EFI Policy Brief 7

Payments for Environmental Services:

A Way Forward for Mediterranean Forests?

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Foreword

Payments for environmental (or ecosystem) services (PES) are an increasingly popular incentive mechanism. Landowners or managers are paid for the provision of certain environmental services, or for a particular forest management strategy generating the desired environmental services, by users or beneficiaries of these services, for example a water company seeking to protect its catchment area.

The Fifth Ministerial Conference on Protection of Forests in Europe in 2007 committed the signatory states to "facilitate the development and implementation of measures, which may include economic tools such as **payments for ecosystem services** in order to broaden and diversify the financial basis for sustainable forest management and to maintain the protective functions of forests". Existing agri-environmental and forest payment measures in the EU also have similarities to PES schemes. Yet few PES currently exist in the Mediterranean region.

The objectives of this policy brief are to outline current knowledge on PES, discuss their potential applicability in the Mediterranean context and identify the challenges that need to be addressed by policy makers, public officials and researchers for their successful implementation.

This policy brief was compiled within the SylvaMED and the NEWFOREX projects. *SylvaMED: Mediterranean Forests for All* is a European cooperation project financed by the European Regional Development Fund under the MED programme. It seeks to facilitate the innovative integration of forest goods and services into regional policies by demonstrating the potential of PES and market-based instruments for the sustainable development of Mediterranean rural communities. *NEWFOREX: New ways to value and market forest externalities* is a European research project financed by the EU 7th Framework Programme (grant agreement no.243950). It aims to develop new methods to value forest externalities, estimate the costs of their provision, and select and design market-based methods for their internalization.

> "The economic valuation of the full range of forest goods and services, as well as the design of innovative market-based instruments, are needed to ensure the provision of important forest environmental services that are currently not captured by the markets.
>
> *Ramon Tremosa*
> *Member of the European Parliament*

Bridging the conservation/ development divide

Over 65% of the total economic value of Mediterranean forests comes from non-wood forest products and services. Yet most of this value remains outside traditional markets, and does not go to the forest owners and managers whose land-use decisions affect their provision.

Traditional environmental management approaches (for example protected areas) are important, but often insufficient when hard tradeoffs between conservation and development interests prevail. Payments for environmental services (PES) can be a useful way of bridging this divide.

PES have recently attracted considerable attention from policy makers in both developing and developed countries, where both small-scale pilots and nationwide PES programmes have mushroomed.

In this policy brief we look at the concept of PES and focus on their potential applicability in the Mediterranean region.

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PES programmes have been used by water suppliers to protect the watersheds from which they draw their water. Payments are made to land users who adopt sustainable management practices which benefit the water supply.

What are Payments for Environmental Services (PES)?

PES are defined as a voluntary transaction where a well-defined environmental service, or a land use likely to secure that service, is bought by at least one environmental service buyer from at least one environmental service provider, if and only if the service provider secures its provision.

PES have three critical features:

1. A clear focus on environmental outcomes: PES are strongly result-oriented.
2. Voluntary, often negotiated agreements: PES are customized and flexible.
3. Conditionality in a contractual relationship: providers commit to actions leading to service provision, and buyers to payments – with monitoring and sanction mechanisms to ensure compliance.

PES schemes differ in scale, from small local initiatives to global international agreements. The number and institutional form of buyers, providers and intermediaries (e.g. individual landowners, communities, private companies, NGOs, public administration) also varies. The specification of the service or land use, and the mechanisms used to collect funds from buyers and distribute them to providers also differ widely.

ADVANTAGES OF PES SCHEMES

- They are more flexible than traditional command-and-control regulation, and can be designed to adapt to region specifics.
- Behavioural changes are encouraged in a non-coercive and potentially participatory and equitable manner.
- New financial resources from the private sector can often be mobilized, to leverage public funding and achieve improved environmental results.
- Public and private participation can often be mixed in a way that maximizes service delivery in each specific context.
- They may have important rural development potential.

One advantage of PES schemes is that local stakeholders may directly negotiate customized deals, without obligatory government participation.

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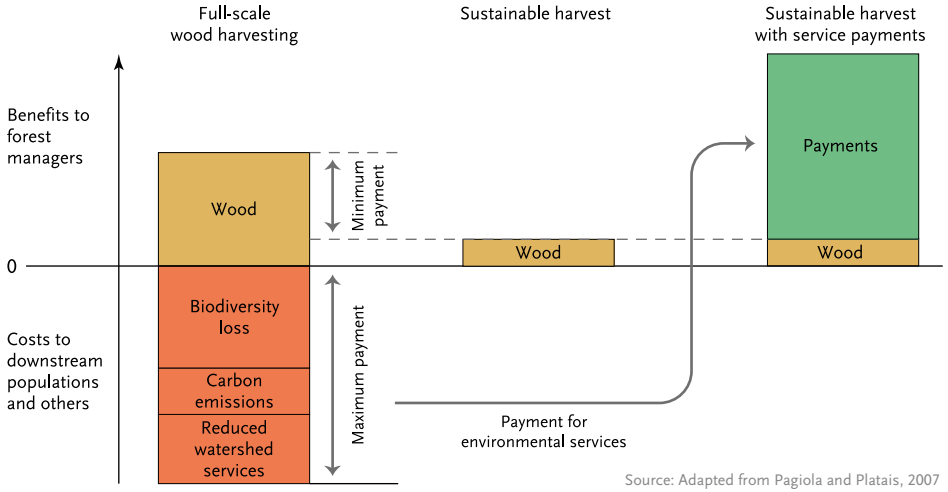
Payment amounts to service providers can be set by negotiation between buyers and sellers (often the case in smaller-scale PES) or by a government/intermediary implementation agency (typical in larger-scale, government-led schemes). Payments should cover at least the perceived opportunity costs of service provision, but should not exceed the social value of the incremental environmental service delivered.



Source: Adapted from Pagiola and Platais, 2007

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The Vittel PES programme has persuaded farmers to reconvert to extensive low-impact dairy farming, including abandoning agrochemicals, composting animal waste and reducing animal stocks.

Case study: Vittel (Nestlé Waters)

Mineral water bottler Vittel has run a PES programme since 1993 in its 5,100 ha catchment at the foot of the Vosges Mountains in eastern France, to keep the high quality of aquifer water. The programme pays all 27 farmers in the 'Grande Source' watershed to adopt best practices in dairy farming. It is implemented through Agrivair, a buyer-created agricultural extension agency, which has a solid local base and is trusted by farmers.

The programme is fairly complex in design, combining conditional cash payments with technical assistance, reimbursement of incremental agricultural labour costs, and even arrangements to take over lands and provide usufruct rights to the farmers. Contracts are long-term (18–30 years), payments vary according to service provision costs on a farm-by-farm basis, and both land use and water quality are closely monitored over time.

Total costs (excluding the intermediary's transaction costs) were over €24.25 million from 1993–2000, or an estimated 980€/ha per year. This is equivalent to 1.52€/m^3 of bottled water produced.

Identification of PES potential	• Define, measure, value and assess the threats to environmental services • Identify potential buyers and providers, their benefits and provision costs • Assess application scale
Feasibility study and capacity assessment	• Assess legal, policy and regulatory context, incl. property rights, rights to make financial transactions, rights to enter into contractual relations • Examine available administrative capacities, and support services and organizations
Establishment of the PES scheme	• Create supporting legal and institutional framework and operational procedures • Design financing and payment mechanisms • Establish technical, supervision and monitoring institutions
Implementation of the scheme	• Communicate, negotiate, and register the contracts • Operationalize financing, payment, monitoring and verification • Resolve possible disputes

The main stages of PES development. Adapted from Forest Trends et al (2008) and Brink (2011).

Design and implementation

For PES schemes to achieve all their potential advantages they should be carefully and thoughtfully designed, taking into consideration the socio-economic, ecological, legal and institutional context. Pilot activities are useful to identify impacts and pinpoint implementation constraints. Distributional issues may also have to be taken on board in more disadvantaged regions. Like any innovative policy mechanism, learning from the application of pilot projects and programmes worldwide is essential, to allow us to refine implementation over time.

Enrico Vidale

Julija Sapic / www.fotolia.com and Corgarashu / www.fotolia.com

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Some areas are much more valuable for alternative uses (eg fertile soils for agriculture with easy road access), so payment rates should be flexible.

Lessons learned

Several design lessons for well-functioning PES stand out:

1. Target threat/leverage zones

Given PES are voluntary, service providers may offer land areas where no real environmental threats exist. It is important to develop a spatially explicit baseline – where environmental threats or opportunities for improvement in the absence of PES would occur – and to spatially target PES using that baseline to achieve additionality.

2. Target high-service zones

Many environmental services are unevenly distributed in the landscape (eg watershed protection demand near large cities). It is important to map their supply and demand, and target high priority areas for PES inclusion.

3. Pay customized rates

Service provision costs can vary dramatically across resource owners, as some areas are much more valuable for alternative uses. Paying all service providers the same per-hectare rate may exclude resource owners with high opportunity costs, so PES rates could be customized.

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Innovative technologies can help reduce monitoring and enforcement costs.

4. Strengthen conditionality

Some PES schemes lack adequate monitoring and sanctions, resulting in reduced compliance and low additionality. Compliance to land-use management changes *and* also actual service(s) provision should be assessed, to be able to claim that the programmes are effective.

5. Ensure institutional coordination of policies

It is crucial that all institutions involved in the implementation of PES components like financing, contracting and monitoring are coordinated. Government involvement is often necessary to guarantee PES objectives are not compromised by contradictory policies.

6. Limit transaction costs

These include set-up, communication, negotiation, monitoring and enforcement costs, and all other costs beyond the actual payments. High transaction costs may reduce the budget available for paying for service provision. Innovative technologies like remote sensing technology for monitoring, sanctioning systems to enhance compliance, bundling or layering of ecosystem services, broker-based exchange mechanisms, or building on existing community development programmes can reduce costs.

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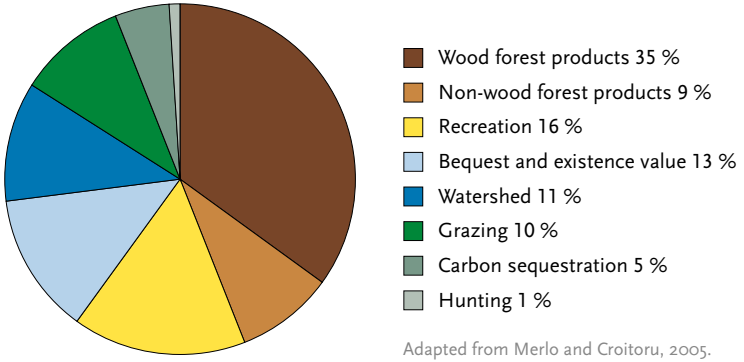
Cork oak, Andalusia

The Total Economic Value of Mediterranean Forests



Adapted from Merlo and Croitoru, 2005.

Mediterranean forests

Mediterranean forests and woodlands cover 73 million hectares – approximately 8.5% of the region's land area. In addition to wood, they provide numerous non-wood forest products (cork, pine kernels, mushrooms and truffles, aromatic and medicinal plants, etc), valuable services (landscape beauty and recreation, carbon sequestration, microclimate amelioration, etc), and are exceptionally rich in terms of biological diversity. Mediterranean forests are crucial for the sustainability of the region's most sensitive strategic natural resource – water. They play an important role in protecting watersheds, regulating seasonal flow quantities and improving water quality.

Yet Mediterranean forests are among the most vulnerable forest ecosystems on Earth. They are exposed to harsh climatic conditions, long-lasting human pressures and recurrent fires, causing their degradation and desertification. Predicted climate and socio-economic changes are expected to increase existing threats and contribute to the expansion of Mediterranean conditions to new areas.

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Billions of euros are lost annually because of forest fires.

Lansing / www.fotolia.com

In the eastern and southern Mediterranean, overgrazing and clearing for agriculture lead to rapid forest degradation.

A threatened treasure

Forest fires

50,000 fires and 500,000 ha are burned annually in the Mediterranean. 2.6% of large fires account for 75% of the area burned.

Land-use change

In Mediterranean Europe forest cover increases, whereas the southern and eastern Mediterranean suffer from rapid deforestation (1.1% per year).

Climate change

At a global scale, there has been a temperature increase of 0.76°C in the past 150 years, whereas in Spain, for example, the temperature has increased by 1.53°C just in the last 30 years.

Biodiversity

Mediterranean forests host around 25,000 species of vascular plants (50% are endemic species), and have a high degree of tree richness and endemism (290 indigenous tree species with 201 endemics).

Water

Over 50% of the region's population (nearly 240 million inhabitants) live in conditions of water tension with <1,000 m^3 $capita^{-1}$ $year^{-1}$. 60 million face severe water shortages (<500 m^3 $capita^{-1}$ $year^{-1}$). By 2050, the latter figure may reach 290 million people in the southern and eastern Mediterranean alone.

A PES scheme implemented in the fully forested fire-prone watershed near La Verne artificial lake (St Tropez, France) channels funds to fire prevention activities, reducing soil erosion and improving drinking water quality.

C. Birot

Elge / www.fotolia.com

A PES scheme in Girona (Spain) encourages the conservation of mature forests.

Opportunities for PES in the Mediterranean

In the Mediterranean region, payments for environmental services remain relatively infrequent. The most well-known, documented examples are PES schemes for biodiversity conservation and watershed management. Yet through their wide applicability, PES have good potential to improve particular environmental aspects:

- promoting adaptive forest management in regions where low profitability of forestry leads to land abandonment, thus lowering the risk of fires, improving erosion control and water use efficiency;
- incentivizing more forest conservation in regions where deforestation and land conversion to more profitable land uses (e.g. agriculture) occurs.

Case study: Girona

This PES programme, running since 2008 in the Catalan province of Girona (north-east Spain), aims to promote biodiversity by conserving mature forest stands (stands which have not been actively managed in the last 50–100 years). Forest owners are offered payments for a commitment to leave the stands in natural evolution for 30 years. The programme is funded from the provincial budget and private donors; beneficiaries can be both private landholders and municipalities. The reward they receive is meant to compensate for the profit loss, calculated using an approved forest management plan.

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The Diga di Ridracoli. Since the dam's construction, the biggest problems have been dam landfill and high levels of nitrogen, problems which directly affect the lifetime of the dam as well the cost of water purification.

Case study: Romagna Acque S.p.a.

Romagna Acque S.p.a. is a consortium of municipalities which manages water resources in the Romagna area of north-east Italy, transferring tap water from the Apennines to cities along the coast. Nearly 50% of the company's water production is linked to a dam basin in Bagno di Romagna.

A study commissioned by the company demonstrated that certain forest management practices could reduce soil erosion, resulting in an overall benefit of 10,000m³/year in terms of avoided soil erosion (originally 42,000m³/year), besides improving water quality. In 2001, the company implemented a payment scheme to encourage forest owners (public and private) to adopt these forest management practices. The initial payment amount was around 200 €/ha decreasing to 100 €/ha after a couple of years, corresponding to 7% and 3% of the water bill revenues. Today, almost all the surface of the catchment area (5,200 ha) is covered by the scheme, which involves the majority of forest owners in the region. It generates an annual monetary flow of 0.5–1M€.

Support for PES schemes is needed

PES are a novel and frequently attractive policy instrument, with a high potential to pool public and private funds to address the challenges facing Mediterranean forests, and therefore deserve closer attention. With their strong focus on outcomes and the conditionality of payments, PES differ significantly from the already familiar public subsidies and grants.

- **Awareness-raising on PES issues among policy makers, decision-makers, landowners and other relevant stakeholders is an essential step towards promoting their use in the region.**
- The knowledge base on PES needs to be extended, based on the assessment of functioning schemes, both in the region and beyond.
- **Developing a network of PES pilot studies and coordinating them across countries to trial different approaches in different places would benefit all by improving the efficiency of allocated funds.** This needs to be coupled with the identification and dissemination of best practice.
- **Guidelines for supporting the design and implementation of PES, acknowledging the roles of the different actors involved in their implementation, are also needed.**

References

Birot, Y., Gracia., C. and Palahí, M. (2011) Water for forests and people in the Mediterranean region. What Science Can Tell Us. European Forest Institute.

Brink, P. ten (ed.) (2011) TEEB – The Economics of Ecosystems and Biodiversity in National and International Policy Making. Earthscan

Gorriz, E. and Prokofieva, I. (2011) Analysis of three economic incentives for the provision of forest goods and services in Catalonia (Spain), Spanish Journal of Rural Development, vol. II, special number 1, pp. 75–86.

Forest Trends, The Katoomba Group and UNEP (2008) Payments for Ecosystem Services: Getting started – a primer.

Merlo, M. and Croitoru, L. (2005) Valuing Mediterranean forests – towards total economic value. CABI Publishing.

Pagiola, S. and Platais, G. (2007) Payments for environmental services: from theory to practice. World Bank, Washington.

Palahí, M., Mavsar, R., Gracia, C. and Birot, Y. (2008) Mediterranean forests under focus. International Forestry Review vol. 10(4), 676-688.

Perrot-Maître, D. (2006) The Vittel payments for ecosystem services: a 'perfect' PES case? Project Paper No.3. IIED, London.

Pettenella D., Vidale E., Gatto P. and Secco L. (2011) Paying for Water-related Environmental Services: a survey on Italian PES mechanisms. IUFRO, International Symposium Multiple Forest Outputs: Silviculture, Accounting and Managerial Economics. Viterbo (Italy), May 19th-21st.

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