

Payment for Environmental Services: Some Thoughts!

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Introduction

Ecosystems provide a wide wealth of services that are fundamental for both the environment and for people. Economic developers know this reality better than any one else. While the demand for these services, including provision of clean freshwater, is continuously increasing, the capacity of ecosystems to provide such services is seriously at risk because of increasing environmental degradation and over-use. This has many causes: economic growth, demographic changes, lack of understanding of the ecological cycles and functions and also irresponsibility of some economic agents running after maximum profit in the shortest possible timeframe, not least the fact that the value of such ecosystem services is often not captured and not included in decision-making. The many market imperfections and the non internalisation of cost externalities in the production sector is adding to the situation, leading to preferences for investments in infrastructure (e.g. dams for flood control, water filtration plants for drinking water) rather than improving the capacity of ecosystems to, for example, mitigate floods and purify water.

1) Identification and definition of ecosystem services

The first step in a PES project is to identify and clearly define the services provided, the provider and the beneficiary.

“*Ecosystem*” means a dynamic complex of plant, animal and microorganism communities and their nonliving environment interacting as a functional unit. Ecosystems vary from relatively undisturbed ones, such as natural forests, to landscapes with mixed patterns of human use and ecosystems that are intensively managed and modified by humans, such as agricultural land and urban areas.

“*Ecosystem services*” means the benefits people obtain from ecosystems. These include *provisioning services* such as food, water, timber and fibre; *regulating services* that affect climate, floods, disease, wastes and water quality; *cultural services* that provide recreational, aesthetic and spiritual benefits; and *supporting services* such as soil formation, photosynthesis and nutrient cycling.

2) Considerations on the economic valuation of environmental services

The second step is to put a price on the services.

Economic valuation can be defined as the attempt to assign quantitative and monetary values to goods and services provided by environmental resources or systems, whether or not market prices are available to assist us. When market prices are not available (e.g., for flood control services, for disaster mitigation services, for erosion avoidance...), the value is established by *the willingness to pay* for the good or service, whether or not we actually make any payment. A major problem in assessing the value of ecosystems arises when the services provided, such as climate change regulation or biodiversity conservation, benefit the global community. However, this short introduction will not deal with valuation of ecosystems global services.

Why estimate ecosystem values?

Environmentalists sometimes question the need to always put a price tag on nature and assert that nature has an intrinsic value, that it is our long-term life support system and that this is reason enough to protect it. They are of course totally right but the reality of life on this planet unfortunately shows that many people do not share this view. Especially (but not only) those who suffer from hunger and understandably try to get the most out of ecosystems in the short term. If they are hungry today, they will not care about what happens tomorrow - even less in 20 years from now! But people in developing countries do not have the privilege of this short-term approach. People in developed countries often also have restricted vision and prefer to maximize their immediate benefits rather than to secure them for the long term.

This being a realistic view of life on Earth, we have to work with it. We therefore think that when one cannot reasonably expect to change a situation in the short term, it is better to try to make the best of it and exert influence to mitigate its negative effects on the environment.

There are at least three good reasons for evaluating ecosystem services and goods:

1. In difficult financial times, it is not easy for government decision makers to spend taxpayers' money on environmental activities, especially if there is no broad support from the public. Ecosystem valuation is a way to estimate ecosystem benefits to people and allows financial experts to carry out a Cost-Benefit activity which might be in favor of environmental investment. Cost-Benefit analysis compares the benefits and costs to society of policies, programmes, or actions to protect or restore an ecosystem. It is therefore an important tool for environmental managers and decision makers to justify public spending on conservation activities.

2. The other good reason is that people are not always aware of the values of ecosystems. Wetlands are good example of this. Many think that they are no more than mosquito breeding areas! By giving objective evidence to skeptical managers and the public of the monetary and non-monetary benefits of wetlands, environmentalists will gain their support. Most people only care about what they love or what brings economic benefit to them. By helping people to improve their living conditions by using and selling wetland goods and services, we will gain strong supporters for our cause!

3. If we want to charge for ecosystem services, so as to promote a more rational use it, we need to have an idea of their financial value. In some cases, a precise price will be established by a market (law of demand and supply) but in most cases, there is no need to establish a very precise price ... How could we realistically put a precise price on biodiversity services, or on climate change services? In these cases, one could talk about compensation price and set them through a fair estimate. The lack of precise price shall never be an excuse for non payment.

The same applies to services beneficiaries...how could we precisely establish the list (names?) of beneficiaries of climate change services or biodiversity services? Here again, the lack of precise clarity should not be an excuse for non-payment. The challenge is to invent new payment mechanisms that fairly compensate the provider in one way or another so that he finds some benefits in conserving some ecosystems.

Economic valuation is but one of many ways to define and measure values. Other types of value (religious, social, cultural, global, intrinsic...) are also important but the economic value is the most important in most countries when decision makers have to make difficult choices about allocation of scarce government resources.

Economic valuation is not an easy and non-conflictive exercise. It often depends on human preferences. In other words, it depends on what people perceive as the (positive or negative) impact ecosystems have on their wellbeing. In theory, the economic value of any good or service is measured in terms of what we are willing to pay for the commodity less what it costs to supply it. Because they are often perceived as common goods (market failure), we do not have to pay for ecosystems products and services. In this case, the value is provided by the estimation of the *willingness to pay*, whether or not we actually make any payment.

But the "*willingness to pay principle*" is often misunderstood. It shall not be merely seen as a way (a technique) to ask people how much they would be willing to pay for a specific service. It shall preferably be used as a tool to derive what people are willing to pay through a series of interviews and other techniques allowing the evaluator to have an estimation of what beneficiaries are actually willing to pay (consciously or unconsciously).

Applying this tool directly (simply asking people) would most probably lead to serious confusions and errors. In most developing countries, it is very likely that poor people would answer that they are not willing to pay anything...Simply because they have no money! Does this mean that they do not value environmental services? Certainly not. And in developed countries, people would probably answer that they are willing to pay a lot but this might not be true! Once they are asked to actually pay, they might no wish to do so.

In the case of services provided by public lands, whether people are willing or not to pay should not be a big issue. One could compare with the collection of house wastes.

Whether people are willing to pay or not for these services (collecting wastes) is irrelevant. They have to pay if they want to leave in an organized society.

The Table below gives an idea of the most common quantitative evaluation methods used, their constraints and limitations.

Method	Applicable to...	Description and Importance	Constraints and limitations
Market Price Method	Direct Use values, especially wetland products.	The value is estimated from the price in commercial markets (law of supply and demand)	Market imperfections (subsidies, lack of transparency) and policy distort the market price.
Damage Cost Avoided, Replacement Cost or Substitute Cost Method	Indirect Use Values: coastal protection, avoided erosion, pollution control, water retention...	The value of organic pollutant or any other pollutant's removal can be estimated from the cost of building and running a water treatment plant (substitute cost). The value of flood control can be estimated from the damage if flooding would occur (damage cost avoided).	It is assumed that the cost of avoided damage or substitutes match the original benefit. But many external circumstances may change the value of the original expected benefit and the method may therefore lead to under- or over-estimates. Insurance companies are very interested in this method.
Travel Cost Method	Recreation and Tourism	The recreational value of a site is estimated from the amount of money that people spend on reaching the site.	This method only gives an estimate. Over-estimates are easily made as the site may not be the only reason for traveling to that area. This method also requires a lot of quantitative data.
Hedonic Pricing Method	Some aspects of Indirect Use, Future Use and Non-Use Values	This method is used when wetland values influence the price of marketed goods. Clean air, large surface of water or aesthetic views will increase the price of houses or land.	This method only captures people's <i>willingness to pay</i> for perceived benefits. If people are not aware of the link between the environment attribute and the benefits to themselves, the value will not be reflected in the price. This method is very data intensive.
Contingent Valuation Method	Tourism and Non-Use values	This method asks people directly how much they would be willing to pay for specific environmental services. It is often the only way to estimate the Non-Use values. It is also referred to as a "stated preference method".	There are various sources of possible bias in the interview techniques. There is also controversy over whether people would actually pay the amounts stated in the interviews. It is the most controversial of the non-market valuation methods but is one of the only ways to assign monetary values to non-use values of ecosystems that do not involve market purchases.
Contingent Choice Method	For all wetland goods and services	Estimate values based on asking people to make tradeoffs among sets of ecosystem or environmental services	Does not directly ask for willingness to pay as this is inferred from tradeoffs that include cost attribute. This is a very good method to help decision makers to rank policy options.
Benefit Transfer Method	For ecosystem services in general	Estimates economic values by transferring existing benefit	Often used when it is too expensive to conduct a new full economic valuation for a specific

	and recreational uses in particular	estimates from studies already completed for another location or context.	site. Can only be as accurate as the initial study. Extrapolation can only be done for sites with the same gross characteristics.
Productivity Method	For specific wetland goods and services: water, soils, humidity in the air...	Estimates the economic values for wetland products or services that contribute to the production of commercially marketed goods	The methodology is straightforward and data requirements are limited but the method only works for some goods or services.

3. Types of payments and payment schemes: some ideas

The third step is to establish a payment scheme.

Once the product is well identified (quantity, quality, regularity of delivery ...) and its price (or value) is fairly established through any appropriate method, the project proponent should find out a form of payment and a way to pay.

The general classification of PES distinguishes the following major types of PES schemes: public schemes, private (self-organized) schemes and trading schemes.

Public schemes are schemes in which a municipality or a local or national government acts as the sole or primary purchaser of a specified ecosystem service or, more commonly, a related land use or management practice. Public schemes may operate at the local or national level.

In private (self-organized) schemes, both buyers and sellers are private entities (companies, NGOs, farmers' associations or cooperatives, private individuals). Private self-organized schemes are typically local schemes.

Trading schemes refer to the establishment of markets in which established rights (or permits) and/or quotas can be exchanged, sold or leased. The existence of a strong, well-defined and functioning legal and regulatory framework is a prerequisite for trading schemes to operate.

When the service provider is a private provider (land owner with land tenure rights) and the service is clearly an outcome of his efficient management of his land, and when the recipient (private or public) is benefiting directly from the service (ex: hotel benefiting from clean water provided by a sustainably managed private forest, farmer benefiting from the positive impact of pollinators on his coffee production...), then obviously, both the price and the mode of payment shall be established by market rules (law of demand and supply). But even in this case, government could intervene to avoid monopolistic positions or the establishment of Trusts... A private owner of a large trunk of land on a small island could easily have a monopolistic access to water on the whole island and therefore set the price as he wishes.

Public and private PES schemes may adopt different financial arrangements regarding the compensation to sellers and the collection of buyers' contributions. The six most common financial arrangements include (for sellers) direct compensation, investment or development funds, and land purchasing and (for buyers) customer-charged payments, lump-sum contributions and tax-based contributions.

When the providers are large communities or entire villages (communities living around protected areas) and provide an important biodiversity service by refraining from hunting in the PA), than of course both prices and modes of payments are more difficult to establish. In this case, the idea is to fairly compensate these communities (estimating the price with whatever method is available or creating ad hoc methods) and rather than to distribute cash to each individual, pay through some kind of community social support, building a road, giving access rights or any other royalties, building a new school or health center etc ...

The specific case of global environmental service: When the provider is a large community or even the whole people of a region (people from the Danube Delta region, people from the Amazon region, and people from countries with significant protected Areas like Tanzania ...) and the beneficiary is another large community or even the global community, a global payment scheme should be established. This is of course a challenge as this kind of mechanism does not exist yet. And of course, because enforcements mechanisms are difficult to establish (unrealistic), some beneficiaries (countries) will not pay for what they receive. The basic idea here is to find a way to establish and organize voluntary payments from global beneficiary countries to provider regions or countries. Another challenge is to make sure that these payments go to the real provider(s) and not to general national budgets. One more challenge would be to make sure that the recipient institution establishes some kind of efficient direct or indirect redistribution schemes to the individual providers.

National or international fiscal instruments (through WTO provisions, regional economic integration institution's rules ...) could be established to raise payments dues. Market based instruments could be put in place at country level for the same purpose.

And environmental funds might be very efficient tools to both receive and redistribute these payments. A small informal working group on this particular subject has been established by UNEP and the CBD Secretariat and will soon make some concrete proposals on how to go forward with this idea.

Final consideration

- Payment for ecosystem services scheme (especially in developing countries) shall strongly take into account our moral obligation to fight poverty. No such payment scheme shall be established at the expense of poor people's right to seek whatever sources of income they need to improve their livelihood. It is the Government responsibility to make sure that poor people are not paying an unfair price.

- Markets are very important tools to (hopefully) establish some PES schemes and shall therefore be encouraged whenever possible. An important and very challenging

prerequisite is to eliminate market failures. But one shall not dream that markets alone will be a solution to environmental problems. This is not true. Government intervention will be needed most of the time, either to help create these market or to regulate them.

- PES schemes must be sustainable. Using non-sustainable sources of financing to pay for an environmental service during “a project’s life” is not a good solution. PES schemes proponents should ensure that the payment mechanism will be in place for a very long time. In some cases, fiscal instruments or environmental funds could be good instruments to use. If payments stop after a short period, it is very likely that the provider will stop providing its service especially in the field of biodiversity conservation.