Non-market valuation of forest goods and services: Good practice guidelines

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ABSTRACT

The European COST Action E45 on European Forest Externalities (EUROFOREX) participants developed a set of good practice guidelines for the non-market valuation of forests, elaborating on stated and revealed preference methodologies, as well as benefit transfer and meta-analytical procedures. This article presents a summary of the guidelines.

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Introduction

The field of non-market valuation originated in the discipline of economics as a tool to assist valuation practitioners estimate the value of goods and services that are not directly traded in markets, incorporating environmental resources, such as forest goods and services. The confluence of economics with other disciplines, including ecology and forestry, makes the application of non-market methodologies distinct. However, this has also resulted in noticeable differences among valuation applications performed by practitioners with an economics background versus those with another background.

Concerned by the lack of common protocols, a group of scientists with diverse backgrounds took the initiative of discussing, and eventually agreeing upon, some good practice protocols. The means to undertake this process was a COST Action called European Forest Externalities (EUROFOREX) or COST Action E45. COST (European Cooperation in Science and Technology) is a European Union framework program instrument supporting cooperation among scientists and practitioners across Europe, however, some non-European members were also invited to participate in the action.

This article highlights the primary points of the good practice non-market valuation guidelines developed by the COST Action E45 team. The article is primarily devoted to practitioners of valuation studies related to forest goods and services, as well as to agencies interested in commissioning a forest valuation study. The first section discusses two types of revealed preference (RP) methods, namely the hedonic pricing (HP) and travel cost (TC) methods. The second section summarizes the stated preference (SP) method guidelines, focussing on the contingent valuation (CV) method and choice modelling (CM) techniques. The third section tackles benefit transfer (BT) and meta-analytical procedures. The last section provides final remarks. The full set of guidelines corresponding to the RP, SP, and BT/meta-analysis is available at http://www.efi.int/portal/projects/cost_e45.

Revealed preferences

This section summarizes the good practice guidelines used to estimate the monetary value of forest externalities by means of RP methods. Based on actual behaviour, these methods can be used to estimate the value of forest goods and services, such as air quality, outdoor recreation, and landscape quality. The most commonly used RP methods include TC and HP, while the defensive expenditure and household production function methods are less popular.

Travel cost method

The TC method investigates the behaviour of individuals in relation to the cost of a trip, observed site characteristics and observed trip patterns. This information is gathered and used to value the characteristics, or existence, of a site-specific environmental amenity. To accomplish this, the TC method estimates values for site-specific amenities, particularly use values that can only be obtained by visiting the site. TC use requires that costs vary across users. The basic TC method consists of two steps: (1) the estimation of demand functions for trips to a site, or group of sites; and (2) the derivation of the willingness-to-pay (WTP) from the demand functions.

An individual's demand is typically modelled as a function of the cost of a trip to the site, the cost of visiting substitute sites, the characteristics of the site (e.g. type of forest), the characteristics of substitute sites, income and other demographic characteristics. The number of trips is expected to decrease with an increase in the cost and augment with an improvement in site quality.

Several TC approaches currently exist. They differ in the way variables are defined and measured, model specifications, estimation procedures and consumer surplus computations. Moreover, if the aim of the practitioner is to value the changes of the characteristics of different sites simultaneously, an appropriate model which handles multiple-sites needs to be specified.

TC models can be implemented for different purposes; therefore, the practitioner needs to have the aim of the study in mind. TC models can be used to value access to sites, e.g. the welfare effects of the closure of a recreational site, or to value the quality characteristics of a site, e.g. change in the level of some site attributes, like the introduction of new tree species.