the Sustainable Development of Forests and the 2001 National Strategy for Biodiversity (IUCN, 2011). According to IUCN (2011), most of these strategies have yet to be applied.

Strategic guidelines of the Ministry of the Environment (MAE) for 2010-2014 include actions on the economic valuation of environmental services. Following the general objectives of the National Plan for Good Living (to implement an inclusive and sustainable social and economic system and guarantee nature rights), the MAE will work towards the achievements of central objectives related to PES mechanisms, as follows: 1) the incorporation of environmental and social benefits in economic indicators as a strategy to promote productive activities with lesser impacts and the establishment of adequate incentive mechanisms; 2) To generate information on the availability of strategic renewable natural resources in order to facilitate their integral management; and to improve management of conflict through public participation (MAE, 2010).

Institutionally, the “economic-environmental thematic” will be managed by the Valuation Team, which will work on the assessment of an economic value to natural resources and the Incentives Mechanisms Team –*Equipo de Mecanismos de Incentivo*– that will be responsible for the sustainable management of natural resources. The guidelines indicate that the term “incentive” shall not refer exclusively to monetary compensations, but adopt a broader sense that includes concepts of efficiency, attractiveness and above all, sustainability (MAE, 2010).

**National Biodiversity Legislation:** The National Biodiversity Strategy (*Law that protects biodiversity*) is an important instrument that proclaims biodiversity as a strategic resource in Ecuador. It proposes a biodiversity vision, principle, and policies; establishes regions of special attention; and offers implementation guidelines. Hence, it recognizes the existence of markets of environmental services such as water capture and CO<sub>2</sub> and offers the opportunity to enhance the perception of the economic value of those services. The instruments of economic management defined in the policy –system for payments of environmental services, charges for changes in land use, investment directed to local populations– intend to recognize the existence of profitable markets for environmental services among forest, *páramos*, mangrove, and floodplain ecosystems in Ecuador (Quintero, 2010: 130-132). The National Strategy on Biodiversity 2013-2020 will be defined around basic guidelines of the Good Living Plan. It will seek to address the failures presented in the application of the 2001-2010 strategy such as the low valuation of biodiversity and the lack of mechanisms of institutional coordination and collaboration for water management (National Assembly of Ecuador, 2013).

**National Water Legislation:** The Constitution sets as priority domestic and drinking uses over all other uses. The Water Law provides that the use of water resources is subject to the granting of a concession by SENAGUA. While concessions are not required for drinking water, livestock or bathing purposes, revisions of the Water Law in 2004 (*Bill Amending the Law on Water*) provided for the establishment of Water Boards and Irrigation Boards with authority to collect fees for water use and develop and maintain the necessary infrastructure (USAID-Ecuador, 2011).

Although considerable progress in water governance is recognized, there is not yet a complete integrated water resources management plan that includes specified functions and responsibilities for water governance actors, where law and regulations work specifically upon present water resources. An example of a common practice that has not been institutionalized is the construction of large hydraulic works, such as hydropower plants aiming to export energy by 2016 and take advantage of the opportunities offered by the sector (La Estrella, 2012).

Ecuador continues in a long-term discussion of a water law to replace the current legislation of 1972. A pre-legislation draft was presented to the parliament in 2009; however, as the new water law has generated numerous debates, its approval has been continuously delayed. As of October 2013, a consultation process was being carried out with indigenous, Afro-Ecuadorian and other communities according to the principles set forth by Convention No. 169 of the International Labour Organization on the rights of indigenous and



tribal people and ratified by the government of Ecuador (National Assembly of Ecuador, 2012).

The legislative project seeks to address problems caused by the fragmented water management structure in the country, such as inequitable access and distribution, hegemony of the irrigation sector, and the absence of participation of the public sector. The legislative project proposes four constitutional principles that guide the general text of the 2008 Fundamental Law: water as a strategic public asset; the human right to water, which involves principles of availability, quality, and accessibility; community or public management of water; and the creation of a unique authority for water management in the country (National Assembly of Ecuador, 2012). One of the main subjects in discussion is Article 1 of the legislative project, which indicates water resources as the exclusive competency of Central government in allocation of uses and concessions (El Universo, 2010). Other contentious points, mainly brought up by indigenous organizations, are the use of water for agriculture for exportation and mining activities, the granting of concessions and the establishment of tariffs, and the nature of the Unique Authority of Water (Ortíz, S.F.).

### 5.3 Protected areas and Forestry

**Table 3 Comparison of water policies on PES and BSM present in the forest sector**

	Colombia	Ecuador
PES or BSM mechanism schemes applied to forestry regulations	Forest CIF certificates by Decree 900 of 1997. CIF were based on the idea of paying positive externalities that natural forests provide in terms of water, soil and biodiversity-related services. CIF recognizes the landowners' direct or indirect costs to conserve natural forest ecosystems (with little or no human intervention). CIF encourages forest conservation and natural water resources in private properties (it does not apply to public lands) by financially rewarding landowners who choose this incentive <sup>9</sup> .	Forestry information and conservation incentives system is called <i>Socio Bosque</i> , a program that ensures the distribution of equitable and direct economic benefits to individual landowners and indigenous communities as an incentive to reduce deforestation rates. The goal of Socio Bosque is to protect over 3.6 million (ha) of forest at national level, and other native ecosystems.
Current working experiences of PES or BSM	Cauca Valley, where diverse associations of agricultural producers initiated a system of PES to guarantee the sustainable provision of water for irrigation. This system has conserved more than a million ha.	MAE has invested USD 22 million in 116,000 ha of forest and moorlands through the Socio Bosque program since 2008. According to the program results, Socio

<sup>9</sup> The allocation, development and execution of parameters established for the development of the CIFs, since its creation were responsibility of the CAR, until the modification by Article 75 of Law 1328 of 2009, "Regulations in financial, insurance, stock markets and other provisions", which transposes the management of functions to the Ministry of Agriculture and Rural Development, continuing with the same policies and creating new parameters for the improvement of this incentive.

examples included in water policies	Similarly, PROCUENCA in the Chinchiná river basin is an agreement to exempt payment over property tax to agriculture producers that preserve and establish tree coverage. This initiative also promotes investments on land change use with the upstream water users to restore the regional watershed. All these benefits can be achieved through a fairly simple action: hiring farmers to restore degraded ecosystems with non-invasive trees.	Bosque has benefited 123,000 citizens through economic incentives provided by more than 2,000 contracts. The program is present throughout the country. Activities in Tungurahua were initiated in February 2013 <sup>10</sup> . The cost of the incentive is USD 42 per ha in moorland areas, while in forest areas it is USD 21 <sup>11</sup> .
-------------------------------------	---	---

Source: Authors (2012), USAID (2009), and Blanco et al. (2008)

<sup>10</sup>MAE. (2013). **MAE opening chapter on Socio Bosque restoration in Tungurahua**. Ministry of the Environment of Ecuador, 5 February. <http://www.ambiente.gob.ec/mae-inaugura-capitulo-restauracion-de-socio-bosque-en-tungurahua/>

<sup>11</sup>MAE. (s.f.) Ministry of the Environment of Ecuador. **Socio Bosques**. <http://sociobosque.ambiente.gob.ec/?q=node/743>

### 5.3.1 Colombia

**Forest CIF Certificates:** In Colombia, Forest CIF Certificates created by Decree 900 of 1997 assumed positive externalities for reforestation, such as the following: regulation of the hydrological regime, erosion control and formation of biological corridors. CIF recognizes the landowners' direct or indirect costs to conserve natural forest ecosystems (with little or no human intervention). It encourages forest and natural water conservation resources located in private properties (does not apply to public lands) by financially rewarding landowners who choose this incentive<sup>12</sup>.

Although the CIF incentive was created in 1997, it was not until 1998 that the central government allocated approximately USD600,000 to begin its implementation. These funds, however, never met their objectives, as the contract period of 10 years was considered too long by the National Planning Department, which calculated that the available financial resources could not guarantee payments for the entire period (IUCN, 2009). Lack of political will from the central government has also complicated the implementation of the incentive. An exception within CIF incentives, at regional level is PROCUENCA, in the Chinchiná river basin, an initiative of the city of Manizales. This initiative runs through an agreement of cooperation between Infi-Manizales (second-tier banking) and FAO as responsible for technical assistance (Ocampo, 006).

Forests are widely recognized as playing an important role in the provision of hydrological services (IUCN, 2009). The relationship between forest cover and watershed services have been described as follows: 1) The total annual yield of fresh water increases with the percentage of biomass removed; 2) Infiltration is reduced by deforestation and subsequent soil degradation (this may reduce dry-season flows); 3) Forest cover may prevent surface erosion and shallow landslides (IUCN, 2009). The National Forest Development Plan, adopted in 2000, recognizes the importance of the services provided by forest ecosystems and establishes a Financial Sustainability Strategy that includes elements specific to PES schemes: identification of financial sources, incorporation of productive and financial schemes, and negotiation of access to multilateral funds (IUCN, 2009: 201).

**Protected Areas Legislation:** Protected areas in Colombia were first legally recognized in the National Renewable Natural Resources and Environmental Code, and regulated by a National Park System in Decree 622 of 1977.

---

<sup>12</sup> The allocation, development and execution of parameters established for the development of the CIFs since their creation were the responsibility of the CAR, until the modification by Article 75 in Law 1328 of 2009, "Regulations in financial, insurance, stock market and other provisions", which transposes the management of functions to the Ministry of Agriculture and Rural Development, continues with the same policies and creates new parameters for the improvement of this incentive.

Protected areas are important hydrological service providers: they encompass four of the six source areas of the country's major watersheds and more than 62% of groundwater recharges areas. However, despite the economic value that these services could represent "there is no specific PES regulation that recognizes how payments of benefits could strengthen conservation activities in protected areas" (IUCN, 2009: 202).

### 5.3.2 Ecuador

**Legislation for protected areas:** The main reference for the group of protected areas in Ecuador is the National System of Protected Areas (*Sistema Nacional de Areas Protegidas – SNAP*). Protected areas are defined as: "... publicly or privately owned areas that are relevant for their ecological, social, historical, cultural or landscape value, determined as such in the country by the law, in order to prevent their destruction and promote the study and conservation of plant or animal species, natural landscapes and ecosystems" (Law 99, Art. 37). The Ecuadorian Constitution prescribes the participation of communities in the decision-making stages of projects that could affect the environment, and includes a previous consultation when projects will be developed in a territory with native or black communities. Generally, Ecuadorian law has increasingly recognized the collective rights of indigenous peoples and nationalities (IUCN, 2011).

One of the most important PES schemes oriented to forest conservation in Ecuador is the *Socio Bosque* program, designed as a voluntary, government-funded PES scheme. The scheme is based on a system whereby communities or individual landowners receive annual monetary incentives based on the amount of land they agree to conserve. The term of agreement is 20 years and landowners who make an early withdraw from the scheme must pay back some of the funds they have received (De Koning et al., 2011). The payments are allocated to individual proprietors (natural persons) and communities, *comunidades*, *pueblos* and natives (legal persons). The program was also conceived for moorland areas under the name of the *Socio Páramo* program.

## 5.4 Energy Sector

**Table 4. Comparison of water policies on PES and BSM present in the energy sector**

	Colombia	Ecuador
Main regulations towards PES or BSM on hydropower plants	<ul style="list-style-type: none"> <li>- The Environmental Act 99 of 1993<sup>13</sup> established the obligation of the hydro-energy sector to transfer 6% of the gross sales of power generation to CARs and municipalities when generation plants have an installed base with over 10,000 KW of capacity.</li> <li>- From the 6% transfers, hydroelectric power generation plants shall divide the gross sales with a distribution of 3% to the CARs, 1.5% to the municipalities and the districts of the hydrographic basin that supply the reservoir, and another 1.5% for the districts where the reservoir is located.</li> <li>- With respect to the same decree, Article 8 States that the financial resources collected must go towards an environmental protection of the area where the projects is operating, and in defense of the river basin system, according to what is established by the watershed management plan and the area of influence of the project.</li> </ul>	<p>Since 2006, the government has an ambitious plan on investment in renewable energy, with emphasis placed on the construction of large hydroelectric plants. Indeed, hydroelectric energy has increased from 44% in 2006 to 59% in 2008.</p> <ul style="list-style-type: none"> <li>- The Yasuní<sup>14</sup> initiative is a compensation mechanism in which Ecuador demanded that the international community provided 50% of the revenue that would otherwise be generated from the exploitation of the oil reserves located in Ishpingo-Tambococha-Tiputini (ITT), Yasuní.</li> <li>- The setting up of the fund required ensuring a flow of resources for at least USD 350 million a year over the life of the trust in return for a commitment from the government not to exploit the ITT oil fields. However, the government failed to raise the necessary funds.</li> </ul>

### 5.4.1. Colombia

In Colombia, each CAR is responsible for formulating an investment plan according to what is established by the Watershed Management Plans (POMCAs) and resources from the mandatory 3% transfer received from the hydroelectric sector. Hence, these funds can be used to finance PES initiatives depending on a case-by-case analysis. This represents the main source of income for the operational activities and conservation programs of the CARs (IUCN, 2009).

### 5.4.2. Ecuador

In 2007, the President of Ecuador, Rafael Correa, announced the launching of the Yasuní initiative, considered as an unprecedented strategy to integrate

<sup>13</sup> Decree 1933 of 1994, which regulates Article 45 of the Environmental Act of 1993 (Annex 1, Table 4)

<sup>14</sup> The Yasuní is a National Biosphere Reservation as declared by UNESCO and contains 20% of the country's oil reserves. Thus, the government is divided between preserving the high social and environmental value of the biological resources of the Yasuní reserve, and exploiting its large oil potential.

climate change mitigation, development aid, and protection of the rights of indigenous peoples<sup>15</sup>. The idea in terms of its implementation was to reduce greenhouse gases emissions nationally and globally by not exploiting the oil reserves of Ishpingo-Tambococha-Tiputini (ITT), Yasuní, worth USD7.2 billion, an effort that would be compensated by developed countries (Rawe, 2013). This initiative was seen as the correct path to boost Ecuador's huge potential in renewable energies, given that the government established as an objective of the Good Living plan<sup>16</sup> that renewable would account for 6% of all energy sources. An estimated 86% of the expansion planned for the 2009-2020 period is based on hydropower energy sources (Castro, 2011). Furthermore, the oil industry is scaling down due to the depletion of its reserves, encouraging the expansion of energy diversification.

However, Correa had to put an end to the initiative on 15 August 2013, as the donations raised were insufficient to compensate the 50% of the revenue that would be generated from oil exploration. Faced with the need to finance public services, the Ecuadorian president claimed no more than 1% of the total area of the Yasuní National Park will be subject to oil exploration, generating revenues of around USD18 billion that will be directed to social and environmental care initiatives to benefit the Ecuadorian people (Rawe, 2013). Even though Correa blamed the international community for the failure of the initiative and emphasized the necessity for the country's economy to generate revenues, polls showed that 79-80% of the population are against oil drilling in Yasuní. Environmental groups in Ecuador have started to collect signatures for a petition in order to present a demand for a referendum on this issue to the Constitutional Court (Rawe, 2013). Overall, the unwillingness shown by the international community to support the Yasuní project and the presidential decision to go forward with the oil drilling initiative, highlight the difficulty to make developed countries go beyond verbal engagements to fight climate change, and might open the door to stronger civil society advocacy on climate change and issues related to environmental care (Acosta, 2013 and Rawe, 2013).

---

<sup>15</sup> This initiative was issued under Decree 847 of 2008.

<sup>16</sup> National Plan for Good Living (PNBV), goal number 4.3.3. <http://plan.senplades.gob.ec/4.3.3>

## 5.5 Mining sector

**Table 5. Comparison of water policies on PES and BSM present in the mining sector**

	Colombia	Ecuador
Main regulations towards PES or BSM on mining purposes	<ul style="list-style-type: none"> <li>- Article 34 of the National Mining Code States that mining activity is banned in moorland areas, which involves the exclusion of exploration in selected areas<sup>17</sup>.</li> <li>- Law 141 of 1994 created the National Royalty Fund and establishes the framework for the liquidation, distribution and use of the royalties received from mining concessions as a compensation for environmental services<sup>18</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>- In Ecuador, all minerals belong to the State. Environmental regulations for mining activities are established by Decree 625 of 1997. For water use purposes, the mining industry must install treatment systems. Discharge flows are subject to the control of prevention and law regulations. It is also forbidden to block existent water flows with removed material.</li> <li>- In general terms, 60% of the royalties should go to productive projects for municipalities, and 50% of the total to each government sector.</li> <li>- The involvement of indigenous and affected communities is restricted, by only allowing them the right of consultation in relation to mining activities in their communities.</li> </ul>

### 5.5.1. Colombia

In Colombia, Articles 31 to 35 of Law 685 of 2001, known as the National Mining Code, establishes the reserved, excluded and restricted zones for mining purposes. Such norms aim to guarantee the rights of mining exploration for communities that have developed traditional informal mining activities in certain areas of the country, protecting environmentally-rich areas and ecosystems. Moreover, they also aim to restrict mining activities in areas such as urban perimeters, historical or cultural sites, and indigenous mining zones, among others. Projects for the conservation and preservation of the environment associated with the National Royalty Fund are legal obligations, where holders of mining concessions are required to comply with general provisions pertinent to the mining industry in matters of mining safety and environmental protection.

<sup>17</sup>Colombian Congress. 2001. **Colombian Mining Code:** [http://www.otuscolombia.org/tabs/normativa/LEY\\_685\\_DE\\_2001.pdf](http://www.otuscolombia.org/tabs/normativa/LEY_685_DE_2001.pdf)

<sup>18</sup> Mining royalties follow the principle wherein the Colombian State is the owner of the subsoil and the non-renewable natural resources; the exploitation thereof guarantees the payment of royalties to the State. The local authorities of those geographic areas where production is located are the recipients of the royalties.

## 5.5.2. Ecuador

In Ecuador the law regulates the bestowal of mining concessions. In April 2008, Ecuador revoked nearly 80% of the country's mining concessions. This was done in order to reinforce severe environmental controls and increase royalty payments (USAID-Ecuador, 2011).

In early 2009, the Congress approved a new mining law, which establishes the rights that a company may have for four years to develop certain special mining areas; as in Colombia, this law also forbids mining activities in protected areas; creates a new government mining regulator, and in the case of the royalties, the State-owned mining company makes a contribution of not less than 5% on sales, so assuring that more than 50% of mining operations revenues go to the State (National Assembly of Ecuador. 2009).

The regulations of this law may require the adoption of tougher environmental and social protections, as the law restricts the involvement of indigenous and affected communities by only allowing them the right of consultation on mining activities in their communities (USAID-Ecuador, 2011). This situation has created opposition from indigenous movements such as CONAIE (Confederation of Indigenous Nationalities in Ecuador), and environmental activists have campaigned against the mining law since it was drafted, and have sought to have it amended.

## 5.6 Water and sanitation sector (WASH)

**Table 6. Comparison of water policies on PES and BSM present in the WASH sector**

	Colombia	Ecuador
Main regulations for PES or BSM on water, sanitation and hygiene (WASH)	- Policies on the water and sanitation sector have supported business modernization since the '80s, aiming towards a process of decentralization. This set of policies includes targeted transfers to municipalities, private sector participation, regulation, cost recovery and a system of cross-subsidies <sup>19</sup> .	- In accordance with the current policy the government has a facilitator role in the process of resources distribution, allowing for the participation of more stakeholders and donors and focusing the WASH policy on the promotion of the Basic Sanitation unit (UBS) <sup>20</sup> . - Examples of PES mechanisms at the national level are: Program for the Conversion of the foreign debt of Ecuador and Spain into public investment <sup>21</sup> or Debt swaps

<sup>19</sup> Despite some modifications to Law 142 in 2001, the same policy continues to be pursued today, independently of changes in the government.

<sup>20</sup> The basic unit consists of a toilet and sink.

<sup>21</sup> *Foreign Debt Conversion Program between Ecuador and Spain in public investments (Programa de Conversión de deuda externa de Ecuador frente a España en inversiones públicas)*. Ministry of Finance and Public Administration. Spain <http://www.minhap.gob.es/es->



		<p>mechanisms. The program has been running since 2005 and the agreement for investment in WASH services began in 2009. This program consists of a debt conversion between two countries, and transforms the default payment into an investment on the debtor country. Therefore, the creditor country waiver of a debt and the debtor country are committed to investing the resources created on investment projects for development. In fact, Ecuador has adopted this approach to provide WASH services in 14 municipalities in the northern areas of the country since February 2011<sup>22</sup>.</p>
--	--	---

Source: Authors (2012), Urrea and Cárdenas, (2011), and the World Bank, (2009).

### 5.6.1. Colombia

In Colombia, the provision of WASH services relies on municipalities, with resources being allocated through obligatory investments provided by the national general budget (PGN) and transferred yearly through the general participation system (SGP, for its acronym in Spanish)<sup>23</sup>. The SGP funds, along with tariffs, royalties and the national budget are spent on subsidies, public work plans and investments, service costs and business modernization. According to the SGP, 5.4% of total resources should go towards safe drinking water and basic sanitation (Antea group, 2012).

Another complementary mechanism derived from national WASH policies, the Department Plans for Water and Sanitation (PDAs)<sup>24</sup>, is coordinated by the Ministry of Housing (Min.Vivienda) and the Deputy Ministry of Water (VMAg). Departments, municipalities, and private companies work together to implement PDAs collectively. The PDAs represent investment plans that constitute a strategy to implement national policies by sectors, under the direction of the VMAg (Newborne et al., 2010). PDAs pursue the objectives of the WASH policy, which is to increase coverage and improve the quality of the services

---

[ES/Areas%20Tematicas/Internacional/Financiacion%20internacional/Gestion%20Deuda%20Externa/Paginas/Ecuador.aspx](http://ES/Areas%20Tematicas/Internacional/Financiacion%20internacional/Gestion%20Deuda%20Externa/Paginas/Ecuador.aspx)

<sup>22</sup> MDUV. (s.f.) **Programa de Soluciones Integrales de Agua Potable y Saneamiento (Canje de Deuda).** <http://www.habitatyvivienda.gob.ec/programa-de-soluciones-integrales-de-agua-potable-y-saneamiento-canje-de-deuda/>

<sup>23</sup> General Participation System (SGP): These resources correspond to the participation of local authorities (municipalities and departments), which are entitled to receive from the overall national resources. <http://www.dnp.gov.co/Programas/DesarrolloTerritorial/FinanzasP%C3%BAblicasTerritoriales/SistemaGeneraldeParticipaciones.aspx>

<sup>24</sup> Decree 3200 of 2008, creates Departmental Water plans (Annex 1). This decree is an initiative supported by the WB, to implement processes of centralization and modernization in water delivery services in the rural areas.

(CONPES, 2007). The Domestic Public Services Law<sup>25</sup> shows that water policies, and particularly the PDAs, allow alternative actions to market and privatization for the coordination and enforcement of community services as a solution to solve the issue of access to potable water and sanitation services. The PDAs create a favorable normative framework to encourage associations of PPP schemes for the improvement of water and sanitation services (Urrea and Cardenas, 2011).

Therefore, progress has been made in the articulation of resources and competencies among planning authorities (DNP), policy managers, the Deputy Ministry of Water of the Ministry of Housing (VMAG), territorial authorities (municipalities and departments), and service providers (water supply and sewerage companies). In the area of study, the government of Caldas is the manager of the PDA and has assigned *Agua de Manizales S.A E.S.P* as consultant manager of the PDA, in order to identify better conditions to provide quality and efficiency in the domestic services of potable water and basic sanitation<sup>26</sup>.

### 5.6.2. Ecuador

The WASH sector in Ecuador presented several problems in service provision such as low levels of coverage in rural areas; poor quality of service and efficiency; and a limited cost recovery and high level of dependence on financial transfers by the national and regional governments (FLACSO, MAE, PNUMA, 2008). Public policies in this sector are the responsibility of the Sub-Secretary of Drinking Water, Sanitation and Solid Waste (SAPSyRS) and the Sub-Secretary of the Ministry of Urban Development and Housing (MIDUVI in its Spanish acronym). However, there is no clear definition of roles and responsibilities between the various national, regional and municipal actors and institutions involved in water management. The institutional framework could benefit from the creation of an independent entity that manages WASH services (Latinosan, 2007). Stakeholders in this sector include the MIDUVI, SENAGUA, the Ministry of Public Health, and several governmental ministries at the national, provincial and municipal level. The 219 municipalities of the country (cantons and local governments) are responsible of the provision of sanitation services, either directly or through autonomous municipal companies.

WASH policies were modified in 2008 and since then are demand-based. Project beneficiaries are responsible for the construction and operation of the services, with technical and financial support from MIDUVI and international

---

<sup>25</sup>Law 142 of 1994 (*Ley de Servicios Públicos Domiciliarios*)

<sup>26</sup><http://www.pdacaldas.com.co/PDADECALDAS/tabid/440/Default.aspx> (Link consulted in 30 January, 2013)

donors, in which the government proceeds as a facilitator of processes and resources.

The later WASH policy focused on the promotion of UBSs, partially subsidized by MIDUVI programs, with the support of international donors and municipalities. In order to build or repair UBSs the community also contributes with labor and basic materials, as part of the subsidies program<sup>27</sup>. Under this approach, municipalities and communities will make informed decisions about technical and financial options and levels of service. Decision-making is decentralized, therefore municipalities and communities implement and co-finance the projects, and costs recovery is made through tariffs or the contributions of users, so assuring sustainability (Pearce-Oroz, 2011).

---

<sup>27</sup> For a new individual solution (USB) the municipality, the program and the MIDUVI provide support via a 70% subsidy, while the community provides the remaining 30%. The maximum amount for a new unit is USD450. Pearce-Oroz, Glenn. (2011). **Rural Water Supply and Sanitation Challenges in Latin America for the Next Decade**. Lessons from the “Cusco +10” International Seminar. <http://www.wsp.org/sites/wsp.org/files/publications/WSP-LAC-Rural-Water-Sanitation-Next-Decade.pdf>

## 5.7 Irrigation sector

**Table 7. Comparison of water policies on PES and BSM present in the irrigation sector**

	Colombia	Ecuador
Main regulations regarding PES or BSM for irrigation	<p>- Irrigation water user groups are organized at the municipal level. The system is financed through additional charges for water use. An example of these associations is present in the Cauca valley, through payments to conserve watersheds for irrigation water uses. Since its establishment, this scheme has led to the adoption of conservation measures for one million hectares of land. The system raises USD600,000 annually in revenues from water user fees.</p> <p>- Another example of implemented PES is the Coffee Ecological Foundation (<i>Fundación Ecológica Cafetera</i>), an NGO linked to cooperative associations of peasant coffee growers<sup>28</sup>. The Foundation contributes to social development processes in the region and its area of influence by actions, projects, education, research and capacity-building programs towards environmental management, sustainability and the well-being of peasants. As an example, during the year 2010 an agreement was reached on the construction of systems of septic wells for rural housing associated with cooperatives, preferably for those subscribed to the Sustainable Coffee Certification initiative (UTZ Certified, 4C, FLO, Rainforest).</p>	<p>- At present, water user associations (WUAs) (<i>Juntas de Aguas</i>), local governments and personnel from SENAGUA are working together with communities throughout the country to establish BSM schemes according to watershed conditions. One of the proposals has been to create a revised system of water use charges, building on the current system of minimal water charges, which would simultaneously create a rationality of water use, and a disciplined use of water by imposing higher charges for this scarce resource.</p>

Source: Authors (2012), Echevarría et al. (2002), and MAGAP (2011)

### 5.7.1. Colombia

In Colombia, irrigation policy relies on the FONAT law<sup>29</sup>, which organizes the sub-sector of land development and establishes its roles. Resources allocated to FONAT for the 2002-2010 period totaled \$1,164,561<sup>30</sup>, from this, 96,3% of the budget implementation was allocated by June 2010 through programs such as the “Analysis, Design and Construction of Irrigation and Drainage Districts Nationwide” initiative, which aims to finance all activities required to provide irrigation and/or drainage infrastructure, or improve existing infrastructure in those areas identified as priorities by the national government. In terms of funding, FINAGRO provides credit for investment in land improvement, construction, rehabilitation, complementation and expansion of the irrigation and drainage districts<sup>31</sup>. Since the FONAT law was issued, the private sector has

<sup>28</sup> On site interview; Legal representative, Mr. Mauricio Herrera on 01.11.2012

<sup>29</sup> FONAT- Law 41 of 1993.

<sup>30</sup> Colombian pesos.

<sup>31</sup> <https://www.finagro.com.co/>

financed approximately two-thirds of the irrigation systems and the remaining third corresponds to public investment<sup>32</sup>.

An example in Colombia of farmers associations is the Coffee Ecological Foundation that supports programs with 50% of the unit cost, cooperatives with 25% and the associated beneficiary with the last 25%<sup>33</sup>. Indeed, in Colombia much of the institutionalization of these markers relies on cooperatives rather than competition among service providers and coffee producers. In the case of Manizales, farmers and peasants are keen to support an organized cooperative that could provide a better quality of water service, as well as raising awareness for water conservation upstream and the maintenance of water services.

### **5.7.2. Ecuador**

In Ecuador, the construction, maintenance, and management of private irrigation systems and irrigated areas are responsibilities of the users and the WUA organizations that are formed by groups of farmers who have been granted legal rights to use the water of private canals (Bastidas, 1999). The National plan of irrigation and drainage, PNRD (2011 – 2026) contains guidelines and irrigation and drainage policies according to the Constitution, describing the actions from government bodies, and from a hierarchical perspective from the State to the local level. The main issues of the plan refer to the effect of conflicts between peasant and indigenous groups, demand for democratization and non-privatization of water included in the Constitution, along with community management of water and the water hoarding ban<sup>34</sup>.

The PNRD policy is to delegate organization and management responsibilities to irrigation associations and WUAs, as the former allocation of titles was chaotic and overlapped among users; moreover, government entities have historically failed to establish a clear allocation of scarce water resources (Vega et al, 2006).

## **5.8 Land tenure and property rights**

One of the key legal conditions to establish PES schemes is the definition of land tenure rights in the target areas. To benefit from payments for environmental services, local ecosystem managers need to have the right and authority to manage ecosystems. Unclear land tenure may lead to land-use disputes leading to cessation or disruption of activities. Depending on a country's legislation, property rights can be: public; private; communal; or openly accessible – i.e. not assigned to anyone. Property rights as such are

---

<sup>32</sup> Aquastat FAO-Colombia: [http://www.fao.org/nr/water/aquastat/countries\\_regions/colombia/indexesp.stm](http://www.fao.org/nr/water/aquastat/countries_regions/colombia/indexesp.stm)

<sup>33</sup> Manizales Coffee Farmers Cooperative (*Cooperativa de Caficultores de Manizales*): <http://www.cooperativamanizales.com/website/Seccion.aspx?Id=10>

<sup>34</sup> Art. 282 of the National Constitution of Ecuador

generally recognized by the constitution of a State and their specific conditions and characteristics are further laid out in the State's legislation (IUCN, 2009: 29).

A common source of conflicts for PES application related to property rights is the opposition between customary and statutory rights. Statutory law is established in the written or codified law of a country and depends on the governmental and institutional structure of a country, while customary law refers to traditional rules and norms (customs) that may prevail in certain countries at the local level and for specific groups of people, who have transferred such rights from generation to generation (IUCN, 2009: 31). According to IUCN (2009) conflicts are likely to arise where customary rules are not recognized by statutory law but applied in practice, especially if customary and statutory property rights differ from each other. Unclear property rights legislation and ambiguous property rights arrangements on the ground can also trigger conflicts over the implementation of PES schemes (IUCN, 2009: 31-32). Clear land tenure includes criteria such as type of land tenure, means of verifying land tenure, and likelihood of disputes or land tenure reform at an early stage. Evaluation of these criteria has to be adapted to local conditions (WWF, 2009).

### **5.8.1. Colombia**

In Colombia, the 1993 Constitution promotes private landownership, although it establishes that the individual landowner does not own the renewable natural resources found on the land or the ecosystem services produced by these resources (IUCN, 2009: 211). Given that natural resources are public goods belonging to the nation "the modalities for the acquisition of a right to use natural resources are 'by means of the law', concession, or permit" as granted by the environmental authorities. Consequently, the National Policy for the Management of Biodiversity and Ecosystem Services, instead of recommending purchase of environmental services, includes concepts of preservation, restoration and sustainable use among its main objectives. Collective rights important to take into account for PES transactions are traditional rights, including land property rights, of both indigenous and Afro-Colombian people. For instance, as indigenous reserves have their own legal systems and jurisdiction, PES schemes on indigenous lands must comply with the land use conditions and restrictions applied to the development plans of reserves (IUCN, 2009).

It is important to note that if property rights are unclear in a specific area, a PES initiative can help solve this problem. In fact, in the Procuencia case the project intermediary signed a contract with landowners who held a title, while

simultaneously initiating a process to help other landholders to properly register their titles.

### **5.8.2. Ecuador**

The Forestry Act of Ecuador does not permit the establishment of real property rights in protected areas (IUCN, 2011: 104) However, it is estimated that approximately 50% of forest territory in the country is subject to unresolved land tenure issues. Land tenure disputes arise from the lack of clarification of actual boundaries of protected forest areas and indigenous lands, which creates an overlap in management categories and unclear possession rights between the State and groups claiming customary rights (indigenous and ancestral peoples, farming communities and settlers) (USAID Ecuador, 2011). Extractive activities such as oil drilling and logging often take place on protected lands or communal settlements. In addition, the transfer of public forests to private parties was made possible by the law, leading to increased problems of land titles, credit, marketing, and tenure conflicts with the indigenous population (USAID-Ecuador, 2011: 14). As Stated by USAID-Ecuador (2011), this situation “creates disincentives for efficient management, and contributes to illegal timber harvesting [along with creating] obstacles to developing a framework for carbon rights trading in the future” (USAID-Ecuador, 2011: 15).

Data on land rights and ownership for Ecuador is limited. Based on the Agricultural and Livestock Development Law, MAG designed a mapping information system based on the natural potential of the land. INDA is in charge of implementing the Agrarian Development Law (*Ley de Desarrollo Agrario*) which deals with the legalization of land rights and tenure and the further development of agriculture. The first objective has not been totally accomplished: progress on mapping land uses. Rather than serving as a guide, current legal instruments have been a source of conflict and confusion (IUCN, 2011).

## 6. Institutional Framework

Law and policy create the general basis for the establishment and functioning of an institutional set up that supports PES; in particular the involvement and roles of public institutions are clarified.

The main purpose of institutions is to ensure the successful implementation of policy and law. Therefore, the effective and efficient implementation of a PES scheme requires an enabling institutional framework. Law and policy generally create the basis for the establishment and functioning of institutions at different levels. They determine the legal personality, powers and responsibilities of institutions, as well as their integration and collaboration within a framework of transparency, public participation, equity and legal certainty. PES-related law and policy may therefore: identify key State actors involved in PES transactions; clarify their functions and powers related to the development and management of PES schemes; set rules for the establishment and operation of specific PES institutions; and establish general administrative guidelines (IUCN, 2009: 37).

An overview of the institutional role and main functions in water governance shows a hierarchical form of such governance at national, provincial and municipal level, with unique features in each country. The response as to what administrative level is best to manage water and its services must be regulated and determined by each country, as both cases presented failures and successes with two main independent authorities working at the local level: the case of CARs in Colombia and SENAGUA in Ecuador is shown in the following table.

**Table 8. Comparison of institutional frameworks for water governance**

Country	Levels	National Responsibility	Province or State Responsibility	Watershed or River Basin Organizations
Colombia	National	The president, MASD, MinVivienda, DNP, MinSalud and MinHacienda and supported by (IDEAM, the CRA, the SSPD and FINDETER).	Deputation province	Regional Autonomous Corporation
Ecuador	National and Provinces	National secretary of water (SENAGUA)	Intendancy	Demarcation River Basin



## 6.1. Colombia

Water governance in Colombia is managed at national, regional and local level. At the national level, the Ministry of Environment and Sustainable Development (MASD) formulates national environmental and renewable natural resource (RNR) policies, according to the objectives and guidelines on territorial planning, environmental and sustainable development policies, and public services as defined by the National Planning Department (DPN).

MinVivienda has jurisdiction over territorial and urban development; and efficient and sustainable land usage and housing services, while the Ministry of Health and Social Protection (MinSalud) has a responsibility towards the population in ensuring that basic requirements are met for good health such as proper sanitation and access to clean drinking water. The Institute of Hydrology, Meteorology and Environmental Studies (IDEAM), manages knowledge, data and environmental information at the national level. The Regulatory Commission of Water and Sanitation (CRA) is responsible for regulating the provision of public services and WASH; and the Public Utility Super-intendancy (SSPD) is responsible for monitoring and surveillance of companies that provide basic electricity, gas, water, sewerage, garbage collection and disposal, as well as to protect the rights of consumers of those public utility services, and to enforce compliance of their obligations (Superservicios, 2008-2013). Furthermore, the Financial entity for Territorial Development, (*Financiera del Desarrollo Territorial* or FINDETER), a national corporation, funds investment initiatives that contributes to community development and promotes the country's growth: initiatives in water management such as WASH, electricity, and the environment are included in its portfolio (Findeter, 2013).

At the regional level, the CARs (public corporate entities with administrative and financial autonomy) are responsible for the development of Watershed Management Plans (POMCAs), irrigation, drainage, flood control, regulation of streams and waterways, land reclamation, and monitoring of water concessions subject to national water management policy and legislation. CARs make an important contribution to the territorial management plans (POT)<sup>35</sup>, which are jointly managed by the municipalities. In December 2011, an amendment regarding the reorganization of CARs was drafted: it proposed a reorganization of 32 CARs (currently operating under the jurisdiction of the 32 departments of Colombia) under 16 regional authorities. The regional responsibility would be divided more in accordance with the nature of the major water basins.

---

<sup>35</sup> Law 388 of 1997, establishes the need to formulate territorial management plans (POT), which focus the principles of decentralization and functions of the State.

Recently, the former MAVDT was broken up into two different entities: the MinVivienda and the MASD. Although these were created with the idea of decentralizing functions and providing more autonomy to plans and policies, several water law decrees and acts are scattered between both ministries according to their competence, which sometimes overlaps or produces loopholes of responsibility in the territory. The separation of the MAVDT is still ongoing and evaluated as positive from government and citizens<sup>36</sup> because it gives priority to budget allocation for environmental standards practices. The configuration of financial flows inside the environmental sector reinforces institutional disconnections inherent to the SINA structure, and these weaknesses can be seen in a similar manner between the national parks and the CARs. However, in recent years linkages have been enhanced as a result of integrated actions such as the construction of the Regional Systems of Protected Areas (SIRAP), and to a lesser extent in the participation of POMCAs (Newborne et al., 2010).

## 6.2 Ecuador

In Ecuador, environmental management is a shared responsibility among public institutions at the national, regional, provincial and local levels. IUCN (2009) lists the Ministries of the Environment, of Agriculture and Livestock, of Energy and Mining, of Urban Development and the Armed Forces as the main central institutions involved in the management of issues related to PES. Along with these institutions are the 22 provincial councils and 219 municipalities “which, according to the Constitutional Law (*Ley Orgánica*), are autonomous entities, able to establish the necessary regulations to control and manage land use based on the Constitution and laws” (IUCN, 2009: 99).

Currently, the main water authority at provincial and national level is SENAGUA, while the most important water unit at provincial level, managed through the intendancy, is the Demarcation River Basin, the latter maintaining watersheds and water infrastructure (Ramazotti, 2008). Plans and actions are implemented by municipalities with respect to watershed or river basin organizations, which receive financial resources for water projects from the central government.

The reform in water governance sector strengthens the inclusion of SENAGUA as the main water authority at national and provincial level, replacing the former National Water Resources Commission (CNRH). The CNRH Secretariat used to depend administratively on the Ministry of Agriculture and Livestock. It did not

---

<sup>36</sup> Interviews taken round 29 and 31 of October, Dutch Embassy, Maurice Van De Beers and Deputy Ministry of Water management and Basic Sanitation (MVCT), represented by Minister Ivan Mustafa.

have continuing work or obligations, and held one or two meetings per year to discuss financing and water budgeting by province<sup>37</sup>.

SENAGUA integrates principles of hierarchical models in which it not only has the task of formulating and governing water, but also incorporates systems for social participation and research in water management. The main objectives of SENAGUA include coordinating and conducting management of national water resources in a sustainable and integrated manner at basin level. The municipalities are responsible for the use of rivers and beaches, streams, riverbeds and slopes by neighboring cantons, and allocating the use of ocean beaches, lakes, rivers and the riverbeds of streams and slopes, for any business, industrial or agricultural activity. An exception exists for polluted waters that can only be used for agricultural purposes, prior to permission granted by the health authority. Municipalities allocate concessions of up to ten years, favoring companies that provide potable water supplies and environmental public services, including sewerage and sanitation to municipal companies or mixed economy companies<sup>38</sup>.

---

<sup>37</sup> Interview with Dr. Leonardo Velastegui, Regional Director SENAGUA, Tungurahua, Ecuador, November 8<sup>th</sup>, 2012.

<sup>38</sup> Article 13 of Municipal Organic Regime Law

## **7. Criteria on good water governance**

Public participation, transparency and access to information, certainty and accountability are recognized criteria of good governance that help to reinforce the rule of law and fight corruption (IUCN, 2009). Together these are vital elements of institutional arrangements for effective water governance. Ecuador incorporates a greater number of desired aspects than Colombia, although on reviewing characteristics of main PES and BSM at the local level, results are considered positive for both countries, although forms of management may differ.

### **7.1 Public participation**

Public participation in water management improves governance. It can also help to create networks of water arrangements, bringing dynamism as well as publicity to the water sector. Such participation generates trust and empowerment among stakeholders, and generates respect and support for the decision-making process (IUCN, 2009).

In project area activities in Colombia, PROCUENCA collaborates as a facilitator, providing technical assistance and applying resources to promote cropping activities, while landowners play an administrative role and are directly responsible for the process. Participation is made possible after a contract has been signed between a landowner and the Caldas Development Corporation (CDC), which acts as a participant and not as a manager. As compensation, PROCUENCA facilitates all production inputs. Resources are paid when they are requested for the landowners, according to their needs for developing a forestry management plan. The plan seeks to advise and motivate changes in the use of land (agriculture, livestock) for profitable activities with lesser environmental impacts, such as forestry projects.

In Ecuador, the FMPLPT has provided several alternatives and forms of participation. As mentioned, several indigenous groups are part of FMPLPT trust funds, though they do not provide the same percentage of money resources for the fund than the rest of the constituents (Tungurahua council, EMAPA, HIDROAGOYAN, HIDROPASTASA). However, they do have the same weight in terms of decision-making when they vote.

The management of cattle, hygiene, storage and marketing of dairy products (particularly milk) are activities related to a capacity-building component that demands public participation monitored and implemented by FMPLPT. The fund supports only part of the budget required for capacity-building activities, but hopefully it will rise to a 100% investment and for budget financing of milk

production projects<sup>39</sup>. Other projects in capacity building activities are supported by international cooperation agreements and independent organizations such as CESA and GIZ-FONAG.

For management plans in the moorland areas, the intervention of FMPLPT in Tungurahua is coordinated with the Unity of Indigenous movements and base organizations. Approximately 6,500 hectares have been set aside exclusively for the conservation of moorlands. With the initiative of FMPLPT, 2,200 families have received benefits involving socio- and economic-productive activities. Total investment stands at USD1,050 million, with FMPLPT providing USD250,000 (FMPLPT, 2012).

## 7.2 Transparency and access to information

Transparency means that business is carried out democratically rather than in a closed meeting. Hence, documentation is available to the public, meetings are open, public input is sought and taken into consideration (IUCN, 2009).

As reviewed, the information related to trust funds is more scattered in Manizales, Caldas than in Tungurahua, Ecuador. Although it is particularly difficult to estimate what levels of transparency are acceptable in Latin America, as public interest groups, political influences, and a lack of a free press are issues yet to be overcome in this continent. However, at least there is access to information that shows the budget spending for each year in the funds of PROCUENCA and FMPLPT.

In the case of PROCUENCA, the budget available for Infi-Manizales for the year 2012 totaled USD 627,000, 64% of which was used up (Infi-Manizales, s.f.). It is not clear how many activities and goals were achieved with the funds spent. However, it is of general knowledge that one of the initial objectives was the capture and storage of carbon dioxide (CO<sub>2</sub>) by planting trees. There is a component supported by the World Bank for the sale of carbon credits to consolidate the fund, so allowing it to be used for certification processes and carbon sales (GFC, 2008).

The FMPLPT presented a fund of USD460,000 for the 2011 budget plan, through which they co-financed ten moorland management programs. This was represented by 2500 families as economic beneficiaries of the fund, and another 1800 beneficiaries who received training. This fund took into account 25,000 hectares of moorland for conservation purposes.

---

<sup>39</sup> Interview of Oscar Rojas Bustamante, *Ibid*.

A problem found in both countries is the lack of information on the funds themselves. There is no information or clauses that define what can happen if adverse situations occur: robbery, corruption, or bankruptcy, among others. Furthermore, there is no open access to information related to rules and regulations of the personnel conditions, permits, duration of contracts, and the responsibilities and obligations of each member of the respective personnel.

In Ecuador another problem noted has been the rotation of staff members of the funds. For example, there was a recent change in FONAG involving the main secretariat, and the same situation occurred in the trust funds for water conservation in the Paute watershed (FONAPA) in Cuenca. This situation led to a lack of trust in the indigenous communities, as they had no valid and legitimated representation in FONAG. Trust funds are institutions that create a point of discussion between the communities and private water companies, and their personnel help to establish a dialogue and reach certain agreements. However, there was a stage where FONAG turned from being a mediation entity into a defense entity to the benefit of the EMAAPQ Water Company<sup>40</sup>. However, in Tungurahua the situation is different given that FMPLPT fully relies on its president, the Mayor of Tungurahua, Fernando Naranjo, who is a trusted leader. This fund is strong and involves the whole community in a very organized way, due to the fact that the biggest authority in the region chairs this fund. The question arises afterwards as to who will succeed this position, and how he or she will conduct the necessary leadership. This could represent uncertainty in the lifespan of the funds.

### **7.3 Certainty**

Certainty is an intangible element that is crucial to attracting non-governmental and private organizations to help with the work of water management. The higher the level of certainty for any given transaction, the greater is the willingness of stakeholders to participate. Without a clear sense of the rules and the expected outcomes, stakeholders are unlikely to commit their resources in order to work with government agencies. Certainty exists only when all the rules are Stated and duly followed, and all the consequences of not following the rules are understood and enforced (IUCN, 2009).

In Colombia there is a lack of certainty as all the regulations for the management of trust funds are dispersed. There is not a majority consensus or public agreement on where to invest the money generated by the funds after several years of taxpayer contributions (FAO, 2011). This lack of certainty has

---

<sup>40</sup> Interview with Pablo Lloret, Deputy Ministry of Irrigation and Drainage, Ministry of Agriculture, Livestock, Aquaculture and Fisheries; former General Secretariat of FONAG, 5 November 2012.

led to a lack of interest, leadership, political influence and finally, to a certain level of controversy as to how to spend the money accumulated (as in the case of Manizales in Colombia), as well as, what could be done for the creation of useful and profitable environmental services that will help to fight poverty and drive social development. However, the responsibilities by each actor and their respective funds are shown in Tables 9 and 10.

**Table 9. Administrative functions in PROCUENCA**

Infi-Manizales	Seller	FAO Technical assistance	Conditional transaction
<ul style="list-style-type: none"> <li>- Promoter of the initiative, which is a voluntary agreement.</li> <li>- Authorized by the Municipal council to use resources obtained from royalties received from water concessions of the water services provided by Aguas de Manizales SA ESP, used to finance this project.</li> </ul>	<ul style="list-style-type: none"> <li>- Proprietor and land leaseholder are responsible for administrative decision making and the good management of the fund.</li> </ul>	<ul style="list-style-type: none"> <li>- Management and administration of the project.</li> <li>- FAO is responsible for the provision of technical assistance services and the preparation of feasibility studies.</li> <li>- Assistance in various management, co-financing and investment.</li> </ul>	<ul style="list-style-type: none"> <li>- PROCUENCA partially participates in CO<sub>2</sub> capture services and property tax incentives exemptions.</li> <li>- Contracts with the beneficiaries of the project establish legal conditions, and verification of fulfillment of forest conservation agreements from the environmental authority in case of tax exemption.</li> </ul>

Source: Blanco (2008)

Furthermore, in Ecuador there are more instances where the government participates directly in the management, execution and decision-making of the actions inherent to the FMPLPT funds as shown below. The initial support of the government in FONAG in Quito was made possible through marketing and publicity of the possibilities of environmental services after receiving trust funds.

**Table 10. Administrative functions and bodies of FMPLPT**

<b>Trust board</b>	<b>Directorate</b>	<b>Technical Secretariat</b>	<b>Trustee</b>
<p>- Superior body of the funds. It proposes and approves policies, principles, and strategies to the directorate, technical secretariat and trustees in order to accomplish their goals.</p>	<p>- Is responsible for administrative decision making and the good management of the fund</p>	<p>-Operative administration of the fund that promotes the accomplishment of goals, executes the decisions of the directorate as well as the management of the program and projects, with own resources and from other sources</p>	<p>-Legal representation of the funds, is a specialist entity that manages the financial resources of the funds, based on the instructions of the technical secretariat and monitoring of the constituents</p>

Source: FMPLPT (2012)



## 7.4 Accountability

Water managers and decision makers should be accountable for the consequences of their actions. Transparency in decision making and contracting is vital to ensure accountability (IUCN, 2009).

In Colombia, PROCUENCA has incorporated Infi-Manizales as a consultancy business and accountants for the project. This organization offers credit with its own resources to the Municipality of Manizales, and its decentralized entities, public domiciliary service companies and societies where the Municipality has more than a 50% share of participation. The management of the portfolio of fixed income investments was agreed according to the guidelines of Decree 1525 of 2008<sup>41</sup>. Infi-Manizales also participates as a partner or shareholder in household utilities and limited partnerships and actions.

For its part, FMPLPT accountability establishes that its assets are allocated exclusively to financial investments, taking into account aspects of security, profitability and liquidity. Incomes can be used for the annual budget of the Technical Secretariat.

The Fund started with USD276,000 and a lifespan of 80 years. It is expected that this initial asset will grow with an average annual return of 6% in investments, plus special contributions made each year. Hence, this allowed the initial annual budget to rise to USD722,000 in 2011. The results of these funds are optimistic as a financial tool for the management of conservation plans of the ecosystems in moorland areas, particularly for the water conservation of the Ambato and Pastaza river basins and other watersheds in the province of Tungurahua. Associate activities such as training and environmental education (protection and improving water quality), and socioeconomic productive activities, have enhanced and improved the livelihoods of indigenous communities in Tungurahua.

---

<sup>41</sup> Decree 1525 of 2008, which dictates norms related to the investment of resources of State entities at national and territorial level.

## 8. Main Recommendations

The introduction of PES and BSM has improved rural livelihoods, reduced poverty and suggested multiple ideas on which compensation mechanisms can be applied in rural areas. Examples such as tributary compensations (for the conservation of moorlands), *sociobosque*, debt-swap and other types of payments, which were reviewed earlier, offer compensation to farmers on the part of companies or urban water users.

In both countries under study by the AN1 project, Colombia and Ecuador, current legislation indicates that water resources and their ecosystems are State owned and that water for human consumption has priority over other uses. However, development plans, legal provisions and institutional settings open different opportunities for the development of PES schemes, public or private, depending on the legal environment of the country.

Thus, in Colombia, the implementation of private PES deals with no public intervention is legally allowed as the State is not considered as the sole provider of environmental services, as opposed to Ecuador, where the Constitution establishes that all transactions on environmental services must be State-regulated.

Colombia presents several opportunities at the institutional level for designing and implementing innovative policy instruments. PES and BSM schemes find support in law, policies and regulations that define the need to establish economic and financial instruments by public and private actors to achieve objectives and environmental goals defined by the SINA. For instance, the amendment of Article 111 of the Environmental Act of 1993 opens the door for PES to act as a transversal political instrument in other sectors of the economy. Also, the recently adopted National Policy and Biodiversity and Ecosystem Services recognize the importance of ecosystem services for human life and social and economic development. The policy emphasizes the importance of proposing conservation measures that will ensure the provision of environmental services and develop instruments for their economic and non-economic valuation.

Other legal requirements, such as the obligation of the hydroelectric sector in Colombia to direct 6% of gross energy sales in retributive rates, represent a stable source of financing for PES initiatives managed by CARs. These regional-level institutions, endowed with administrative and financial autonomy, can facilitate the implementation of PES initiatives adapted to the specific conditions of the territory in a collaborative process with the community. However, the existence of an administrative entity located between the national

level (ministries and the executive) and the local level (municipalities) is likely to create additional confusion between the roles and responsibilities of political-administrative entities, as well as potential overlaps and gaps in the administration of natural resources. Another criticism that has commonly been formulated against the CARs is that their jurisdiction is based on the political division of the country, and not according to the location of the major hydrological basins, the reference unit for the elaboration of POMCAs. In response to this concern, in 2011 the Colombian government proposed to reorganize the structure of the CARs into 16 regional authorities, in accordance with the territorial location of the major hydrological basins, and to clarify their missions and responsibilities so they are more in line with national priorities and complement the work of the other SINA institutions.

In Ecuador, the political Constitution recognizes the right of people to benefit from the environment and natural resources, whereas the production, provision and exploitation of ecosystem services are regulated by the State. The development of PES initiatives is overseen by environmental institutions, as long as it is carried out in accordance with the basic principles of the Constitution and the National Plan for Good Living: that is, to implement an inclusive and sustainable social and economic system and guarantee the rights of nature.

However, it is still not clear how these constitutional dispositions and goals can be reconciled in practice, as there is legal uncertainty as to the status and further development of PES. For example, how can private funds be directed towards the compensation of environmental services taking into account the legal status of natural resources in the country? The development of PES mechanisms is allowed but at the same time hampered, as the State has remained the sole manager of ecosystem services, preventing any private initiative engagement.

At the institutional level, the creation of SENAGUA as the unique water authority may contribute to facilitating water management in Ecuador, although institutional authorities still have to address several problems of overlapping, lack of information on hydrological technical problems such as hydrologic stress, water demand and water concessions. A proper inventory database will solve several disagreements related to this matter. It is expected this process will take an extended time and should be supported by the new national water law.

From the point of view of the project's objectives, stronger requirements are necessary in both countries to create conditions and opportunities for social development based on ecosystem services that could fight poverty at the local level.

One of the main objectives of the AN1 project is to reduce poverty and improve living conditions of the rural poor in the Andes, by implementing sustainable models of water and land use that increase agricultural productivity. The review of the main PES-related legislation and policies indicates that neither Colombia nor Ecuador has an institutional and legal framework that establishes poverty reduction as a mandatory objective of PES initiatives. In the case of private PES schemes, the impacts on poverty reduction come from the social benefits directly or indirectly derived from the implementation of PES mechanisms. The design of public PES schemes, on the other hand, is expected to include proactive measures for improving the quality of life of the participants or the population in the area of implementation. The lack of legal requirements for this matter makes the social impacts of PES rather arbitrary or context-dependent. That being said, criteria such as the disposition of the Ecuadorian Constitution on “Planning national development, eliminating poverty, and promoting sustainable development and the equitable redistribution of resources and wealth (...)” and the definition of natural resources as a valuable asset to improve the quality of life of the Colombian population in the National Policy on Biodiversity and Ecosystem Services, open the door to a larger consideration of social impacts in the design of PES mechanisms.

Stronger institutional guidelines on the use of tools and mechanisms to estimate the economic value of ecosystem services would facilitate the implementation of PES schemes that produce positive externalities for the poor. The status of natural resources as public goods of open access to the population appears to be contradictory with the establishment of an economic price on said resources, although recognition, in both countries, of the obligation to protect natural resources and apply sustainable criteria to their use, might constitute a legal basis for putting a price on scarce goods. Institutional guidelines for the valuation of ecosystem services have been designed by the Colombian and Ecuadorian governments. Monitoring of their future application will allow for the evaluation of how public authorities reconcile the right of populations to access and benefit from natural resources, with the inherent right of nature to “exist, persist, maintain and regenerate its vital life cycles” (as recognized in the Ecuadorian Constitution), or the emphasis placed on the notion of the harmonious development of humans and renewable natural resources, a fundamental basis for the well-being of present and future generations (Law 99 of 1993, Colombia).

The successful implementation of PES mechanisms requires the use of incentives that will ensure participation in the scheme and compliance with the environmental protection and social objectives of the initiative. Mechanisms such as FONAG in Ecuador, and Forest CIF Certificates in Colombia, provide incentives to landowners and local communities to use conservation practices

to ensure forest conservation and water quantity and quality. However, it is important to differentiate economic incentives directed to production increases, such as financial support for palm oil producers and the mining industry in Colombia, and other incentives focused on environmental conservation. Both governments have committed to integrate other criteria apart from production levels for the design of incentive programs: in Ecuador, the definition of incentives will consider issues of conservation, sustainability, and technical assistance, and in Colombia, the National Policy and Biodiversity and Ecosystem Services establishes the need to focus initiatives mechanisms in line with the Target 3 of the Aichi goals: “[...] positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions” (Convention on Biological Diversity, 2012).

Public consultation and participation is also fundamental in the implementation of PES schemes, as the use and marketing of natural resources often clash with local communities and indigenous groups’ traditional use of land and customary rights over it. Public participation is higher in Tungurahua. This process has become intensified as Ecuador has experienced important institutional changes and established several support organizations that encourage participation, responding to the needs of the communities. In Colombia, public participation can be observed at the local level. CARs are responsible for organizing capacity building and providing technical assistance to the communities, although PES and BSM are considered independent collective initiatives. As highlighted in numerous examples such as Fundación Ecológica Cafetera, PROCUENCA, and government resources targeting poor families, among others, PES and BSM schemes should be redesigned to reduce transaction costs and empower communities to make their own decisions on investments in accordance with their most pressing needs (landslide prevention, artificial recharging of aquifers, investment in business project initiatives for the poor).

Finally, the swapping of about 10 million hectares in the high Andes by the AN1 project team also revealed the need to create mechanisms to strategically identify sites for the production of positive externalities from changes in water and land uses strong enough to incentivize and ensure participation in PES schemes over time. Therefore, a comprehensive policy on ecosystem services should provide guidelines on how to clearly identify a water-related product that will be beneficial for all parties. For example, how to measure the externalities created by a positive water balance that will benefit the water users and create economic and social impacts that will make the poor better off.

## 9. Bibliography

Acosta, Alberto. (2013). **Why Ecuador's president has failed the country over Yasuní-ITT.** *The Guardian*. 4 September.

<http://www.theguardian.com/global-development/2013/sep/04/ecuador-president-failed-country-yasuni-itt>

Bastidas, E.P. (1999). **Gender issues and women's participation in irrigated agriculture: The case of two private irrigation canals in Carchi, Ecuador.** International Water Management Institute (IWMI) Research Report, 31. Colombo, Sri Lanka.

Blanco, J. (2008). **Integrated Water Resource Management in Colombia: Paralysis by Analysis?** International Journal of Water Resources Development 24:1 (91-101).

Blanco et al. (2010). **Estado de la política sobre servicios ambientales hidrológicos en los Andes**, 91-191. In Quintero, Marcela. 2010. "Servicios Ambientales Hidrológicos en la Región Andina". CONDESAN e Instituto de Estudios Peruanos, Lima.

Blackman, Allen et al. (2005). **Assessment of Colombia's National Environmental System (SINA).** Resources for the Future, October.

BSR (Business for Social Responsibility). 2007. **The New Markets for Environmental Services: A Corporate Manager's Guide to Trading in Air, Climate, Water and Biodiversity Assets.**

Celleri, Rolando. 2010. **Estado del conocimiento técnico científico sobre los servicios ambientales hidrológicos generados en los Andes**, 25-46. In Quintero. 2010. "Servicios Ambientales Hidrológicos en la Región Andina". CONDESAN e Instituto de Estudios Peruanos, Lima.

**Constitution of the Republic of Ecuador.** (2008). <http://pdba.georgetown.edu/Constitutions/Ecuador/english08.html>

**Constitution of the Republic of Colombia.** (1991). <http://pdba.georgetown.edu/Constitutions/Colombia/colombia91.pdf>

Convention on Biological Diversity. 2012. Aichi Biodiversity Targets. <http://www.cbd.int/sp/targets/>

CNRH (2006). **Gestión integral de los recursos hídricos del Ecuador: información básica.** Consejo Nacional de Recursos Hídricos. Quito, Ecuador.

De Bievre, Bert. (2013). **Mecanismos para compartir beneficios en cuencas hidrográficas.** Cuencas andinas – CONDESAN. <http://www.condesan.org/portal/novedades/presentando-nuestra-experiencia-sobre-mecanismos-para-compartir-beneficios-en-las-cuencas-de-los>

De Koning, F. Aguiñaga, M., Bravo, M., et al. (2011). **Bridging the gap between forest conservation and poverty alleviation: the Ecuadorian Socio Bosque program.** Environmental Science & Policy. 14: 531-542.

DNP. (2011). **National Development Plan 2011-2014.** Departamento Nacional de Planeación. Bogotá, D.C., Colombia. <http://www.irc.gov.co/irc/en/fiscalinformation/National%20Development%20Plan%202011-2014.pdf>

Echevarría, M., Vogel, J., Albán, M. and Meneses F. (2002). **The Impacts of payments for watershed services in Ecuador: Emerging lessons from Pimampiro and Cuenca in Ecuador.** Environmental economics programme. International Institute for Environment and Development (IIED), London.

Escobar, Germán and Rubén Darío Estrada. 2011. **Diversity of Water-Based Benefits in the High Andes Range.** Working Paper n° 1. Project On designing and implementing benefit-sharing mechanisms. RIMISP, Santiago, Chile.

El Universo. (2010). **Indígenas se movilizan por el debate final de Ley de Aguas.** *El Universo*, 3 de mayo. <http://www.eluniverso.com/2010/05/04/1/1355/indigenas-movilizan-debate-final-ley-aguas.html>

Fertl, Duroyan. (2009). **Ecuador: Indigenous, Government Clash over Mining.** <http://www.greenleft.org.au/node/42535>

Findeter. 2013. ¿Quiénes somos? [http://www.findeter.gov.co/publicaciones/quienes\\_somos\\_pub](http://www.findeter.gov.co/publicaciones/quienes_somos_pub)

FMPLPT. (2012). **Gestión 2009 – 2011 Los primeros pasos.** Fondo de Paramos Tungurahua y Lucha Contra la Pobreza. Ambato, Ecuador.

GWP. (2000). **Integrated Water Resources Management.** Global Water Partnership. Background Papers Series. Global Water Partnership – Technical Advisory Committee (TAC), Stockholm, Sweden.

GWP. (2003) Colom de Morán, E., Ballesteros, M. **Gobernabilidad eficaz del agua: acciones conjuntas en Centro América.** Global Water Partnership.

GWP and INBO. (2009). **A Handbook for Integrated Water Resources Management in Basins.** Global Water Partnership and the International Network of Basin Organizations. Stockholm, Sweden.

IUCN. (2009). **Payments for Ecosystem Services. Legal and Institutional Frameworks.** International Union for Conservation of Nature and Natural Resources. Greiber, T. (Ed). Gland, Switzerland.

IUCN. (2011). **Governance of Ecosystem Services: Lessons Learned from Cameroon, China, Costa Rica, and Ecuador.** International Union for the Conservation of Nature, Thomas Greiber and Simone Schiele, eds. Environmental Policy and Law Paper No. 79, Gland, Switzerland.

La Estrella. (2012). **Correa: Ecuador exportaría energía eléctrica en 2016.** La Estrella. 28 de julio. <http://www.laestrella.com.pa/online/noticias/2012/07/28/correa-ecuador-exportaria-energia-electrica-en-2016.asp>

Latinosan. (2007). **Latin American Sanitation Conference: Report about Ecuador.** [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/08/31/00425962\\_20120831123443/Rendered/INDEX/722200WP0Box370114B00PUBLIC00LatiINGLES.txt](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/08/31/00425962_20120831123443/Rendered/INDEX/722200WP0Box370114B00PUBLIC00LatiINGLES.txt)

MADS. (2012). **Política Nacional para la gestión Integral de la Biodiversidad y sus Servicios Ecosistémicos.** Ministerio de Ambiente y Desarrollo Sostenible. República de Colombia.

MAGAP (2011) **Plan Nacional de Riego y Drenaje (2011-2026) (PNRD).** Ministerio de Agricultura, Ganadería, Acuacultura y Pesca. Subsecretaría de Riego y Drenaje. Quito, Ecuador.

MAE. (2010). **Planificación estratégica Ministerio del Ambiente – Coordinación general de planificación, 2010-2014.** <http://www.ambiente.gob.ec/wp-content/uploads/downloads/2012/07/Plan-estrategico-MAE-2012.pdf>

MAVDT. (2010). **Política Nacional para la Gestión Integral del Recurso Hídrico.** Ministerio de Ambiente, Vivienda y Desarrollo Territorial, Vice-ministerio de Ambiente, República de Colombia.

MoreanoVenegaso, Melissa. (2012). **Socio Bosque y el capitalismo verde.** <http://lalineadefuego.info/2012/09/04/socio-bosque-y-el-capitalismo-verde-por-melissa-moreano-venegaso/>

National Assembly of Ecuador. 2009. **Mining Law, Article 93. Royalties on Mineral Exploitation.** Quito. January 29. [http://www.mineriaecuador.com/download/ley\\_mineriaec.pdf](http://www.mineriaecuador.com/download/ley_mineriaec.pdf)



National Assembly of Ecuador. (2012). **Proyecto de ley orgánico de recursos hídricos, uso y aprovechamiento del agua**.<http://es.scribd.com/doc/109613458/Proyecto-de-Ley-Organica-De-Recursos-Hidricos-Usos-y-Aprovechamiento-del-Agua>

National Assembly of Ecuador. (2013). **Estrategia nacional de biodiversidad 2013-2014 se orienta en 4 ejes: Viceministra de Ambiente**. 24 de julio. <http://www.asambleanacional.gov.ec/2013072410301/estrategia-nacional-de-biodiversidad-2013-2020-se-orienta-en-4-ejes-viceministra-de-ambiente.html>

Newborne P., Martínez Zuleta C., and Rudas Lleras G. (2010).**Revisión del Enfoque Sectorial en el sector ambiental en Colombia (2007-2010)**. Informe de la misión de revisión encargada por la Embajada Real de los Países Bajos en Bogotá. Overseas Development Institute (ODI), UK.

OAS. (2006). **Markets for Environmental Services**. Department of Sustainable Development. Organization of American States<http://www.oas.org/dsd/PES/Markets.htm>

Ocampo, Francisco Ignacio. 2006. **Proyecto forestal para la Cuenca del río Chinchiná – Procuena**. Taller internacional sobre gestión del riesgo a nivel local: El caso de Manizales, Colombia. [http://idea.manizales.unal.edu.co/gestion\\_riesgos/descargas/gestion/Procuena.pdf](http://idea.manizales.unal.edu.co/gestion_riesgos/descargas/gestion/Procuena.pdf)

Ortíz, Gonzalo. (2010). **Mucho en juego con la ley del agua en Ecuador**. Inter PressService. 19 de mayo. <http://www.ipsnoticias.net/2010/05/mucho-en-juego-con-la-ley-del-agua-en-ecuador/>

Pagiola et al. (2005). **Can Payments for Environmental Services Help Reduce Poverty? An exploration of the Issues and the Evidence to Date from Latin America**. *WorldDevelopment*, Vol. 33, No. 2: 237-253.

Pearce-Oroz, G. (2011).**Los desafíos del agua y saneamiento rural en América Latina para la próxima década. Lecciones del seminario internacional**. Cusco+10, Programa de Agua y Saneamiento (WSP). Banco Mundial (WB), Lima, Perú.

Quintero, Marcela. (2010). **Una visión integral del estado del arte sobre los servicios ambientales hidrológicos en Los Andes**, 193-218. In Quintero, Marcela. 2010. “Servicios Ambientales Hidrológicos en la Región Andina”.CONDESAN e Instituto de Estudios Peruanos, Lima.

Rawe, Sophie. (2013). **Yasuní-ITT: A Failed Initiative to Change History**. The Argentina Independent. 4

September. <http://www.argentinaindependent.com/socialissues/yasuni-itt-a-failed-initiative-to-change-history/>

SENPLADES. (2007). **Plan Nacional de Desarrollo (2007 – 2010): Agua y Saneamiento**. Secretaría Nacional de Planificación y Desarrollo, Quito, Ecuador.

SENPLADES. (2009). **National Plan of Good Living, Strategies for the (2009 – 2013) period**. Secretaría Nacional de Planificación y Desarrollo. <http://plan2009.senplades.gob.ec/web/en/strategies>

Superservicios. (2008-2013). **What is the Public Utility Superintendency?** Superintendencia de Servicios Públicos Domiciliarios. <http://www.superservicios.gov.co/home/web/guest/english>

Southgate, Douglas and Sven Wunder. (2007). **Paying for Watershed Services in Latin America: A Review of Current Initiatives**. Sustainable Agriculture and Natural Resource Management Collaborative Support Program (SANREM CRSP), Office of International Research, Education, and Development Virginia Tech. Working Paper No. 07-07.

UNDP. (2008). **Conflict Resolution and Negotiation Skills for Integrated Water Resources Management**. United Nations Development Programme. Training Manual, July 2008. <http://www.cap-net.org/sites/cap-net.org/files/Conflict%20Manual%20Final%20170908.pdf>

UNDP. (2009). **Programa Gobernabilidad del sector agua y saneamiento en el Ecuador en el marco de los Objetivos de Desarrollo del Milenio (ODM)**. United Nations Development Programme. Quito, Ecuador.

UNDP. (2013). **What is Water Governance?** United Nations Development Programme. <http://www.watergovernance.org/whatiswatergovernance>

Urrea D., and Cárdenas A. (2011). **Aguas sin planes ni dueños: Política de privatización y procesos de resistencia en Colombia**. CENSAT Agua Viva - Amigos de la Tierra Colombia.

USAID-Ecuador (2011) **USAID country profile, Property rights and resource governance, Ecuador**. Land tenure and Property rights portal. <http://usaidlandtenure.net/ecuador>

Vega J. et al. (2006). **Payments for Watershed Services: An Application to Irrigation Pricing in the El Angel Watershed, Carchi, Ecuador**. Contributed paper prepared for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia.

The World Bank (2009) Report No: ICR00001199. **Implementation completion and results report (ibrd-74010) on an adaptable program loan in the amount of us\$48.0 million to the republic of Ecuador for a rural and small towns water supply and sanitation project (PRAGUAS) in support to the second phase of the rural and small towns water supply and sanitation program.** Sustainable Development Department Bolivia, Ecuador, Peru and Venezuela Country Management, Unit Latin America and the Caribbean Region.

Wunder, Sven. (2005). **Payments for Environmental Services: Some Nuts and Bolts.** Center for International Forestry Research. Occasional Paper No. 42.

Wunder, Sven. (2007). **The Efficiency of Payments for Environmental Services in Tropical Conservation.** Conservation Biology. 21: 48-58.

WWF. 2010. **Payments for Ecosystem Services – Literature review: A Review of Lessons Learned, and a Framework for assessing PES Feasibility.** BioClimate Research and Development.