International Payments for Ecosystem Services (IPES)[1]

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1. Introduction

The planet is experiencing a period of rapid species and ecosystem loss. The deterioration of biodiversity is reaching unprecedented levels, with an extinction rate reported in the 2005 Millennium Ecosystem Assessment to be 1,000 times higher than what has been typical over most of the earth's history.

Biodiversity loss threatens the well-being of human societies. Less diverse and degraded ecosystems are compromising the livelihoods of many vulnerable communities around the world. Yet it is largely ignored.

The global water crisis, for example, often results from poorly managed ecosystems and biodiversity loss. Biologically diverse and healthy ecosystems provide essential benefits for water supply, ranging from water filtration and erosion control to the regulation of flood waters. Nevertheless, little has been invested in maintaining ecosystems and sustaining the services they provide. Too often, human-built infrastructure (e.g. water filtration plants) is adopted as the solution to problems that ecosystems have been addressing for millennia. While the costs of setting up a water treatment facility can run into billions of dollars, the opportunity cost of having the same filtration services provided by ecosystems are often considerably lower. As a result, it is becoming increasingly recognized that the preservation and maintenance of ecosystems and the services that they provide often makes good economic sense.

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A significant amount of research and on-the-ground programs have already been developed around the concept of Payments for Ecosystem Services (PES). Gradually, mechanisms are appearing whereby the delivery of ecosystem services such as habitat conservation, sediment control, or carbon sequestration are incentivized and rewarded. In most cases, however, such initiatives are of limited scale relative to the global challenge of ecosystem decline.

The carbon market is the most developed form of PES operating at the international level. The Clean Development Mechanism (CDM) under the United Nations Framework Convention on Climate Change (UNFCCC), where projects that deliver carbon offsets in developing countries receive payments from carbon emitters in developed countries, can be seen as an international PES (IPES). Similar approaches can be envisaged for a range of ecosystem services provided by biodiversity, and for biodiversity itself[2].

2. Applying IPES to Biodiversity

Experience with innovative and positive incentive measures for combating climate change provides an inspiration for addressing other global environmental issues, such as the loss of biodiversity. In 2006, the United Nations Environment Programme (UNEP) and the International Union for Conservation of Nature (IUCN), in close collaboration with the Secretariat of the Convention on Biological Diversity (SCBD) launched an initiative to research options for an IPES mechanism with a special emphasis on biodiversity and a broad range of ecosystem services.[3]

Three principles for such an IPES mechanism have been proposed:

- It should foster biodiversity conservation, sustainable use, equitable access and benefit sharing of genetic resources across the world;
- It should be financially self-sustaining, and incorporate local communities, governments, and the private sector;
- It should address the needs of developing countries and, more generally, those of the poor, women, as well as indigenous and local communities.

The scope of biodiversity components and ecosystem services of interest for such a mechanism have also been proposed and include:

- Watersheds and water services generally;
- Forests and their carbon sequestration services;
- Genetic resources, including traditional knowledge; and
- Species or ecosystems that have international existence values.

[2] See Chichilnisky, G. 1996. Development and Global Finance: the Case for an Internacional Bank for Environmental Settlements, UNDP and UNSESCO, New York; Chichilnisky, G. and Heal, G. 1998. Economic Returns from the Biosphere, Nature Vol. 391; UNEP-IUCN. 2006. Developing Internacional Payments for Ecosystem Services: A Technical Discussion – Summary Report. Geneva, Switzerland.

[3] See decisions VIII/26, paragraph 6 (c), VI/15 Annex, paragraph 37, and VIII/13 paragraph 4.

Major challenges to effectively deal with various ecosystem services do exist and will need to be properly addressed in order for an IPES scheme to be successful. Important outstanding issues relate to the measurement of the services, the scale at which they are managed, and the possibility of 'bundling' several ecosystem services into self-sustaining IPES[4].

a) Measurement

For many services provided by ecosystems across the planet there does not exist a single, uniform, and universal unit of measurement. Some experience with composite biodiversity indices, however, does exist at both national and international levels. Such measurements have been used in programmes that allow developers to offset at least some of the unavoidable damage to biodiversity resulting from their projects offsite.[5] Such experience could be harnessed for the elaboration of an IPES mechanism. In addition, there has been some effort to study the potential for using capital market instruments to give uniformity to some of the diverse ecosystems such as watersheds and their services. This potential is based on the observation that ecosystems are value-generating assets and, as such, could be leveraged to raise funds to meet the development needs of local communities. Much more research, however, is needed to find out exactly how such a potential may be turned into an opportunity for sustainable development.

b) Scale and bundling of ecosystem services

Many of the services of a given forest or watershed and the benefits that are enjoyed, such as water purification, are regional or local in nature. The scenic beauty of the same ecosystems might also be a rather local or regional service, though they might also generate a global willingness-to-pay for their preservation if they are internationally renowned or if they provide the habitats for globally significant fauna such as elephants, tigers, polar bears, and great apes. The main insight is that many ecosystem services are produced jointly and may simultaneously range from the local up to the global scale. In such circumstances, the “bundling” of ecosystem services and their payments would appear to be useful. A related question is the optimal scale at which to bundle these ecosystem services.

It has been suggested that a “landscape approach” could serve as a promising means for addressing the issue of scale. This approach focuses on the community level while assimilating the widest range of human-environment relationships operating at various levels. Further research is needed to specify how such an approach can be utilised for designing the IPES mechanism.

An important opportunity for applying the notion of “bundling” arises from the effort to develop payments for “Reducing Emissions from Deforestation and Degradation (REDD)”, whch has the potential to both mitigate climate change and maintain biodiversity.

[4] Bundling refers to the practice of joining related services for the purpose of offering them as a single unit.

[5] One such programme is the Biodiversity and Business Offset Programme (BBOP), which seeks to demonstrate that offsets can achieve better and more cost-effective conservation than what normally occurs in infrastructure development (see http://www.forest-trends.org/biodiversityoffsetprogram/index.php). The Netherlands Ministry of Housing, Spatial Planning and Environment (VROM) is also involved in developing a method of biodiversity-compensation taking the whole supply chain into consideration.

3. The Demand Side of IPES

To date, the take-up of PES schemes has been growing but still remains limited. Most of the existing schemes have been either government funded, underscored by regulatory provisions, or both. Also, most of the schemes have been implemented at the local or regional level.

The greatest hope for sustainable funding for IPES is, however, likely to come by mobilizing markets and the private sector, in close cooperation with governments and local communities. At present, only a few companies and industries are stepping into this domain to protect their brand, reputations and supply chains. For example:

- tourism companies, such as the Meliá Conchal hotel chain in Costa Rica, are securing the scenic beauty of, and water flows within, the landscapes they rely upon, though there are legitimate concerns over the risk of public goods being privatised; and
- water utilities such as the New York City water authority paying upstream land users in the Catskill-Delaware watershed for improving water quality so as to reduce the cost of water filtration.

A major challenge is channelling the willingness-to-pay for ecosystem services into actual payments. One crucial response to this is to identify and quantify the IPES "product". It is also essential to determine how the product and its benefits can be communicated and marketed to potential payers, including both businesses and consumers.

Another challenge is to determine the choice of locations where desired services are to be paid for. Ideally, such choices should be based on the services to be delivered and the associated cost. Yet, due to the complexity of ecosystem processes and the influence of factors beyond the landholder's control, the exact service quantity is often not known in advance. Nevertheless, parcel characteristics such as slope and rareness of habitat type can help assess service potential when these have a clear connection to desired services, as is the case for erosion control and the conservation of habitat for endangered species.

The Victorian BushTender program in Australia provides one example of a targeted PES scheme. The cost of the conservation measure is determined by means of a competitive procurement auction. The benefit is estimated by multiplying a Biodiversity Significance Score – which depends on the type of plants and animals in a site – with a Habitat Service Score – which depends on the type of management commitment. The ratio of the resulting product and the cost provides the Biodiversity Benefits Index, which shows the "amount" of biodiversity per dollar.[6]

Further exploration could focus in particular on companies that are already involved in global markets and rely on critical ecosystem services. Potential examples include the mineral extraction and construction industries, food and beverage producers, and tourism providers. It may also be useful to target consumers who are more likely to support

[6] See www.dse.vic.gov.au.

payments made for the delivery of services that have global values. This applies for use values (e.g. conservation of tropical forests for medical research purposes) or non-use-values (e.g. conservation of coral reefs to preserve the option of visiting them).

Several proposals have been put forward in order to accelerate private sector engagement in ecosystem services markets and payments. Firstly, there is a need to continue documenting and highlighting the business benefits associated with investments in ecosystem services – making the biodiversity business case. Secondly, there is a need to ride on the growing media coverage of the carbon market to highlight the potential for other ecosystem services markets. And thirdly, there is a need to capitalise on the expanding interest of financial institutions in conservation in order to create business-to-business incentives for engaging their clients in ecosystem service markets.

4. The Supply Side of IPES

In the case of developing countries, IPES have the potential to offer the rural poor and women – who often are the true stewards of ecosystems – rewards for restoring and maintaining ecosystem services. Many potential benefits exist with the inclusion of the rural poor and women in such schemes including:

- Increased cash income
- Expanded experience with external business activities,
- Increased knowledge of sustainable resource use practices
- Improved resilience of local ecosystems

There may, however, be pitfalls when seeking to realize pro-poor benefits from payment schemes – e.g. the danger of not involving an entire community from the start, or trying to implement IPES where it is not appropriate. In addition, issues such as developing countries' development rights also need to be carefully taken into consideration.

A range of institutions, established by public, private, or NGO players, now exist to support or reduce transaction costs and connect ecosystem service providers and beneficiaries. Some intermediary groups with expertise in community organizations, for example, may take responsibility for local project management, as well as for mediation between ecosystem investors and local communities.

Areas where competence will be essential, and where building or enhancement of capacity may be required, include:

- scientific and technical knowledge for measuring and documenting existence and current status of ecosystem services that local communities wish to offer;
- negotiation skills and contractual experience that ensure that both service providers and beneficiaries are negotiating at equal level, have full access to all relevant information, and can hence with full knowledge agree on all terms of the contract; and
- implementation, monitoring, and verification expertise, which may need to involve technical assistance, depending on the needs of involved parties and the complexity of the tasks.

Ultimately, all legal and technical responsibilities will crucially incorporate the community or providers of ecosystem services. Therefore, it is critical that any support institutions that communities engage with are able to transfer the required expertise. In addition, community-based providers of ecosystem services are advised to consider the following questions:

- Are local organizations experienced with project management and technical support?
- Have community representatives been selected and authorized to negotiate with outsiders?
- Are ecosystem investments meeting community goals, determined by a cross-section of the community including women and lower-income members?
- Do participatory processes form the basis of decisions, and is there adequate buy-in?
- Are there ways that local people, including women, can substantively participate at every level of the project (including design, implementation, and monitoring)?

5. Matching Supply and Demand

Important barriers remain in the way of bringing together the demand and supply sides of IPES. Some of these hurdles have been identified earlier, including: the lack of clarity on what exactly is being paid for and what level of assurance will be given that what is purchased will be delivered, the lack of quantifiable benefits associated with paying for ecosystem services, and the high transaction costs.

The ability to match demand and supply at the international scale will also critically depend on the international institutions and financial arrangements that need to be created, including the associated laws, incentives, monitoring and compliance arrangements, and the recognition of different stakeholders' rights. International cooperation is, therefore, a key component in the further consideration and development of IPES, including through pilot projects. In this regard, the Convention on Biological Diversity (CBD) can provide an ideal platform for bringing the expertise and different interests together.

Existing initiatives and mechanisms provide a useful starting point for further analysis. For instance, a number of options currently being debated in the context of REDD could offer opportunities for bundling carbon sequestration and biodiversity conservation services of forest ecosystems.

Watershed services offer another opportunity. Most cities in the world with over 1 million people have watersheds that are under pressure. With their valuable water filtration services at stake – and the cost of replacing them by artificial filtration plants running up to trillions of dollars – there is an opportunity to channel greater investment into their preservation and maintenance.

One potential mechanism which merits further exploration and debates is the bundling and "securitization" of ecosystem services. The restoration of watersheds needed for

maintaining water purification services, for example, often requires huge upfront investments. In such cases, the creation of "watershed facilities" owned by local communities could be established to hold the rights to sell water purification services. These rights could also be leveraged for accessing financial markets to raise development funds. The watershed facilities being researched, however, will focus on securing the maintenance of ecosystem services for local communities, benefiting the poor, especially women, and achieving financial sustainability.

6. Way Forward

Many challenges exist to take the concept and practice of PES to the international level. While market forces can offer the potential to provide efficient and effective means of maintaining and enhancing ecosystem services, the issue of scale must clearly be addressed when considering ecosystem services and beneficiaries at the global level. Breaking down the market structure and addressing issues related to the demand side of the market, such as the motivations to pay for such services and the ways in which motivations can be enhanced will be an important first step. Of equal importance is the need to address the supply side characteristics of such a market and in particular the institutional and financial arrangements necessary to bring together the demand and supply sides, based on reliable and accepted measurement criteria and accounting frameworks. The innovative examples and good practices, which are already available, seem to indicate that many challenges can effectively be met.

Immediate next steps for the UNEP-IUCN IPES initiative include additional research and analysis, as well as effective publication and communication, in order to demonstrate how workable mechanisms could be put in place. Pilot projects, starting with smaller scales and amongst a limited number of actors, would be useful to gain further experience and put concepts to practical tests. The ongoing and continued support from the Conference of the Parties (COP) to the CBD for work on innovative positive incentives, as already expressed by its eighth meeting, is critical for sustaining this effort to secure long-term financing for preventing the loss of biodiversity and ecosystem services.