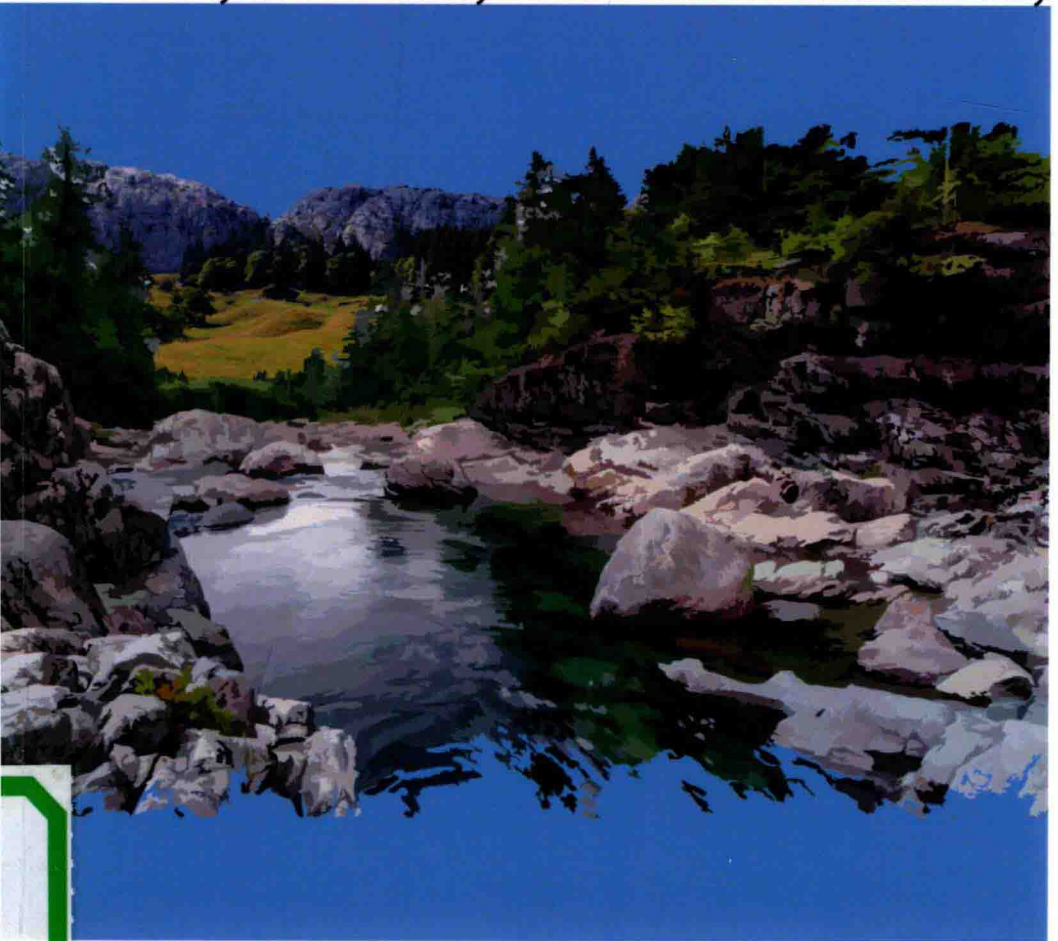




The Value of Forests

Payments for Ecosystem Services in a Green Economy



UNITED NATIONS



ECE/TIM/SP/34

Forestry and Timber Section, Geneva, Switzerland

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Abstract

Payments for Ecosystem Services (PES) describes the situation where the user of an environmental service, such as water purification, pays the landowners who provide that service. For PES to exist, there must be a clearly defined user and supplier, as well as a number of other necessary conditions, which are defined in this document using a summary of current sources. Particular attention is paid to how these conditions currently obtain within the UNECE region. The range of forest environment services is explored through fourteen detailed case studies, which examine best practice in promoting PES. Political and public relations implications of PES are discussed at length, and recommendations include the need for clarity about where PES may be a useful tool in moving towards a green economy and where other methods may be more appropriate.

Keywords

Biodiversity, ecosystem, environmental, erosion, forest policy, forest services, green economy, habitat, leakage, monitoring, payment for ecosystem services, PES, private, protective functions, public, recreation, subsidies, tenure, timber, tourism

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PREFACE

What is the value of sitting under a forest tree's shade, and enjoying a cool drink of water or lunch? What is the value of a vista of a pristine grove of conifers or a stand of hardwood trees in full autumn colour? And how do we place a value on wildlife habitat; protection from floods, landslides, avalanches; and perhaps most important of all, clean water, air and climate? Our forests provide many critical services to humanity. We have long valued the forest for things that have very tangible monetary worth, such as wood and wood products, but we have not been able to demonstrate and capture the values of its services that are difficult to measure or even priceless.

It is not that we don't recognise these services from our forests. We have long understood the importance of the key ecosystem services that our forests provide, but we have been slow to realize that these things could be worth paying for; especially when the costs and responsibility for stewardship of the forest are not in the public sector. Payment for ecosystem services (PES) is a tool to enable a forest owner or owners to capture the financial benefits from the positive externalities derived from forest ecosystem services and encourage them to continue to provide these services to another party or society at large.

This publication is a joint effort of UNEP, UNECE and FAO (through the joint UNECE/FAO Forestry and Timber Sections in Geneva) and discusses the concept of PES, as well as the various approaches, applications and resulting benefits in the UNECE region. It also covers some negatives that could occur without good policy in place. It uses lessons learned to provide guidance on what is needed for the success of PES schemes and their possible future.

UNEP, UNECE and FAO express their appreciation to all those who have played a part in the production of this timely publication and hope that it will highlight the critical role that forests play in maintaining our environment and contributing to a green economy.

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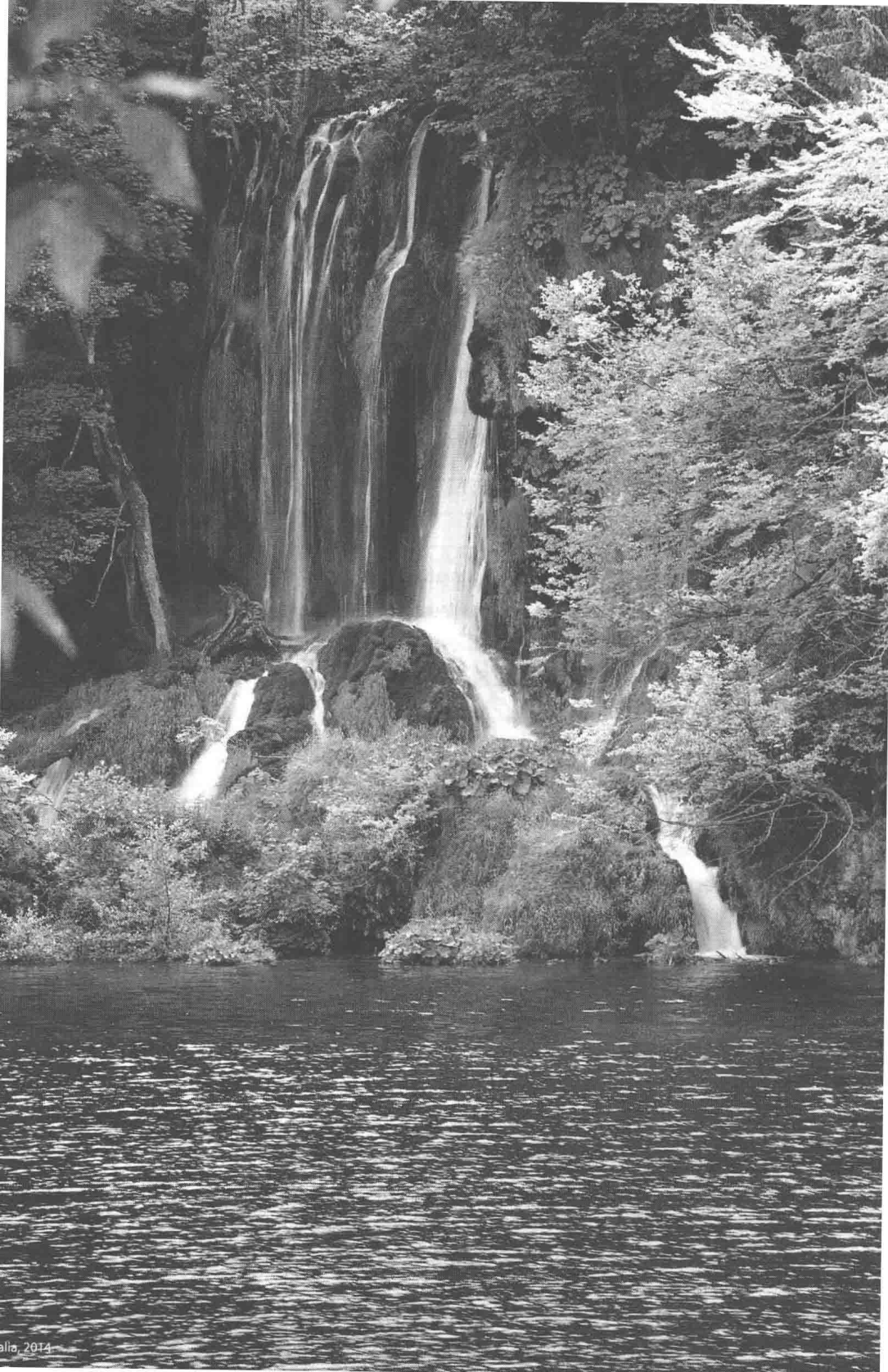


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INTRODUCTION

There are a number of definitions for the term 'Payment for Ecosystem services' (PES), but in general it refers to situations where a specific, usually local, agreement is made for users of an ecosystem service to pay the providers of that service. It is distinct from environmental payments such as taxes, subsidies, grants and penalties, because the payment is agreed in advance between the user and provider, and the monies paid go to the provider, not into a general public purse.

So, for example, a firm needing pure drinking water, such as the Coca-Cola® bottling plant at the Tagua Reservoir, Portugal, agrees to pay local forest owners to maintain their forests in good condition so the plant may continue to draw pure water from the reservoir. This successful example is the kind of 'win/win' solution which PES can give, whereby both parties benefit in a way which would not have been the case if the PES option had not been available (Bulgaho, Presentation to ThinkForest Conference, 2012).

PES is generally based on a "user pays" rather than a "polluter pays" principle. Broadly speaking:

User Pays: Under this arrangement, the beneficiary of an environmental service provides payment, whether this is directly for an environmental service such as water purification, maintaining biodiversity, or storage of carbon.

Polluter Pays: In this situation, the parties responsible for damaging the environment are taxed or fined for doing so.

With PES, the fact that the money goes directly to the provider helps ensure that the service will continue to be supplied. This payment can be used to strengthen that particular ecosystem against pressures that may affect it, including climate change. As a voluntary agreement, rather than a tax or fine, it is hoped that there is more willingness to comply from the paying party (though at present no evidence is available to substantiate this) leading to lower transaction costs.

At the time of writing, the majority of PES schemes are unique, often innovative and do not fit easily into subsidy/tax programmes such as the EU Common Agricultural Policy (EU CAP). PES projects are particularly effective tools for rural development, especially where they succeed in bringing together public and private partners. Financing through a PES scheme secures long-term commitments to provide ecosystem services, which may otherwise be hard to achieve, especially in an economic recession. In some situations, PES schemes may be used as an instrument for poverty alleviation, if they provide employment and income for impoverished populations. The local nature of agreements may also be an effective tool for raising awareness about environmental concerns among a local community, although, as mentioned in section 5, partnership agreements of this kind are a change from a more traditional environmental message

in which natural biomes are left untouched, so this awareness-raising will have to be carefully managed.

PES has come to prominence in the past decade as a possible solution to environmental problems. As a relatively new cooperative tool for environmental protection, it is important that it is used carefully, as early failures could bias the public against a useful solution. The following sections examine what is meant by ecosystem services; how they can be valued; what kind of PES agreements have been used so far; the conditions necessary for their success, and possible future directions for PES.



1. ECOSYSTEM SERVICES

Before discussing how they can be paid for and what types of schemes are available, it is important first to define ecosystem services and the context in which they are found. This section defines what ecosystems are, their different categories, and how these relate to forest ecosystems. It goes on to examine the commitments that have been made towards forest-related PES schemes in Europe.

1. General ecosystem services

The Convention on Biological Diversity (1992) defines an ecosystem as “*a complex of living organisms and the abiotic environment with which they interact in a specified location.*” In other words it is a local network of interacting plants and animals, and the landscape in which they live. An ecosystem service therefore, is a direct, measurable benefit from an ecosystem, for example, prevention of soil erosion by forests.

The concept of local agreements to pay for such services was clarified by Wunder (2005) who defined basic principles of PES projects:

- Participation in PES schemes must be free and voluntary.
- The compensated ecosystem service, or land-use, likely to provide the service is well defined.
- At least one provider is involved.
- At least one buyer exists.
- The ecosystem service provider guarantees the availability and conservation of the particular ecosystem service. This proviso is called conditionality: the buyer needs to know they will continue to get what they have paid for.

The UNECE defines PES as “a contractual transaction between a buyer and a seller for an ecosystem service, or a land use/management practice likely to secure that service.” (UNECE, 2007). PES therefore covers a variety of arrangements through which the beneficiaries of ecosystem services pay the providers of those services. (Gutman, 2006). It is a range of financing arrangements for the conservation and sustainable use of natural ecosystems, such as forests, to ensure that the cost to the environment is paid for. It is not, therefore, one model to be universally applied, but rather a series of schemes which can be considered for application to particular circumstances, whether or not they exactly conform to the CBD or UNECE definition.

Recent increased promotion of PES has been due, in part, to new research by the UN-sponsored Millennium Ecosystem Assessment (hereafter MA) (Vihervaara et al., 2010). This report assessed the state of the world's ecosystems and examined 24 essential ecosystem services in the context of “benefits people obtain from ecosystems.” It found

that over the past 50 years, only four of these services have shown improvement whereas fifteen have shown serious decline, with the remainder under stress in some parts of the world. Practical measures such as PES, that may reverse this tendency, are therefore of great interest to the UNECE.

1.2 Categories of Forest Ecosystem Services

The MA classifies ecosystem services into four types, which apply to forest ecosystems as follows:

Provisioning: Useful physical products of the forest such as food, wood, fibre and fuel.

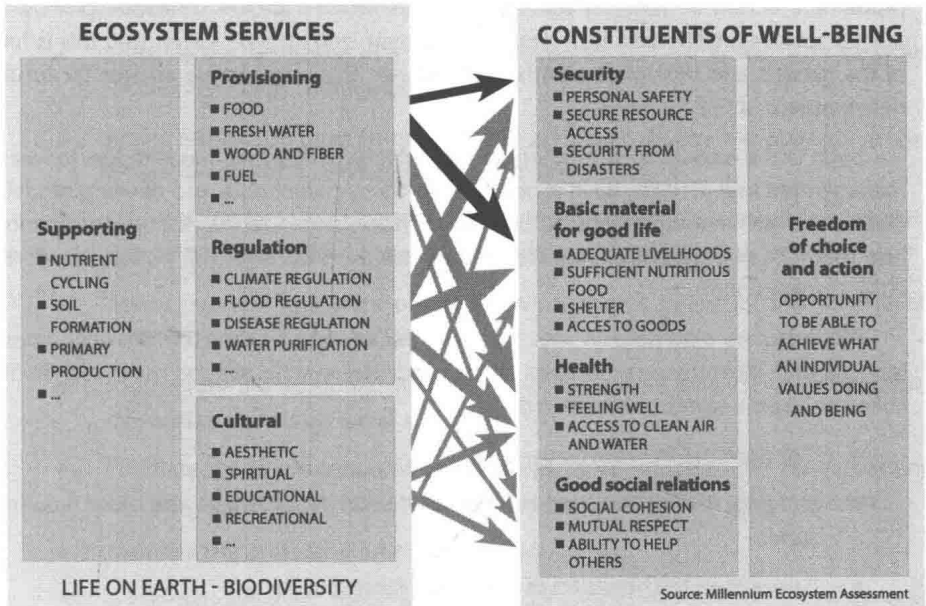
Regulating: These are the 'preventative' benefits of forests: their role in erosion control, flood prevention, climate regulation, carbon sequestration and water purification. As will be shown, this last has been one of the most common areas for PES schemes, partly because benefactors of water purification services are often easier to identify.

Cultural: Forests are sources of aesthetic and spiritual regeneration as well as providing recreation and education, which supplies services for the tourism industry.

Supporting: This describes the role of ecosystems as a 'nursery' for other environmental benefits, such as nutrition cycling and soil formation. Biodiversity services such as species and habitat conservation fall into this category.

The relationships between these different ecosystem services, and their contribution to human well-being, are set out in the diagram below:

Figure 1: Linkages between Ecosystem Services and Human Well-being.



Source: Millennium Ecosystem Assessment. Ecosystems and Human Well-being. A synthesis. p.vi

Forests fit the Wunder's condition of being well-defined areas, and also provide all four ecosystem services:

Provisioning: Models for extraction of provisions from forests have varied widely across the world, from complete deforestation, to commercial schemes which follow a model similar to PES where the goods extracted are paid for directly whilst still contributing to forest well-being. For example, sustainable forest management has been practiced for many decades in Europe and has been shown to lead to healthier forests.

Regulating: Whilst there seems to be a high awareness of the key role of forests in carbon sequestration and purification of water (World Bank/WWF, 2003), their role in climate regulation, flood control, air purification and land stabilization, especially in mountainous areas, (FAO Forest Resources Assessment (FRA), 2005) are ecosystem services which are rarely paid for by the industries and communities which benefit from them.

Cultural: Forests are treasured natural assets for society in general, but in particular are vital to the cultural activities of indigenous societies. Furthermore, modern cultural trends such as ecotourism can also be seen as a cultural service (Millennium Ecosystem Assessment, 2005, p.7), as these generate income for those involved in their promotion. It is not just ecotourism that benefits, however; most non-urban tourist industries would not exist were it not for the natural beauty (rivers, woodlands) that is part of the service they sell.

Supporting: Forests are extraordinarily abundant in life; they provide biodiversity protection, acting as habitats for over half the world's known terrestrial plant and animal species (Millennium Ecosystem Assessment, 2005 p.587). Given that this is half of the genetic and biological wealth of the planet, this may also be an area for future development of PES.

Such is the interest in the potential profitability of PES that stakeholders in forest management and services have formed consortia to collect data and develop models. The recent Newforex conference in Copenhagen, for example, ran workshops considering new methods of cost and valuation of PES, as well as its benefits and pitfalls (Newforex 2012, Copenhagen).

PES schemes may help to maintain or enhance forest ecosystem services where markets and incentive mechanisms are lacking. These schemes are most commonly linked to carbon, water, or biodiversity.

- For example, PES can be used to:
- Enhance biodiversity and to conserve healthy vital forests and other wooded land.
- Strengthen the provision of non-wood forest products.
- Improve water quality.
- Mitigate climate change by sequestering and storing carbon.
- Mitigate flood risk.

PES can be a tool to help maintain the multi-functional role of forests. Forests may be at risk from increased demand for renewable energy, environmental damage and the effects of climate change. Forest ecosystem services and resilience become more crucial, and PES is an important method by which direct payments can be made to maintain these services.

1.3 Commitments towards forest-related PES schemes in the UNECE Region

Within Europe, protecting forests has been rising on the political agenda. The government ministers at the Forest Europe Oslo Conference 2011 called for a legally binding agreement to ensure continuity of all environmental, economic and social forest functions. This built on earlier work, beginning with the Fourth Ministerial Conference on the Protection of Forests in Europe, held in Vienna in May, 2003, which recognized the essential benefits that forests provide. The signatory countries committed to promote incentives that have positive impacts on sustainable forestry, and also to the removal of incentives that have negative impacts. At the Fifth Ministerial Conference, held in Warsaw in 2007, signatory countries and the European Community recognized the vital role that sustainable management of forests plays in protecting water quality, and committed

themselves to implement tools for securing water-related services provided by forests, such as payments for ecosystem services. They also agreed to:

- Enhance the protective role of forests for water and soil as well as mitigating local water-related natural disasters.
- Assess forestation programmes for their effects on quality and quantity of water resources, flood alleviation and soil maintenance.
- Develop and improve policies for forest and water resource management contributing to the maintenance of sustainable ecosystems.
- Assess the economic value of forest services related to quality and quantity of water resources and flood alleviation.
- Incorporate the economic valuation of water-related forest services into policies and strategies on forest and water.
- Facilitate the implementation of measures, including payments for ecosystem services, to diversify the financial basis for sustainable forest management.
- Maintain the protective function of forests.

At the international level, the Strategic Plan for Biodiversity 2011-2020, adopted at the 10th Conference of the Parties to the Convention on Biological Diversity (COP-10) in Nagoya, Japan contained the following goals:

Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.

Goal B: Reduce the direct pressures on biodiversity and promote sustainable use.

Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.

Furthermore the Convention on Biological Diversity (CBD) mapped out twenty global targets to be achieved by 2020. The following are particularly relevant:

- The integration of biodiversity values into national/local development plans, poverty reduction strategies and planning processes, and incorporation into national accounting and reporting systems as appropriate (target 2).
 - The elimination, phase-out or reform of incentives, including subsidies, harmful to biodiversity, and the development and application of positive incentives for the conservation and sustainable use of biodiversity (target 3).
 - Taking steps to achieve, or have implemented, plans for sustainable production and consumption and to have kept the impacts of the use of natural resources well within safe ecological limits (target 4).
-

- The sustainable management of areas under agriculture, aquaculture and forestry, ensuring conservation of biodiversity (target 7).

Other initiatives are also relevant, such as those related to the implementation of the United Nations Convention to Combat Desertification (UNCCD), on the economics of desertification, and on land degradation.

As can be seen from the above, commitment to, the concept of PES is strong in the UNECE region, and many of the conditions (outlined in Section 4) are already in place.

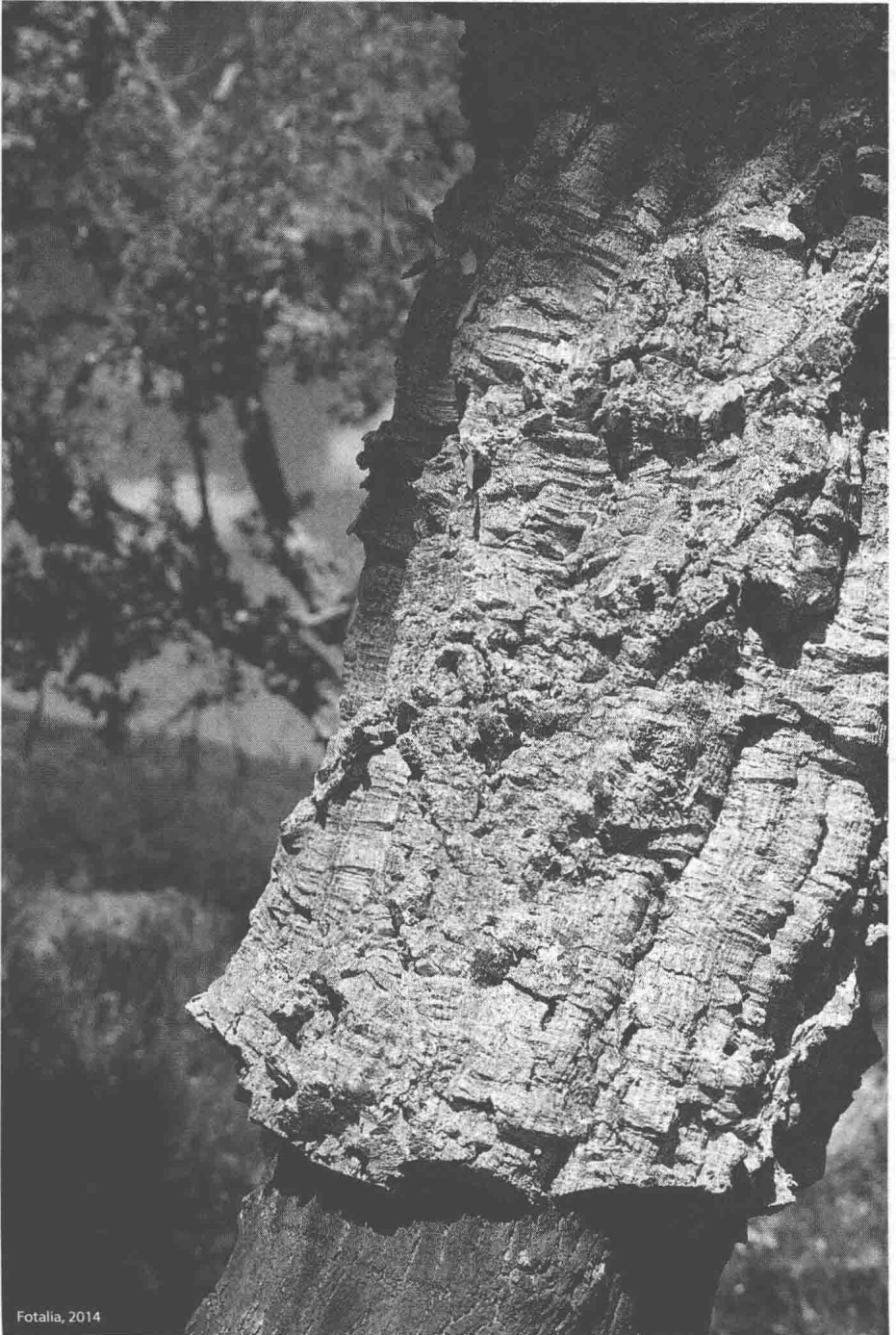
1.4 Green economy, the economics of ecosystems and their services

The Action Plan for the Forest Sector in a Green Economy, developed under the auspices of the ECE Committee on Forests and the Forest Industry and the FAO European Forestry Commission, refers to the need to protect the welfare of all forest stakeholders, with particular reference to compensating suppliers, wherever possible. Payment for Ecosystem services is a possible mechanism for this, and different approaches to the compensation process are addressed.

A number of different economic valuation approaches have been developed to determine the value of ecosystem services and biodiversity. The study on "The Economics of Ecosystems and Biodiversity" hosted by UNEP and financed by the European Commission and other country donors, was launched at the 10th Conference of the Parties to the Convention on Biological Diversity (CBD) in Nagoya, Japan in 2010 and compares different valuation approaches (TEEB, 2010). It also estimates that the global value of ecosystem services may run to several trillions of dollars annually. TEEB presents recommendations to policy makers and the business community at national, international, regional and local levels on how to take proper account of the value of ecosystem services and biodiversity in decision making.

Labelling, certification, and payments for ecosystem services can complement regulation, by encouraging consumers of ecosystem services to recognize and pay for their value. PES should change the economics of ecosystem management to support biodiversity-friendly practices that benefit society as a whole (TEEB).

To be in line with the Action Plan, payments for ecosystem services must encourage resource owners to adopt management practices that maximize social benefits within existing regulations and market incentives. PES may offer an opportunity, therefore, to increase the profitability of conservation, with benefits for both the private landowner and for society. In the absence of PES, landowners might not choose to conserve their land or to maintain a specific ecosystem service unless other incentives, such as tax incentives, or other instruments such as regulation, were in place (TEEB).



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