

**Seminar: Is there such thing as innovative financing
for ecosystems management?**



ABSTRACT VOLUME

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Adaptive PES: Financing sustainable water management for ecosystem services



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Keywords

Payment for ecosystem services, financial incentives, water conservation, funds

Highlights

In order to embrace a green growth approach where the environment is sustainably managed to achieve multiple objectives, there must be realistic measures to protect ecosystems for meeting human objectives and ensuring long-term sustainability. Payment for Ecosystem Services (PES) is one such innovative financial instrument that achieves multiple objectives.

Introduction and objectives

Ecosystem services are deteriorating at an alarming rate, particularly in developing countries, where competition for land and water is high. They have traditionally been provided free of charge, thus there is little economic incentive to use them sustainably. Payment for Ecosystem Services (PES) is a powerful tool for enhancing economic, environmental, and social returns from investments in integrated ecosystem management, including water conservation, by creating new marketplaces for ecosystem services. This session aims to identify the best approaches to the design, implementation, and monitoring of PES, and its efficacy in achieving ecosystem goals, while ensuring human objectives.

Methodology approach

A green growth approach requires applying market-based solutions for managing ecosystem services. As an organization committed entirely to green growth, GGGI is implementing innovative financial instruments especially in the water sector. One instrument is PES, which is developed using a four-step methodology:

- Setting up program objectives, diagnosing enabling conditions and identifying main hurdles to implementation.
- Conducting in-depth analysis to delineate foundations for PES operation.
- Implementing a PES program, driven by the scope, goals and overall scale. This is a gradual process which provides an opportunity for learning-by doing.
- Program evaluation, with necessary adjustments that improve efficacy and allow for an adaptive PES program.

Analysis and results

Based on the above approach, GGGI has been involved in the development of financial instruments to support ecosystem services in several countries:

- Costa Rica: FUNBAM 2.0 is a national financing vehicle that mobilises public and private investments for sustainable development. Innovative project pipelines include (1) 'Forest Plantation Usage Program', a credit-financing scheme encouraging local agricultural producers to plant trees, thus producing timber, mitigating GHG emissions, and creating job opportunities; (2) 'Sustainable Timber Management Program', a marketplace where buyers pay timber producers for the years until the

trees are ready to be harvested. Forthcoming programs focus on Blue Carbon and sustainable water management.

- India: GGGI is at the concept stage for the 'Water Fund for Solar Irrigation Schemes', a form of PES in countries where unsustainable groundwater abstraction is impacting aquifers and their ecosystems. In India, government subsidies have shielded farmers from the full cost of pumping, leading to groundwater overdraft. By solarizing pumps and allowing farmers to sell surplus solar power at a feed-in tariff (FiT) to utilities, farmers indirectly conserve water. A Water Fund will top up existing FiTs and close the financial gap between current FiTs and what is needed to incentivize farmers to conserve water.

Conclusions and recommendation

The above cases illustrate the different ways by which PES works and highlights the importance of an adaptive model for PES to be effective. This process of learning-by-doing is necessary to answer some key questions around human behaviour and incentives. For example: i) what are the drivers that shape water use; ii) what incentives, financial and non-financial, promote conservation, and iii) is PES an effective mechanism for long-term sustainable water resource management. By answering these broader questions, decision makers are better informed to design projects and financial instruments, that not only lead to short-term gains, but also achieve long-term objectives.

Economic and financial instruments for insurance ecosystem based approaches



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Keywords

green infrastructure, resilience, sustainable finance, ecosystem services, human well being

Highlights

- presents COMPASS initiative on the opportunities for near real time comprehensive assessment of sustainable infrastructure
- how to design the right economic instruments and target financial resources where these water investments will best pay off.
- Presents preliminary results from the NAIAD project as an example

Introduction and objectives

The important role of natural infrastructure is only coming to the fore now mainly due to exponential changes (population growth and climate change in particular), which are putting pressure on our natural environment. The session will focus on the opportunities for economic instruments and financing of ‘green infrastructure’, (ecosystem-inspired) approaches which either on their own or combined with grey infrastructure (hybrid) could provide a more cost-effective path. Green infrastructure can help reduce our exposure to extreme events due to climate change thanks to damages avoided by giving real examples on the insurance value of ecosystems from the NAIAD project.

Methodology approach

Framed under the COMPASS initiative, the preliminary results from the NAIAD project focus on the role of the insurance value of ecosystems. It provides data on the real application in 9 demos across Europe at three scales (city, medium and large catchments/ aquifers) from an extended cost benefit approach. Here nature based solutions, like aquifer recharge, afforestation, river restoration or soil conservation to name but a few are analysed through their implementation or life cycle costs, foregone value, avoided damages and co-benefits. The financing of natural infrastructure will also be discussed, under the concept of natural assurance schemes.

Analysis and results

Around 90% of natural hazards are water related, and likely to become more frequent and severe due to climate change. The costs of floods in the EU alone have been €4.9 billion a year on average from 2000-2012, predicted to increase fivefold to €23.5 billion by 2050. The European Environment Agency looking at water risks in Europe, also included water scarcity as a problem for many regions with some 45% of European territory expected to be facing water scarcity problems by 2030. In the 2018 Global Risk Report three of the five most likely global risks were environmental—extreme weather, natural disasters, and failure to mitigate climate change extreme weather events, while investments in water management will be critical to achieving the SDGs. Over the next 15 years, an estimated 22 trillion dollars will need to be invested in water infrastructure, which is more than half of the total expected infrastructure investment demand (USD 41

trillion). By including the insurance value of ecosystems through innovative economic valuation techniques and financing, these anticipated needed investments in water infrastructure, can incorporate green infrastructure and investing in nature as essential to reducing water risks and securing water for human well-being.

Conclusions and recommendation

COMPASS is addressing this problem by helping to value natural infrastructure to identify areas of high environmental value where grey infrastructure should be avoided, or identifying areas where grey infrastructure in combination with natural infrastructure can jointly support the maintenance of ecosystem services. The examples from NAIAD in 9 demos across the European Union highlight the insurance value of ecosystems like natural water storage capacity to mitigate risks from natural hazards like floods or droughts. These show real life examples of workable natural assurance schemes that demonstrate viable business cases to invest and value nature for water security.

Establishing a trans-provincial eco-compensation scheme for ecological protection in the Chishui River watershed



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Keywords

Ecological compensation, payment for ecosystem services, transboundary environmental protection, institutional and governance reform

Highlights

- Chishui watershed is a unique region facing growing pressures on ecological systems resulting from rapid urbanization. The eco-compensation scheme is an innovative mechanism for ecological and watershed protection.
- Apart from institutional reforms, a trans-provincial regional office will be established to oversee the management and guide effective investment for environmental protection

Introduction and objectives

The Chishui River is a tributary of the Yangtze River running through the 3 provinces of Yunnan, Guizhou, and Sichuan before flowing into the Yangtze River. It remains as the only naturally running river in the Yangtze River system, with an annual runoff of 9.74 billion m³, and its watershed is classified as a special ecological zone rich in biodiversity. The watershed remains relatively underdeveloped, with per capita GDP at CNY16,040 (USD 2,467) for 2016, about 1/3 of the national average for the same year. The river is the water source for many well-known brands of liquor in China such as Moutai, which depends on the river's good water quality.

Methodology approach

Key questions:

- (i) What are the institutional and regulatory reforms needed to facilitate the establishment and operation of an Eco-Compensation Scheme for Chishui watershed?
- (ii) What governance framework is required to ensure that the scheme can function effectively and be managed in the interest of all parties?
- (iii) What incentives are required to attract private sector participation in the management and sustainable operation of the fund?

Dialogue and discussion with key stakeholders and government agencies informed the proposed design and structure of the fund, including required institutional and governance reforms, and building on lessons from previous eco-compensation initiatives.

Analysis and results

- Lessons from previous eco-compensation schemes are being reviewed, especially the scheme in Xin'an River Basin in Anhui and Zhejiang Provinces, and other schemes including the Dong River in Jiangxi and Guangdong Provinces, aimed at protecting and improving the water quality in these river systems.

- Although the Xin'an River and Dong River schemes both had clearly defined providers and beneficiaries and clear objectives, they required strong national government involvement and to proceed successfully. This reflects the existence of institutional, legal, and regulatory barriers. In the development phases of these earlier programs, both the downstream provinces—Zhejiang and Guangdong—were opposed to making payments to the upstream provinces without financial support from the central government, arguing that their tax contributions should be used for investment in watershed management.
- Though the national government has been strongly promoting the development of horizontal eco-compensation programs, much remains to be done to create the right set of incentives and conditions for provinces to take the initiative in addressing trans-provincial watershed management challenges.
- In the Chishui project, innovative measures will include the establishment of a trans-provincial Eco-compensation Fund and regional environment office leading group, comprised of members from each province and central government agencies to manage the operation and structure of the fund.

Conclusions and recommendation

In the past two decades, PRC implemented a range of fiscal instruments for improving environmental quality under the umbrella of eco-compensation schemes, which include not only payments for environmental services, but also taxes, fees, subsidies and other compensation payments. A number of lessons can be drawn from experiences of different schemes implemented in the country, which are informing the establishment of new innovative financing instruments such as the trans-provincial eco-compensation scheme in the Chishui watershed of the upper Yangtze River system. The development of the scheme will provide further insight to the continued evolution of this mechanism in China –in the context of a region that faces unique social economic, and environmental challenges –with high potential for upscaling and application in other regions.

Financial sustainability of watershed conservation schemes: Lesson learned from LAC



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Keywords

enabling environment, governance structures, green infrastructure, blended finance, climate finance

Highlights

The potential of water funds, water stewardship and micro-finance as mechanisms to finance green infrastructure and watershed conservation measure is analysed. Key success factors and guidelines for the design of effective governance structures that ensure long term financial and institutional sustainability of these schemes and make use of the potential

Introduction and objectives

Around the world increasingly frequent extreme events are making the externalities of economic activities visible and creating awareness in the private sector that nature is their real license to operate. Accordingly companies and citizens are more and more showing a willingness to pay for ecosystem protection; companies are more and more aware that only beyond the fence measures can truly protect them in the long term from water stress and ensure business continuity. The great challenges for these investments to happen are low trust and elevated transaction costs; in other words, governance is key.

Methodology approach

Four pioneer experiences of private sector investments in watershed conservation in LAC (Brazil, Peru, Colombia and Ecuador) were documented and analysed to evaluate the potential of water funds and water stewardship as mechanisms to finance green infrastructure and achieve water security. The conceptual framework developed for the analysis of these cases combines key concepts from Transaction Costs Theory, concerning the economic regulation and procurement of public services; with the practical lessons learned in the last decades from the application of Public-Private Partnership models and project finance for the financing and delivery of common and public goods.

Analysis and results

Water fund schemes and their evolution are analysed for Ecuador Ecuador (Quito) and Peru (first water funds and recently launched national public payment scheme for watershed services), and compared with the water stewardship experience of the river basin agency iBiO in Rio Doce in Brazil and the lessons learned by the UNEP program Microfinance for Ecosystem-based-Adaptation to Climate Change (MEbA) in Peru and Colombia. Based on this analysis we have identified key success factors, lessons learned in phasing their implementation and setting effective governance structures that ensure long term financial and institutional sustainability of these schemes. To finalize the challenges ahead are identified and the potential of FinTech and ICT innovations such as blockchain to improve financial sustainability is explored.

This research is part of the development of a Financing Framework for Water Security aims to empower local stakeholders in the choice of adequate governance structures and guides them in the design of an implementation arrangement given particular transaction characteristics and the local institutional context.

The findings of these cases in LAC and their applicability to 7 demonstration cases in Europe will be done as part of the European project NAIAD (Nature Insurance value: Assessment and Demonstration).

Conclusions and recommendation

Governments play a crucial role by setting up the regulatory framework and safeguards. Key factors for sustained payments from companies and citizens alike are governance aspects: a) transparency in collection, b) use for intended goals, c) accountability at all levels; as well as technical aspects: d) scientific base to guide investments plans and e) models and tools to quantify and understand the vulnerabilities of different values chains under Climate Change. Financial and institutional sustainability are two sides of the same coin. FinTech and ICT innovations such as blockchain hold a great potential to reduce current transaction costs and create trust.

How to upscale financing for ecosystems management in Africa?



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Keywords

ecosystems, financing, water, sanitation, Africa

Highlights

- Provides an overview of innovative financing for Ecosystems Management in Africa, with specific reference to the Water and Sanitation Sector (WSS);
- Provides lessons learnt from AfDB's experience in Africa;
- Outlines a framework to better integrate ecosystems management and the WSS, shifting from 'ad hoc' to proactive approaches.

Introduction and objectives

The 2030 Development Agenda recognizes the importance of sustainable management of ecosystems as critical to achieving the Sustainable Development Goals, including in the WSS. To undertake this at scale requires new financing strategies and tools to help build, expand and maintain natural infrastructure. But how suitable or applicable are these tools for Africa? And, more importantly, do they have characteristics that allow them to be combined with more traditional sources of financing? The objective of this study is to identify tools or particular characteristics that would support the financing of sustainable infrastructure in a wide range of African contexts.

Methodology approach

The study predominantly uses a desk analysis to identify potential tools, followed by a subsequent diagnostic of their applicability to different financial, social and environmental conditions, to better understand their significance or potential. The study surveys the global landscape of innovative financing tools for the water and ecosystems management, and identifies the tools that were successful or faced specific challenges. Examples including green bonds, green levies, impact investments, venture capital, pooled financing, climate funds, payment for ecosystem services were all evaluated for their potential applicability. Specific case studies from the AfDB's portfolio are also detailed.

Analysis and results

Whilst there is potential for applying innovative financing methods across Africa, care is required to ensure that tools will actually be useful in the specific contexts across the continent. To do this, the following questions are relevant for the study:

- Has innovative WSS financing been widely applied for ecosystems management?
- What would be the identifiable preconditions for innovative WSS financing to better address ecosystems management?
- How could the WSS benefit from the increased integration of innovative financing for ecosystems management?

The study notes that WSS financing for ecosystems management is not widespread, and its integration tends to be ad hoc rather than proactive. The study assesses the Bank's experience with 'Innovative financing

Mechanisms' covering different products and initiatives within and outside the Bank, including carbon financing, guarantee products, and its experiences with external funding. A number of preconditions were identified as being necessary, including a need to shift the perception of ecosystems management from an add-on to being a critical assets, and to strengthen the case that natural infrastructure is not just for supplementary activities but may also be a core activity.

Conclusions and recommendation

Whilst opportunities for ecosystems management financing are recognized, a number of steps will be necessary, including shifting the perception of ecosystems management in WSS from a supplementary action to being investing in financial and social assets. In this regard, a framework has been prepared, drawing upon the lessons learnt thus far. The AfDB's experience on using and promoting different 'Innovative Financing Mechanisms' within its regional member countries will prove critical to future success of integrating financing of ecosystems management in the WSS on the African continent.

miParamo, environmental financing mechanism to strengthen water funds in Colombia



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Keywords

Financing, Water Fund, Ecosystem restoration, High Andean ecosystems, Andean Paramo

Highlights

miParamo, a Water Benefit Certificate initiative, is a results - based finance mechanism to promote High Andean Wetland conservation with local families. It aims at strengthening water governance by the improving relations among upstream communities and downstream water users. miParamo works as a financial mechanism of Water Fund Alianza BioCuenca.

Introduction and objectives

The Páramo of Santurban is a Colombian key ecosystem that provide freshwater for two million people, however, anthropic activities and climate change threaten its sustainability. The Alianza BioCuenca, one of the seven Colombian Water Funds, focus on the Paramo of Santurban, to conserve and restore the main freshwater source for the Zulia and Pamplonita river basins.

Objective: Improve conservation of Páramo of Santurban financing conservation and restoration water sources projects based on quantify environmental benefits and improve local livelihoods of upper basin people, by financing-market mechanism based on payment for water benefit related to keep the conservation targets agreement.

Methodology approach

miParamo identify the lack of economic opportunity for local people located in high mountains, as a driver that increase environmental degradation. The initiative is a results - based technical-finance mechanism that improve local livelihoods of upper basin people in order to show that preserve nature in high Andean forest and the recognition of its value, will increase local income of the families and provide a sustainable way of life.

miParamo uses a market-based approach, focus on a scientific based quantify of water benefit and it's valuation, related with supply and guaranty of environmental services. The mechanism strengthens the water governance.

Analysis and results

miParamo design and implementation include three work packages: Technical, Political and Marketing.

By Technical, there are two complementary approaches;

- 1.- Scientific-based valuation of hydrological environmental services by paramo. There are implemented a twin basins study, complemented by isotopic hydrology and ecosystem services model. The first a result that shows that environmental restoration generate annual increase hydrologycal regulation about 1500 m³/ha, which implies a lower vulnerability to shortage by loss of base flow in dry season.
- 2.- There are identified 104 upper basin families, in order to increase natural areas, reduce agricultural impact and improve local

livelihoods, that meant a conservation targets agreement; first phase of environmental investment include 70 rural families, located in Mutiscua Municipality.

By political, miParamo is growing-up with coordination and support related with the interest by national government in order to improve payment for environmental services. On May 2017 was published the legal framework to PES in Colombia (law 870 by Environmental Ministry).

BY Marketing, there are communications tools designed, using Transmedia storytelling, in order to generate a scientific-based result to show, in a easy, simple and confident way, in order to offer a path to be involve, to people, water users, companies and government.

Conclusions and recommendation

Water funds are an actual and effective environmental financing mechanism that are increasing and generate key results to improve the sustainability of key freshwater ecosystems; however, financial sustainability is one of key challenges that have to face water funds. miParamo is a results - based finance mechanism that strengthen water fund and open possibilities to reply in other water funds on LAC region. The partners of miParamo are SDC, GIZ, GSI-LAC and Alianza BioCuenca, in the name of Regional Government (Gobernacion of North of Santander) and Regional Environmental

Strengthening enabling conditions for innovative financing for water-related ecosystems



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Keywords

ecosystems, infrastructure, financing, sustainability

Highlights

Investments in ecosystems can result in substantial avoided costs and a wide range of benefits. Due to the long-term nature of such investments and the public goods they deliver, innovative approaches to financing are often needed. Examples of innovative financing approaches provide lessons for strengthening the enabling environment.

Introduction and objectives

Investments in ecosystem services generate a range of public and private benefits in terms of valued goods and services as well as reduced water-related risks. Designing innovative financing approaches requires determining how these benefits can be converted into revenue streams, as a basis for cost recovery and to improve the risk-return profile of investments. There is a diverse range of policy instruments that can help to achieve this, including tariffs for water services, pollution taxes, charges to raise revenue for public goods, payments for ecosystems services and value-capture mechanisms.

Methodology approach

This analysis draws on on-going analytical work on innovative approaches to financing water security and sustainable growth in the context of the OECD-WWC-Netherlands Roundtable on Financing Water. It draws lessons learned from examples of innovative financing models that promote investment in ecosystem services and green infrastructure, building on structured discussions with experts from both the water and finance communities (development finance institutions, institutional investors, commercial banks, asset managers, venture capital firms).

Analysis and results

Investments in ecosystems or green infrastructure can result in substantial avoided costs and a wide range of benefits. Such schemes may have modest funding requirements (despite high benefits), but due to the long lag times for benefits related to changes in land use to materialise, a long-term strategy is needed. Further many of these investments deliver valuable public good benefits, which can be difficult to monetise and convert into revenue streams that can attract finance.

Despite these challenges, there are numerous examples of innovative financing models which can effectively combine different sources of finance to support investment in ecosystem services. These require strengthening the enabling environment through policy instruments (tariffs, taxes, PES, value capture) to improve the risk-return profile of investments. Blended finance can play a catalytic role to strategically deploy development finance mobilise additional finance. Dedicated finance facilities can be used to scale up investment in natural capital projects with ad-hoc structured finance solutions for projects focussed on

protecting public goods. Such a dedicated facility allows for patient investments with longer tenors than otherwise available.

Conclusions and recommendation

The analysis provides valuable insights for policy makers, NGOs and financiers (development finance institutions, institutional investors, public funding agencies, commercial banks, etc.) to develop and scale up innovative approaches to investments in ecosystems and green infrastructure. It also draws lessons for the design of blended finance vehicles and how challenges can be managed, to ensure development finance can leverage private finance and development outcomes are realised.