

COSTA RICA - INTRODUCING WATER USE CHARGES TO PAY FOR ENVIRONMENTAL SERVICES CASE #1

This case describes the introduction of an environmental charge on water users with the aim of protecting forest covers and hence water resources.

ABSTRACT

This case describes the process, and presents the main problems faced in levying, collecting and distributing funds from the water sector (hydro electricity and water users) for use in protection of the environmental services. In the framework of laws that allow for payment for environmental services, Costa Rica has introduced several cases of pricing water to pay for services provided by forests in watershed areas. The first catchment programs financed through cost recovery were started in 2002. As a result, Costa Rica's watershed owners, both public and private, are beginning to be rewarded for providing water, whether for drinking or for generating electricity. The problem now is to ensure that these rewards are indeed spent in the catchments, to maintain environmental services.

Importance for IWRM

This case is one of the few, if not the only example of a country recognizing the importance of its forests in providing environmental services, including water catchment protection and recovery of the water resources.

The water charge recognizes the value of water to the communities from which it comes; compensating them with a charge levied on downstream users. The introduction of the charge reflects a shift towards the implementation of the principle of water as an economic good.

Main tools used

- C7.2 Pollution and environmental charges
- A2.3 Reform of existing legislation

MAIN TEXT

1 Background and problems

Originally, the function of the forest in protecting water catchment areas was not well understood, and often measures taken to reduce deforestation had unintended consequences for water resources. At the same time, until 1995-96 water was regarded as a public good, and hence virtually free and unlimited.

In 1996, the new Forestry Law (N° 7575) was published and some progress was achieved. For example, in that year only 7,000 hectares were deforested whereas the area planted with new forests was 21,738 hectares (see Figure 1.) Moreover, in 1996 Costa Rica had successfully sold its first 200,000 tons of carbon emission reduction credits to Norway for \$10 per ton of carbon. However, because of the lack of integrated water management policies, the population did not have enough water available to meet the population's needs although there was enough water in the country. Even though 95% of the population received water in their households, only 71% had access to safe water. Moreover, up until 1995-96 water as an input was valued as a public good: free and unlimited. Finally, in a study by the Economic Commission for Latin America (ECLA, 1995) the authors referred to a divorce between the economic and the environmental policies. As a result, the government looked for an improvement in the economic valuation of natural resources. Water was mentioned as a good example of leaving aside the concept of sustainability in the resource valuation because water fees did not consider production and depreciation costs of the resource, which means protecting the water production areas and maintaining the quality of the resource.

In 1997, the program of payments for environmental services officially started. Its funds come in part from one third of the fuel tax—according to article 69 of Forestry Law N°7575. However, the Ministry of Finance, citing a fiscal crisis, did not disburse the corresponding

amount for that year (approximately 7,000 million colones or US\$ 35 million). The other source of funds comes from selling emission reduction credits. Towards the end of 1997, FUNDECOR, FONAFIFO¹ and a private hydroelectric company signed an agreement stating that the company would pay for the protection and conservation of the forests in the watershed that supplies the hydroelectric project. The agreement, although small in magnitude, sets a precedent for voluntary accords with private companies for payment of environmental services.

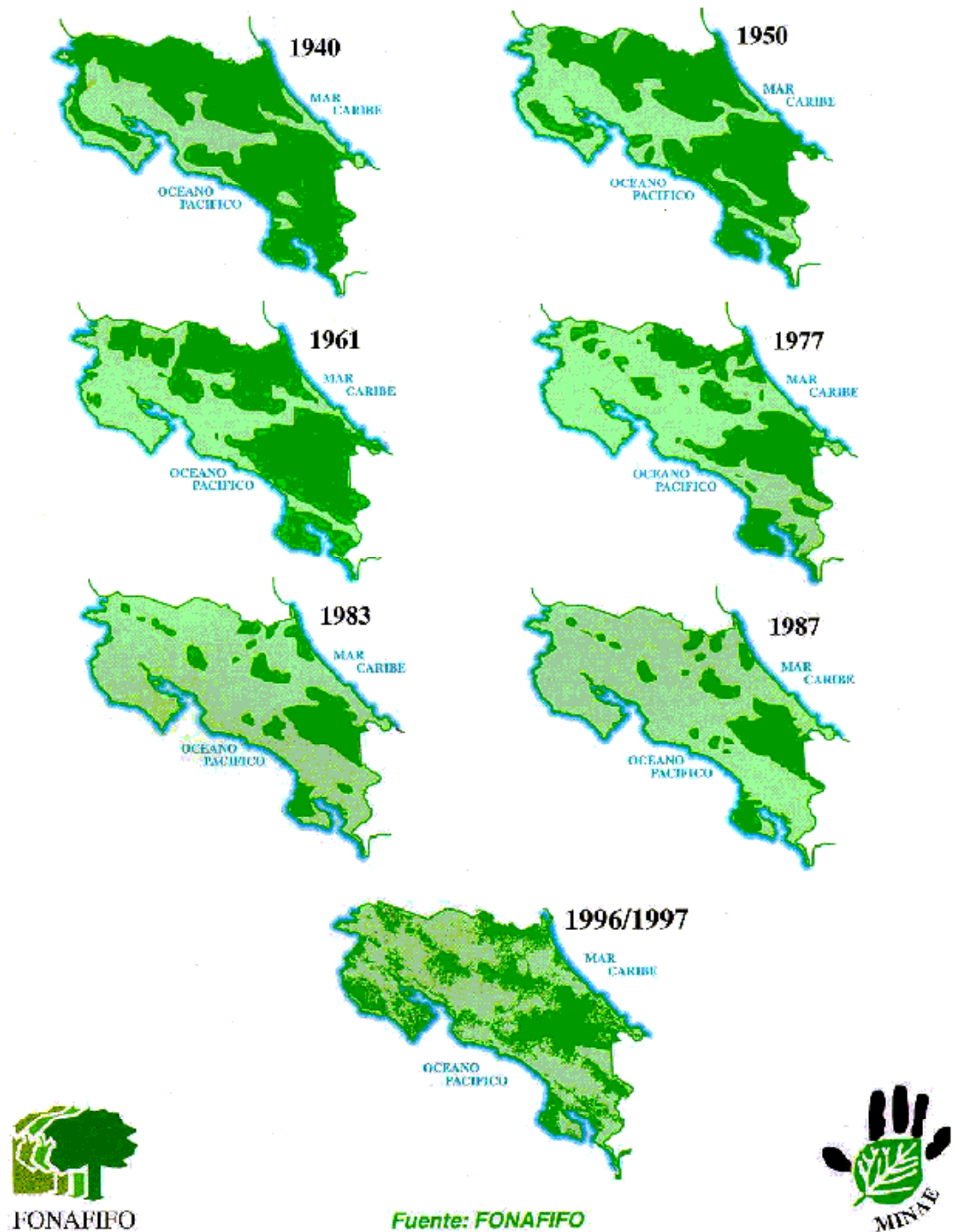


Figure 1 Diminishing forest cover in Costa Rica

¹ FUNDECOR: Central Volcanic Mountains Foundation.
FONAFIFO: National Fund for Forestry Financing.

Current Costa Rican current legislation (decrees, regulations, or directives) includes provisions requesting water undertakings (concessionaires) to mitigate, recover, or compensate for any damage to the water sources. In framing this legislation, a number of studies were commissioned to identify the main problems and institutional weaknesses surrounding the provision of environmental services, including how they can appropriately be quantified and valued in both economic and ecological terms.

In 1996, the Costa Rican Congress approved a new forestry law (#7575) that included the establishment of payment for environmental services provided by the natural forest and by forest plantations. It originally focused on the reduction of carbon emissions. The funds for the environmental services payments came from a fuel tax and from selling emission reduction credits (e.g. to Norway in 1996). This paved the way for the introduction of an environmental charge, as described below.

2 Decisions and actions taken

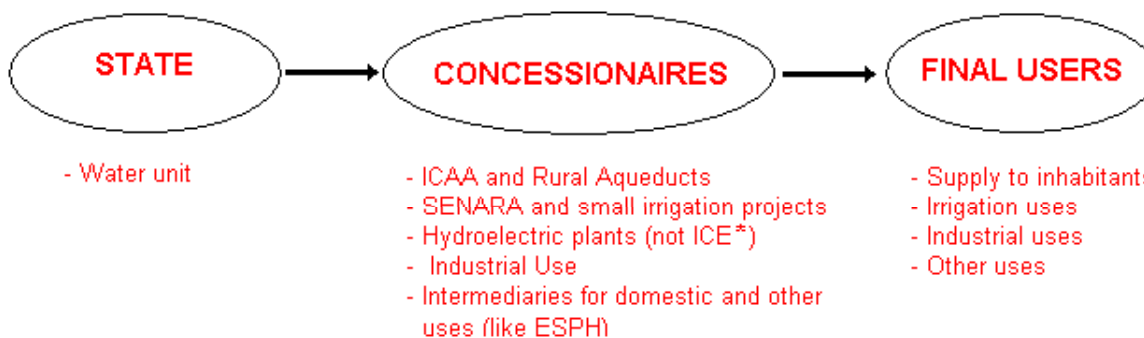
During 1998, the management and conservation of natural resources had both improvements and drawbacks. Among the improvements were the publication of the Principles, Criteria, and Indicators for Managing the Forest, the Forestry Certification Program, and the National Strategy for Forestry Fires. Moreover, external forestry audits began for those with management programs and logging permits in the conservation areas, in order to improve control and transparency in these processes. Among the drawbacks were a 50% reduction in the forestry areas operating under the preservation program, through the payment of environmental services and an 11% reduction of the area with new forest plantations (compared to 1997). An important effort—that resulted from the National Concord Forum—was the submission of a bill for valuation and reimbursement for environmental services. Even though the Costa Rican legislation identified four environmental services that may be compensated, the mechanism that prevails in the country is primarily based on forestry criteria, which do not guarantee the protection of strategic water catchment areas.

Nevertheless, the approval of the Biodiversity Law N°7788 authorized SINAC to charge consumers a rate (added to their water fee) for the concept of the environmental services received. One result of the program of payments for environmental services is that currently Costa Rica's watershed owners, both public and private, are beginning to be rewarded for providing water, whether for drinking or for generating electricity. In addition, the Utility Company of Heredia (ESPH) presented a proposal to the regulatory agency (ARESEP) and was the first to obtain approval for a water fee that includes a small amount to be used to protect watersheds and recover degraded river basins.

Towards the end of 1997, FUNDECOR, FONAFIFO² and a private hydroelectric company signed an agreement stating that the company would pay for the protection and conservation of the forests in the watershed that supplies the hydroelectric project. The payment for environmental services started with these funds and includes payments equivalent to US\$ 600 per hectare per year (over five years) for the establishment of forest plantation and US\$ 225/ha./yr. for forest protection. For the period 1997-2000 the "Payment for Environmental Services Program" paid for approximately 250,000hectares (which is some five percent of the country's total area).

² FUNDECOR: Central Volcanic Mountains Foundation. (Fundación de la Cordillera Volcánica Central).

FONAFIFO: National Fund for Forestry Financing. (Fondo Nacional de Financiamiento Forestal).



In 1996, the Regulatory Agency for Public Services law #7593 allowed environmental considerations to be included in water fees charged to the users. These fees were to be approved by the regulatory agency ARESEP (Autoridad Reguladora de los Servicios Públicos).

In 1999 the Utility Company of Heredia (Empresa de Servicios Públicos de Heredia S.A.-- ESPH) presented a proposal to the regulatory agency ARESEP and was the first to obtain approval for a water fee that included a small portion to be used to protect watersheds and recover degraded river basins (see exhibit 1). After considerable debate the amount approved for this environmental component was $\text{¢}1.90 / \text{m}^3$ (US\$0.00543 / m^3)³. The amount proposed was $\text{¢}20.83 / \text{m}^3$ (\$0.0595/ m^3). For example, a person consuming 25 m^3 would pay $\text{¢}47.50$ (\$0.1357) for environmental services, which is about 2 percent of the total payment for water services.

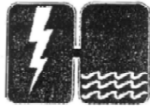
Nº DE CLIENTE	00010168	Empresa de Servicios Públicos de Heredia S.A.		
Nº DE MEDIDOR	8439	Rec. #	936	
LOCALIZACION	04-72-5742	AGUA		
BENAVIDES HERNANDEZ CRISANT				
C 5 7 AV 1 APARTAMENTO 1				
DESCRIPCION DE TARIFA	LECTURA ACTUAL	LECTURA ANTERIOR	CONSUMO D'ARIC M ³	CONSUMO M ³
DOMICILIARIA	869	844		25
FACTURACION				
CODIGO	DETALLE	IMPORTE	HISTORIAL DE CONSUMO M ³	
1	IMP. ACUEDUCTO	1.640.50	MES	AÑO
09	TARIFA HIDRICA	47.50	11	2000
2	ALCANTARILLADO	711.00	12	2000
			01	2001
			02	2001
			03	2001
			MES AL COBRO	
			04-2001	
MESES PENDIENTES		TOTAL A PAGAR	2,399.00	CARGO POR MORA
				48.00
FACTURACION ACTUAL	FACTURACION ANTERIOR	DIAS FACTURADOS	PROXIMA FACTURACION	VENCE
23/04/2001				23/05/2001
OBSERVACIONES				
PAGO EN CAJA EXTERNA HASTA EL 02-06-2001				
* 23 MAY 2001 *				
SUPER GIGANTE # 8				

Figure 2 Receipt showing the amount charged to protect water resources ⁴

³ I used an exchange rate of $\text{¢}350/\text{US\$}$, which prevailed on March 30, 2002.

⁴ Observe that for a consumption of 25 m^3 the consumer will pay $\text{¢}47.50$ (\$0.1357 at exchange rate $\text{¢}350/\text{US\$}$) for environmental services, which is equivalent to $\text{¢}1.90 / \text{m}^3$ (\$0.00543 / m^3). You can see “tarifa hídrica” is near 2% of total pay

By March 2002, ESPH had collected somewhat over Colones 150,000 (US\$440) for the environmental component. This is much lower than the equivalent that FONAFIFO collects for environmental services (approximately US\$6,700 per month) but the ESPH payment process has started only recently and at the time of writing only two payments have been made.

The price that the consumer currently pays for the water service includes the mean cost that the water undertaking pays to gather, make potable, transport, and distribute the water. It also includes a fixed service charge, a variable charge based on consumption, and a sometimes variable charge for sewage treatment (see exhibit 3).

Emphasis on Forestry

Even though the Costa Rican legislation identified four environmental services for potential compensation, the mechanism that prevails in the country is primarily based on forestry criteria, which do not guarantee the protection of water for domestic and industrial use, irrigation, hydroelectricity, tourism, or other uses. The funds to pay for environmental services come in part from 3.7% of the fuel tax, and in part from selling emission reduction credits and voluntary agreements.

Table 1 ICAA: Metropolitan Area Services, Monthly prices in US\$ *

Block m ³	Unit of measure	Residential	Ordinary	Reproductive	Preferential	Government
0-15	\$	3.93	14.12	21.90	6.08	6.08
16-25	\$/ m ³	0.30	0.83	1.31	0.32	0.32
26-40	\$/ m ³	0.31	0.83	1.31	0.32	0.32
41-60	\$/ m ³	0.51	0.83	1.31	0.32	0.32
61-80	\$/ m ³	0.67	0.83	1.31	0.32	0.32
81-100	\$/ m ³	0.67	0.83	1.31	0.32	0.32
101-120	\$/ m ³	0.67	0.83	1.31	0.32	0.32
120 & more	\$/ m ³	0.67	0.83	1.31	0.32	0.32

Using an exchange rate of ¢350/1US\$
Source: Official Newspaper: Diario Oficial La Gaceta N° 34, 16 de febrero de 2001

3 Outcomes

It should be noted that SINAC has been allowed to levy a charge for environmental services, to be added to water users' bills, and that environmental considerations may be included in the estimation of water charges levied for different uses of the resources.⁵

Payment for environmental services may come from two sources: (a) the water providers and those who use water as an intermediate good, and (b) the end users. Among the providers are the municipalities, ESPH: the Public Utility of Heredia, SENARA: the Irrigation National Service (Servicio Nacional de Aguas, Riego y Avenamiento) and similar organizations.(see exhibit 4). The regulations concerning environmental services must be presented to the Attorney General for approval, to ensure that profits are not being made from water charges. Three pilot projects have begun. In each the hydroelectric companies pay upstream landowners between US\$10 and \$40 per hectare per year to preserve and improve catchment management in the upper watershed. Specifically:

⁵ Referring to water pricing, the approval of the Biodiversity Law N°7788 authorized SINAC⁵ to charge consumers a rate (added to their water bill) for the concept of the environmental services received. Initially, from 1948 to 1998, the former regulatory agency was in charge both of approving permits to exploit water resources and setting prices at each level of consumption. It is important to mention that the Law on the Regulatory Agency for Public Services (N° 7593, 1996) allows environmental considerations (values) to be included in the estimation of water fees to be charged for the different uses of the resource

- a. Energía Global has been paying FONAFIFO \$10 per hectare annually since 1998 for up to a total of 400 hectares located in the San Fernando River watershed and over 2000 ha. in the Volcan River watershed.
- b. The National Company of Light and Energy (CNFL) signed a second agreement with FONAFIFO in 2000, whereby the company pays \$40 per hectare, per year, to compensate owners of natural forests or forest plantations who participate in the program in the areas where it has power plants.
- c. Platanar, a hydroelectric company, is paying a total of \$15 per hectare, per year, to preserve and improve forests in the Platanar River watershed. In addition, the company signed an addendum in 2000 under which the landowners receive \$30 per hectare per year.

Contentious issues

Regarding water pricing, ESPH's first proposal was rejected, but the second was approved. Even though the amount agreed was smaller than the one requested, it represents an important step in charging the correct water price. ESPH's second proposal included a catchment value of $\text{¢}2.7 / \text{m}^3$ ($\text{\$}0.0077 / \text{m}^3$); a protection and recovery value of $\text{¢}4.89 / \text{m}^3$ ($\text{\$}0.014 / \text{m}^3$); a value for water as an input of $\text{¢}10.52 / \text{m}^3$ ($\text{\$}0.0301 / \text{m}^3$); an investment fund equal to 15% of the value of protection and recovery + catchment value + water as an input, and the treatment cost of sewage. The final result was the approval of an environmental component of only $\text{¢}1.90 / \text{m}^3$ ($\text{US}\text{\$}0.00543 / \text{m}^3$). This amount includes only part of the concepts of catchment value, and protection and recovery value. Table 3 presents a comparison between ESPH's current tariff and the proposed tariff, which includes an environmental component for each demand sector (the environmental component is called "tarifa hídrica", see exhibit 1), which is near 2% of total aqueduct tariff:

**Table 2 Current and Proposed tariffs (include environmental component)
In US\$/m³ (at $\text{¢}350/\text{US}\text{\$}$)**

	Current Tariff	Proposed Tariff	Difference
Residential	0.1956	0.2125	0.0169
Ordinary	0.5731	0.5969	0.0238
Reproductive	0.7328	0.7566	0.0238
Preference	0.1817	0.1986	0.0169
Government	0.5093	0.5262	0.0169

The original proposal established that the funds from the catchment value were used to compensate forest owners in the upper parts of Heredia's Mountains because they provide hydrological benefits to the society. It also established that ESPH should compensate them no later than a year after the charge began. Exhibit 1 (shown on page... above) shows an actual water bill highlighting the payment for the environmental services. The funds earmarked for the protection and recovery value were to be spent in public and private degraded areas to promote forest recovery close to the water catchment areas.

ARESEP's approval took from September 1999 to March of 2000, illustrating the lengthy and difficult process involved in introducing this pioneering pricing system. During this period many hearings were held. Most of the discussion centered on the proposed mechanism of collection and later payment, rather than on the concept of the environmental component per se.

ESPH was opposed by FONAFIFO and some landowners in areas not covered by the proposed legislation at the start of the process. FONAFIFO argued that ESPH should transfer the collected amounts to them to be pooled with FONAFIFO's other collections for the payment of environmental services. Thus, FONAFIFO would be the one that would distribute those funds.

The Conservation Areas of the Central Volcanic Mountain, which also participated in the discussion, was interested in having payments approved not only for private land but also for public land. Other stakeholders wanted to become members of the administration board that would manage the collected funds, so that they would have a voice in the allocation of payments.

Forest owners were opposed because of the gap between what FONAFIFO was currently paying and the amount proposed by the ESPH. ESPH proposed to compensate forest owners in water catchment areas with ¢23,000/ha/year (US\$66/ha/year) for activities of protection and natural regeneration of the forest and for activities of reforestation. FONAFIFO was paying only ¢15,832/ha/year (US\$45/ha/year) for a 5 years contract that compared with ESPH's proposal of ¢23,000/ha/year (US\$66/ha/year) for a 20 years contract. ESPH's argument was that 5 years was not long enough to guarantee adequate future forest protection, as could be seen from FONAFIFO's experience.

However, ESPH clients did not oppose the additional charge. One of the studies underpinning the proposal, found that people were willing to pay more for environmental services than was currently charged (Barrantes and Castro, 1998).

A follow-up study on a similar topic is currently underway, being conducted by ICAA (Instituto de Acueductos y Alcantarillados), a large water utility. The results of this study are to be presented to ARESEP; the study will assess the success of the ESPH's initiative and its pricing system.

Performance

Between 1997-2000, the Payment for Environmental Services Program paid for approximately 250,000 hectares with the funds collected, out of Costa Rica's total area of just over 5 million hectares.

Presently, ESPH is reviewing where compensation is to be paid, taking into account an evaluation of whether or not a forest is actually being protected. This review has noted some activities taken to recover degraded land near the water catchment areas. But most people interviewed considered that it was not only too early to evaluate but also to expect more specific initiatives from ESPH. There is agreement that ESPH has completed the reorganization needed to undertake their additional responsibilities, and as of the beginning of March 2002, the organization Colones 153,628 (US\$440) exclusively for the concept of the environmental component.

On the other hand, FONAFIFO collects approximately US\$6,714 per month. The payment process has started only recently. Only two payments have been made, one for 350 hectares to FUNDECOR, and another for 35 hectares to a private landlord. The present funds are barely enough to pay for 1000 hectares and national experts calculated that the critical protection covers some 12,000 hectares. The hydrological, geological and social criteria for fund allocations are still being determined.

4 Lessons and replicability

Costa Rica has been able to pioneer water charges for environmental services because of its many social advantages, which include high education levels, a tradition of social organization, and relatively democratic governance systems. Lessons that can be learned about policies and policy processes of what has worked in Costa Rica include:

- a. Initiatives that ensure that local groups are included in the benefits of conservation are needed to involve them in helping to protect the water catchment areas.
- b. Government's proactive attitude has been very valuable in promoting the concept of payment for environmental services, and giving it credibility with a wide group of stakeholders.

A major criticism of the program is that funds are not administered specifically for the intended use. Funds go straight to the Government treasury instead of to a specific environmental services fund. Many believe that the current water pricing policy will not achieve the protection of water resources until this method of fund administration is changed.

However, much has been achieved; Costa Ricans no longer see water as a public good. There is evidence that local people are adopting a sustainable development ethic which values protection of water catchment areas. Nevertheless, correct water pricing “per se” is not a solution unless it is accompanied by rigorous land use planning and strong environmental policies.

Complicating Factors

A number of factors have complicated the introduction of the new water pricing policies, including the following.

1. Fund Administration. There was no opposition to the concept of water charging. The main difficulties in applying the water tariff centered on the way in which funds would be collected, administered and distributed by ESPH; especially in determining who would do the work and who would be charged.
2. Land Titling Laws. Current land titling incentives do not favor environmental protection for watershed. Today, approximately 60% of the farms in Costa Rica lack official land titles. If a farmer clears land for agriculture, he or she can receive a title for up to 100 hectares; if the land is given over to cattle rearing title for up to 300 hectares can be received. The cattle may also be used to secure bank loans. The typical owner thus mostly chooses to clear the land, sell the harvested timber, and raise cattle to generate income, thus endangering the watersheds and downstream river basins.
3. Lack of Incentives for Private Landowners. Costa Rica’s command-and-control approach to environmental protection makes it expensive to enforce compliance over the large areas of land targeted for protection. Currently, Government policy offers little incentive for private owners of protected lands to comply with protection measures.
4. Legal Uncertainties. Although new and important laws have been passed, they rest on an uncertain base, in the presence of existing conflicting laws. The recent claim that the Biodiversity Law is unconstitutional has further confused the legal situation.
5. Conflicting Priorities. To date, forests have been the center of the nation’s environmental policy; incentives for the protection of other resources, including water, have not yet gained the same level of recognition.
6. Changing Personalities. Environmental leaders come and go with each change of government. This lack of continuity has slowed the introduction of new measures, led to frequent changes of direction, and given rise to skepticism on the part of stakeholders and the public.

Recommendations for an improved national policy process

These challenges imply the need to improve the policy process. A strong pricing system is not enough to ensure the availability and quality of water resources. A reliable land use plan, and a solid environmental policy that also deals with water pollution should accompany it. These improvements require active national debate and negotiation. . The focus of government institutions needs to shift from attempted control of all decision-making over water to facilitating the reconciliation of national, private, and collective interests.

Policy needs to accommodate uncertainty and change; clarify the integration or trade-off of different benefits and costs, and provide signals to forest managers as to how they will be held accountable for water protection. This means there must be negotiation among different positions, and ‘deal-cutting’ among different social groups. Because the water charges are paid into the general government exchequer or treasury fund has reduced the amount actually spent

on environmental services. A dedicated system, perhaps a trust, administered by the different conservation areas, is needed.

It appears that in formulating environmental management programs, policy makers and planners in developing countries do not understand how much people are willing to pay for water improvements in the urban and rural environment. However, willingness-to-pay considerations should constitute key inputs into programs designed to enhance environmental quality if such programs are to be sustainable and replicable. In fact, Whittington *et al.* (1991) view willingness-to-pay as a key concept in any improved planning methodology designed to obtain information on the value placed on different levels of services. This, in turn, allows for the fixing of charges, which ensures that operation and maintenance costs can be recovered. Bender *et al.* (1980) believe that the estimation of willingness-to-pay schedules should be regarded as an integral component in formulating economically sound environmental policies.

5 References and contacts

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