Contigent valuation of environmental assets: literature review

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Abstract

Background Decision-making with respect to the management of environmental ecosystem services is complex because involve multiple objectives. Better management of forestry sector in Albania will necessary involve the identification and reconciliation of the trade-offs between the negative externalities created by industry development and protection of recreational areas and biodiversity. In a situation where there are competing potential users of scarce resources the issue of optimal allocation arises. Where there is a competitive market functioning, the price mechanism will ensure an economically efficient allocation of resources. Where markets do not exist there is a failure of the market to value resources, for this reason there is a need to apply techniques that estimate a value for environmental resources. The objective of this paper is to estimate the value given to the environmental assets specifically to forestry ecosystem of Lura.

Method Contingent valuation method (CVM) is proposed for the purpose of this study. CVM is used to estimate economic values for different kind of environmental assets. This method involves directly asking people in a survey, how much they would be willing to pay for specific environmental services.

Expected results and practical implications: The results of this study will be used to identify the appropriate use of resources in the forestry sector, provide justification for public decision makers for management to protect forestry resources; to assess the worth of forestry assets and finally to stimulate awareness in Albanian stakeholders regarding environment.

Key words: *Contingent Valuation method, forestry resources, environment, ecosystem.*

1. Introduction

Environmental resources are categorised into goods and services. Environmental goods are also categorised into those which are traded in the goods market, and the non-traded ones, but provide immense livelihood value to rural populations nevertheless.. These normally do not have a market, as is the case with other commodities because they are not traded, this is the concept of 'missing markets', and thus are not usually included in private and public development decisions. However, these environmental goods and services, which are not traded in the market, have economic value, which is fundamental to our existence. Economic valuation provides us with tools to assist with the difficult decisions involved in the utilisation of our environmental resources. The major application of economic valuation is to avoid the loss of environmental resources especially those with irreversible outcomes. Valuation of environmental goods and services plays a very important role in terms of providing vital and useful information for accounting for environmental resources presently not accounted for by the national accounts. Method Contingent valuation method (CVM) is proposed for the purpose of this study. CVM is used to estimate economic values for different kind of environmental assets. There are several approaches/methods to the valuation of environmental assets; each approach is suitable for different environmental benefit situations. These include the stated preference of Contingent Valuation Method (CVM), which is used to assign monetary values to non-use values of the environment. These types of values do not involve market purchases and may not involve direct participation. They include the ecological functions, aesthetic values of the enjoyment of scenic views or wilderness experience, option values, existence values and bequest values. Revealed preference methods of travel cost and hedonic prices/indices, the former mostly used for valuation of environmental amenities which do not involve direct market purchases but use what is known as a "surrogate" market of travel costs involved in getting to the environmental resource such as wildlife viewing or coastal tourism. Hedonic prices approach is mainly used for valuing environmental quality in terms of prices of houses as a proxy. Other methods include cost based valuation such as the replacement cost technique.

Market approaches for environmental resources management have received much attention recently due to their efficiency and flexibility among other qualities. However, the enforcement of environmental laws needs a clear environmental liability regime to base legal decisions such as compensation aspects of the liability

2. Literature Review

Whilst the economics approach to sustainable development and environmental decision-making represents the mainstream view, and it is not without controversy. Why? There is a very obvious but important dilemma that confronts any form of environmental valuation. Economists typically rely on individuals revealing their preferences for goods and services as a result of market transactions. However, the vast majority of environmental goods and services are not traded in markets: they are not bought or sold. Thus, non-market valuation is an attempt to correct for a form of market failure. Environmental valuation as practised by economists is an attempt to place monetary value on these goods and services so that efficient resource allocation decisions can be made. Defining market failure Neoclassical economics is concerned with markets for goods allocating scarce resources to alternative uses, and prices being established which reflect the scarcity of, and levels of demand for, goods. Think for a moment about our daily lives and what affects them. We live in a particular environment, breathing the air. However, we do not pay a price for the air, as there is no market in air. As a result, we cannot reflect our preference for breathing clean rather than dirty air through the market. This is an example of market failure. Market failure occurs when the conditions for perfect competition are not met. If the market fails, then government intervention designed to correct the market failure may bring benefits to society. However, government intervention may fail to secure these benefits, even making matters worse and resulting in market failure. This is known as government failure. We know that the market mechanism will lead to the socially optimal outcome only under very specific conditions. However, it is highly unlikely that these conditions will be fully satisfied.

2.1 Neoclassical and ecological economics

Within the economics discipline, some of these broader aspects of decision-making have been adopted by economists who describe themselves as being ecological economists. What are the main differences between neoclassical and ecological economics?Neoclassical economics can be used as a tool to assign monetary values to environmental goods and services and these values can then be incorporated into decision-making at the project, sectoral and national levels. Neoclassical economics is then used to provide a theoretical basis for environmental valuation and introduce the different ways of measuring welfare change, using the concepts of consumer surplus, willingness to pay and willingness to accept. The components

of environmental value are analysed, with distinctions made between use values and non-use values, including option values and existence values.

The neoclassical approach treats the environment as a commodity which can be broken down into different components and analysed, just like any other commodity. For example, the economic value of a wetland ecosystem can be broken down to show the value of different wetland products, such as wild plants, fish, and building materials derived from wood, palm leaves, grasses, and soils. There are also important ecological functions of the wetland, such as water filtration and climatic regulation, which may have impacts on the agricultural or other economic sectors. These indirect economic impacts will also be factored into the economic valuation estimate. This is essentially a mechanistic conception of the environment, in which the overall value of nature is broken down into its constituent parts and reconstructed, rather like a machine. It assumes that the environmental system can be reduced to its parts and that the essentially deterministic relationships between the different elements are governed by predictable laws. Ecological economists argue that environment–economic linkages are not characterised by short-term deterministic relationships, but are governed by synergy, irreversibility and ecological thresholds. They view economic, social and ecological systems as having a dynamic and interconnected relationship that evolves over time.

This approach rejects universal policy prescriptions that flow directly from the neoclassical model, arguing for a more pluralistic approach in which environmental policy decisions are tailored to the specific circumstances in each case, and in which ecological thresholds or sustainability constraints are applied to economic decision-making. The neoclassical approach emphasises the instrumental use of environmental resources for human preference satisfaction. The central assumption of free will and consumer sovereignty elevates the role of humankind to environmental managers. In ecological economics the human species is seen more as an environmental steward rather than merely a consumer of environmental goods and services. Some would take a stronger stance, rejecting the underlying utilitarian ethic of neoclassical economics by arguing for the extension of 'rights of existence' to other species, independently of the interests of humankind. Institutional economists also argue that environmental behaviour and preferences are largely determined by the economic system and societal norms, hence suggesting a greater role for environmental education.

The utilitarian ethic of neoclassical economics is concerned with maximising net human welfare across generations. If the interests of future generations are not explicitly protected, this approach allows the welfare of one generation to be traded off against that of another generation. The aim of protecting the interests of future generations has now become a central component of the widespread commitment to sustainable development. However, the meaning of protecting the

interests of future generations is subject to multiple interpretations, and differs in neoclassical and ecological approaches to the environment. For example, followers of the 'weak sustainability' school might allow economic development that degrades the environment so long as the overall stock of wealth (which includes both man-made and natural capital) does not decline in value terms over time. Ecological economists remain sceptical of this interpretation of inter-generational justice, arguing that there is a need to conserve a 'critical stock of natural capital' to pass on to future generations. This approach to sustainability may be described as a 'strong sustainability' approach.

2.1.1 Different perspectives between neoclassical and ecological economics

Neoclassical and ecological economics have different perspectives on: the relationship between the economy and the environment; the relationship between humankind and nature; the rights of future generations; and the role of the market in environmental resource allocations. These different perspectives have important implications for the role of environmental valuation in environmental management at the project level. Neoclassical and institutional economics give different perspectives, with neoclassical economics emphasising the market failure approach to the environment while institutional economics concentrates on the property rights approach. Individuals' preferences are assumed exogenous (ie external to the model) by neoclassicists, but endogenous (ie internal to the model) by institutionalists, and moral and social norms are given more prominence by institutional economists. Sustainable development can be defined in terms of five core principles: economic efficiency; social equity; ecological integrity; quality of life; and public participation in decision-making. These five principles have different interpretations and emphasis according to 'weak' and 'strong' sustainability. Environmental valuation and cost–benefit analysis focus on the efficiency aspects of sustainable development and form part of the range of methodological approaches to incorporating sustainable development into decision-making. Environmental valuation uses money as a common measuring tool to weigh up environmental costs and benefits.

2.2 Market and nonmarket goods and services with economic value

Forests provide flows of market and nonmarket goods and services with economic value. Market goods include timber and nontimber forest products. The market value of timber can be observed in world prices. The value of nontimber forest products has only recently become known because these markets tend to be local. Economists have valued flows of nontimber forest products using market analyses of the net revenues of collection. The values of fruit and latex in Belize

; firewood, cork, fodder, mushrooms, and honey in the Mediterranean; and many other nontimber forest products have been shown to be significant. The harvesting of products, such as berries and mushrooms, for noncommercial purposes has also been valued using travel cost models. Recreation is an important nonconsumptive use of forest resources, and several studies use travel cost and CV models to estimate the value of forest recreation. Other nonconsumptive uses whose value has been estimated include watershed protection and pollination services for local agriculture. Carbon sequestration is also an important nonconsumptive use. Should a global carbon market arise, this service may have significant market value. Forests also may have significant nonuse value to society at both the local and global scale. Overall, the literature review suggests that non-timber and non-market values of forests in developing countries are often significant, when compared to the market value of forest land for timber extraction and agricultural production. Information on the economic significance of non-timber forest benefits can and should be incorporated in private property rights, forestry regulations and pricing policy. This potential has not yet been realized, however, largely due to political and institutional barriers but also because of the lack of regular, reliable information on the use of (and changes in) non-timber benefits.

2.3 Estimation methods for environmental goods and services

There are several approaches/methods to the valuation of environmental assets; each approach is suitable for different environmental benefit situations. These include the stated preference of Contingent Valuation Method (CVM), which is used to assign monetary values to non-use values of the environment. These types of values do not involve market purchases and may not involve direct participation. They include the ecological functions, aesthetic values of the enjoyment of scenic views or wilderness experience, option values, existence values and bequest values. Revealed preference methods of travel cost and hedonic prices/indices, the former mostly used for valuation of environmental amenities which do not involve direct market purchases but use what is known as a "surrogate" market of travel costs involved in getting to the environmental resource such as wildlife viewing or coastal tourism. Hedonic prices approach is mainly used for valuing environmental quality in terms of prices of houses as a proxy. Other methods include cost based valuation such as the replacement cost technique.

2.3.1 Stated Preference Method (CVM)

A considerable literature has grown on the valuation of non-market benefits where the CVM has emerged as the most employed approach in valuing non-use values of the environment. It is, however, used also for use values like water

supply project studies particularly in the rural areas. It is based on asking people questions about their preferences in terms of their willingness to pay (WTP) for a certain environmental service or resource's existence, preservation or avoidance of damage. Alternatively, WTP is the total amount of money an individual would give up in exchange for all the benefits associated with an environmental resource. The opposite is the willingness to accept compensation (WTA) for a degraded (or conversion of an) environmental resource such as a wetland among others. It is the minimum total amount of money an individual would accept to forego all the benefits associated with an environmental resource. The use of CVM for valuing environmental resources originated and was largely developed in North America. In forestry, CVM has been used to value wildlife and recreational benefits of protected areas. Several recent studies have demonstrated the feasibility of applying CVM to forest land use in the developing world. For example, in a case study of forest recreation in Costa Rica, Echeverría, Hanrahan and Solórzano (1995) used a "take-it-or-leave-it" personal interview survey of eco-tourists to estimate WTP for the Monteverde Cloud Forest Preserve. They found that the two methods generated comparable estimates, and that the aggregate benefits of forest recreational areas exceed the (direct) costs of their provision. Logging of native forests can cause loss of biodiversity and reduced recreational enjoyment. Therefore, there can be a non-market benefit from banning (or limiting) logging, but this comes at the cost of not having access to logs that are valued by wood processing facilities (and ultimately consumers). Both the non-market costs and market benefits of logging vary markedly from one area of forest to another, meaning that it may be sensible to ban logging in some forests but not others.

We summarize and compare altogether five different taxonomies of market and non-market valuation methods: Mitchell and Carson (1989) classify the methods based on the source of data. First, the methods are portioned according to whether they yield monetary values directly or indirectly. Then, if the values are derived directly, they classify whether the data come from observation of people acting in the market (revealed preferences) or from people's responses to hypothetical questions concerning their willingness to pay (stated preferences); Munasinghe (1993) distinguishes among approaches according to the type of market from which the value is derived. The monetary value can be thus derived by looking at (i) the conventional market; (ii) the implicit market; or (iii) a constructed market; Dixon et al. (1994) distinguish between techniques that are based on a measurement of the physical relationship between the cause and the effect (also called cost-based methods), and techniques that are based on observed behavior, specifically on revealed or stated preferences of consumers; SEEA-2003 (UN et al. 2003) distinguishes between the cost-based and damage-based valuation methods. Similarly to the above mentioned classifications, damage-based valuation methods

are further portioned into methods based on revealed or stated preferences; Pearce and Howarth (2000) follow a different logic. They start with total economic value, which is then portioned into use and non-use values. Then various methods are sorted including their ability to provide a monetary value for a certain value. The dose-response (concentration/exposure-response) function or production function need 48 to be derived and thus known if one wants to attach a monetary value to any environmental benefit whichever method is then applied.

Recent empirical work, particularly in temperate forest situations, has generated a large number of studies on the value of non-market forest benefits. This trend has been followed in the developing world. The literature review reveals however that the focus of interest in developing countries is somewhat different from that in wealthier regions. Most published economic studies of forest land use options in developing countries appear to concentrate on direct use values. While the methods used to value these benefits are relatively straightforward, usually involving market prices, data on quantities and inputs are often difficult to obtain. Relatively few of the studies reviewed attempted to calculate the net economic value of forest products. Early case studies in developing countries concentrated on the value of non-timber forest products (NTFPs). This may reflect an assumption (or a hope) that the economic importance of NTFPs was sufficient to justify the conservation of forest land. In many cases, distributional concerns may also be reflected in this focus. Rural communities living in and around forest areas often rely heavily on NTFPs products for both subsistence and cash income. These groups are often among the poorest and most deprived members of society in developing countries. Where forests are perceived mainly as sources of growth for the timber industry, or as potential land for future agricultural expansion, attempts to estimate the value of other harvested forest products are one way to adjust the balance of perspective. A key question for future research is how the value of different NTFPs changes with urbanization and income growth.The early concentration of developing country studies on NTFPs also reflects differences in forest values between developing and industrialized countries. Empirical research on non-market forest benefits in the latter case has focused on recreational and existence values held by urban consumers. This has spurred the development of nonmarket estimation techniques appropriate to such values, such as travel cost models (TCM) and contingent valuation (CVM). In developing countries, on the other hand, forest values related to production and subsistence remain relatively important, although this is changing in those regions characterized by rapid urbanization and income growth. In southeast Asia, for example, examples of TCM and CVM used to value forest recreational benefits have become increasingly common, particularly near urban areas. CVM may be more problematic in poor rural societies with different cultural perceptions. Nevertheless it appears to be the only means of eliciting existence values.

Economically speaking, an asset is scarce if its use carries opportunity costs. That is, in order to obtain one additional unit of the good one must give up a certain amount of something else. In economic terms, quantifying and valuing ecosystem services are no different from quantifying and valuing goods or services produced by humans. In practice, however, valuing ecosystem services is problematic. There are reasonable estimates of the value of many provisioning services – in cases where well-developed markets exist – but there are few reliable estimates of the value of most nonmarketed cultural and regulating services (Carpenter, 2006, Barbier et al., 2009). The problem is that since most ecosystem services and biodiversity are public goods, they tend to be overconsumed by society. From an economic point of view, biodiversity (and ecosystems) can broadly be seen as part of our natural capital, and the flow of ecosystem services is the «interest» on that capital that society receives (Costanza and Daly, 1992). Just as private investors choose a portfolio of capital to manage risky returns, we need to choose a level of biodiversity and natural capital that maintains future flows of ecosystem services in order to ensure enduring environmental quality and human well-being, including poverty alleviation (Perrings et al., 2006). The basic assumption underlying the present chapter is that society can assign values to ecosystem services and biodiversity only to the extent that these fulfill needs or confer satisfaction to humans either directly or indirectly.

This approach to valuing ecosystem services is based on the intensity of changes in people s preferences under small or marginal changes in the quantity or quality of goods or services. The economic conception of value is thus anthropocentric and for the most part instrumental in nature, in the sense that these values provide information that can guide policy making. Appropriation is the process of capturing some or all of the demonstrated and measured values of ecosystem services so as to provide incentives for their sustainable provision. This stage in essence «internalises», through market systems, demonstrated values of ecosystem services so that those values affect biodiversity resource use decisions. Internalisation is achieved by correcting markets when they are «incomplete» and/ or creating markets when they are all-together missing. In the benefit sharing phase, appropriation mechanisms must be designed in such a manner that the captured ecosystem services benefits are distributed to those who bear the costs of conservation.

2.3.2 The concept of total economic value (TEV)

The concept of total economic value (TEV) of ecosystems and biodiversity. It is defined as the sum of the values of all service flows that natural capital generates both now and in the future – appropriately discounted. These service flows are valued for marginal changes in their provision. TEV encompasses all components

of (dis)utility derived from ecosystem services using a common unit of account: money or any market-based unit of measurement that allows comparisons of the benefits of various goods. Since in many societies people are already familiar with money as a unit of account, expressing relative preferences in terms of money values may give useful information to policy-makers. This chapter reviews the variety of taxonomies and classifications of the components of TEV and valuation tools that can be used to estimate such components for different types of ecosystem services. Given the complex nature of ecosystem services, economic valuation faces important challenges, including the existence of ecological thresholds and non-linearities, how to incorporate the notion of resilience of socio-ecological systems, the effects of uncertainty and scaling up estimated values of ecosystem services. Pearce et al. (1989), which recognises three types of environmental value: · direct use value, e.g. the benefit of using forest resources as input to production or as a consumption good; · indirect use value, comprising the indirect support and protection provided to economic activity and property by natural forest functions, or forest "environmental" services; and · non-use value, including all other benefits which cannot be characterised in terms of a current or future physical interaction between the forest and consumers. Direct uses of forests include both commercial and non-commercial activities. Commercial uses such as timber production may be significant in both domestic and international markets. Non-commercial direct uses, on the other hand, are often mainly local but can be very important for the subsistence needs of rural populations and poorer groups, e.g. fuelwood, game, edible and medicinal plants (FAO 1990). Direct uses also include important services such as forest recreation, education and research, which are often conducted on a non-commercial basis. Indirect use values comprise the many ecological functions of forests. Their value derives from supporting or protecting economic activities that have directly measurable market benefits.

For example, some forest may have indirect use value through controlling sedimentation and flood damage that affects downstream agriculture, fishing, water supplies and other economic activities (Aylward et al. 1999). Likewise the micro-climatic function of certain forests may have indirect use value by maintaining or enhancing the productivity of crop cultivation in neighbouring areas (Lopez 1997). Another important indirect use value associated with forests is the storage or "sequestration" of carbon in trees, offsetting the atmospheric accumulation of so-called "greenhouse" gases that are implicated in global warming. Some authors distinguish a further sub-category of option value, referring to potential direct and indirect use values which might be realised in the future. According to this view, there may be a premium on preserving forest ecosystems for future uses, particularly if people are uncertain about potential future values but believe they may be high, or if the effects of exploitation or conversion are considered irreversible.

For example, forest resources may be under-utilised today but may have high future value in terms of scientific, educational, commercial and other economic uses. Similarly, the environmental regulatory functions of a forest ecosystem may become more important over time as economic activities develop and spread in neighbouring areas. Finally, there are non-use values. These refer to the intangible benefits derived from the mere existence of forests, above and beyond any direct or indirect use value that people may enjoy. Non-use values include both existence value and bequest value. An example of the former is the value which people attach to the continued existence of certain species of wildlife found in particular forest areas (e.g. bears or tigers). Such values may be most apparent among those who do not live near or use the products of forests directly themselves, and perhaps benefit only very slightly from indirect uses, but who nevertheless wish to see such forests preserved in their own right. Bequest values arise when people place a value on the conservation of particular resources for posterity (future generations). Bequest values may be high among local populations using or inhabiting a forest area, to the extent that they wish to see a way of life and culture that has "co-evolved" with the forest passed on to their heirs. By the same token, those who live far from forests may wish to ensure that their descendants have an opportunity to visit and enjoy them. The Total Economic Value (TEV) of a forest system refers to the sum of (compatible) values: i.e. direct and indirect use (and their associated option values), plus non-use values. Different forest land use options will be characterised by a different combination of direct, indirect and non-use values, and thus a different total economic value. Only part Valuing Forests 7 of this value is reflected in market prices, however, creating a risk that forest planners and land users will ignore or under-state certain important forest benefits. We now turn to why this happens. Only some of the forest benefits listed above are traded in markets and have a directly observable price. In general, direct use values are most likely to be reflected in market prices. Indirect use values may be reflected in the prices of certain goods and services which depend heavily on the underlying environmental benefit, while non-use values are rarely reflected in market prices or decision-making.

Clearly, however, the absence of a market price does not mean that a thing has no economic value. Most forest land owners are aware of the many environmental benefits they provide, in addition to supplying timber or other commodities to the market. Public agencies in many countries, some of them responsible for managing millions of hectares of forest land, often make special efforts to provide non-timber benefits. This includes restricting logging in areas of exceptional natural beauty for the sake of recreational uses, or on steep slopes so as to protect water quality and reduce the risk of flooding downstream. Similarly, some companies provide access to their land to hikers, hunters and fishermen on a voluntary basis. While such efforts are welcome they are usually limited in scope and often inadequate

relative to public demand. The reason is that forest land owners and managers in most countries get little or no material advantage from providing environmental benefits. Both in the private and the public sectors, land owners and managers tend to focus on the direct costs and tangible benefits of their activities. Thus foresters produce timber because they can sell it, while farmers convert forest land because they can cultivate it for profit or subsistence. Many non-timber forest benefits, on the other hand, cannot easily be bought and sold (e.g. biodiversity, watershed protection, carbon storage). Others generate little or no revenue for the land owner, although they may have significant value to the general public (e.g. aesthetic values).

Where non-timber forest benefits are also nonmarketed, private land owners will have little motivation to produce them unless compelled to do so. Similarly, public forest agencies may under-estimate the importance of such benefits, which are often less visible than the revenue, taxes and jobs generated by the timber and agriculture industries. Even where forest benefits are partly or informally traded, they often escape notice. In many developing countries, for example, rural populations exploit non-timber forest products such as vines and edible fruit for both subsistence and sale, but this activity is rarely recorded and is thus easily ignored by forest authorities. Similarly, in the developed world, entry fees to forest recreational areas often grossly under-value the true willingness-to-pay of visitors and thus the full value of recreational benefits. Demand for traditional forest products - timber and pulp - is certain to increase with economic growth (FAO 1997; Sedjo and Lyon 1990). Timber prices are also expected to ris e in many developing countries, due to the increasing scarcity of easily accessible, mature stands of timber, although price increases will be moderated by new forest plantations and supplies from other parts of the world (Perez-Garcia and Lippke 1993; Sohngen et al. 1999). At the same time, demand for forest recreation and landscape amenity values can also be expected to grow rapidly in many developing countries, due to urbanization and rising incomes, whereas the demand for certain non-timber forest products may fall. For example, higher rural incomes can lead to decline in both the range and volume of forest products used for subsistence, but this may be offset for certain products by increased commercial exploitation and sales in urban markets. Recent work on the consumption of an edible forest fruit in Malaysia has found that urban consumption has increased at almost the same rate as incomes. The fact that many non-timber forest benefits are not traded or do not have a directly observable market price is not a problem in itself. However, the use of forests to produce tradable commodities such as timber or agricultural crops often reduces the availability of non-timber goods and services, with the result that non-market, environmental values are lost. If the

latter are significant, forest resources will be used inefficiently, both in terms of the area devoted to timber or converted to agriculture, and in terms of the technology of production, i.e. management. We now turn to why the market often fails to account for non-timber benefits, even when they are important in economic (as opposed to financial) terms.

In principle, markets will allocate resources efficiently if prices reflect both the full marginal costs of production and the full marginal benefits of consumption, including all components of total economic value Where prices do not reflect all costs and benefits, however, the so-called "invisible hand" of the market does not work and resources may be used inefficiently, resulting in a loss of human welfare (Baumol and Oates 1988). Economists have identified various reasons why and how market prices fail to reflect environmental costs and benefits. Two of the most important reasons for market failure in forestry are the prevalence of "public goods" and "externalities". Public goods are characterized by the fact that: (i) no one can be effectively excluded from consuming them and (ii) increased consumption of the good by one individual does not reduce availability to others. Such aesthetic value is among many public goods provided by forests, along with carbon storage and biodiversity conservation. Economic theory explains why the free market will systematically under-provide such goods, and why collective action, typically by the government, is usually required to ensure their adequate provision. Externalities are uncompensated costs or benefits arising from economic activity. A classic example in forestry is the decline in availability of game or other non-timber forest products due to logging. Unless the logging company (or land owner) pays compensation to hunters and gatherers for their loss of livelihood, the full economic cost of extracting timber will not have been paid. If similar conditions prevail elsewhere, market prices of timber products will tend to understate true economic costs and consumers will use timber relatively inefficiently. In addition to public goods and externalities, markets may fail to reflect non-timber forest benefits due to lack of information about their contribution to economic welfare, distortions in prices arising from public policy and regulations, lack of clear or secure property rights over forest lands, and other factors. In such cases, the question arises as to how decision-makers can compensate for market failure, and ensure that non-timber forest benefits are given sufficient weight in land use planning and management. There are many ways to internalize non-market values in the behavior of producers and consumers, ranging from the introduction of strict environmental standards to ecological tax reform, and from facilitating environmental damage claims in the courts to the promotion of trade in environmental services or "pollution permits". Nevertheless, it is clear that information on the significance of non-market environmental impacts, and the trade-offs between market and non-

market values, is an essential input to rational environmental policy-making. Without such information, it is difficult to see how one can determine the urgency, stringency and scope of intervention required. One promising approach is to express. Non-market environmental costs and benefits in monetary terms, so they can be compared directly with the value of marketed commodities.

2. Conclusions

Better management of forestry sector in Albania will necessary involve the identification and reconciliation of the trade-offs between the negative externalities created by industry development and protection of recreational areasand biodiversity. In a situation where there are competing potential users of scarce resources the issue of optimal allocation arises. Where there is a competitive market functioning, the price mechanism will ensure an economically efficient allocation of resources. Where markets do not exist there is a failure of the market to value resources, for this reason there is a need to apply techniques that estimate a value for environmental resources. Two of the most important reasons for market failure in forestry are the prevalence of "public goods" and "externalities". Public goods are characterized by the fact that:no one can be effectively excluded from consuming them and increased consumption of the good by one individual does not reduce availability to others.

In addition to public goods and externalities, markets may fail to reflect non-timber forest benefits due to lack of information about their contribution to economic welfare, distortions in prices arising from public policy and regulations, lack of clear or secure property rights over forest lands, and other factors. In such cases, the question arises as to how decision-makers can compensate for market failure, and ensure that non-timber forest benefits are given sufficient weight in land use planning and management. There are many ways to internalize non-market values in the behavior of producers and consumers, ranging from the introduction of strict environmental standards to ecological tax reform, and from facilitating environmental damage claims in the courts to the promotion of trade in environmental services or "pollution permits".

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