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Using the Contingent Valuation Method for ex ante service innovation evaluation *(reviewed paper)*

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Abstract: Die kontingente Bewertungsmethode (CVM) kann ein nützliches Instrument für die Ex-ante-Evaluation von Innovationen im forstlichen Dienstleistungssektor sein, besonders wenn die Erholungsfunktion eines Waldes neu zu einer kostenpflichtigen Nutzungsfunktion umgewandelt werden soll. Anhand der Fallstudienresultate werden die Vorteile der CVM gegenüber anderen Evaluationsmethoden diskutiert.

Abstract: The Contingent Valuation Method (CVM) can be a useful tool for the ex ante evaluation of service innovations in the forestry sector, in particular for transforming a recreational forest function from a free to a payment-based utilisation. In presenting the case study results, the superiority of CVM to other evaluation techniques is discussed.

1. Introduction

In the history of economic thought, the perceived importance of innovation has grown to such an extent that by the end of the twentieth century it had become one of the main elements to which enterprise turned to raise profits and market quotas. This new conception has given rise to the so-called «innovation economics», centring on an analysis of the main characteristics of the concept of innovation and the consequences of the spread of new technology and knowledge at enterprise, sector and economic system levels.

According to the first formulation of the concept of innovation[1], theorised by Schumpeter in 1911, an innovation is the implementation of a new combination of means of production. This gave rise to two main schools of thought (neoclassic and evolutionary) that have developed and re-worked the basic principles of innovation economics to produce the present day framework. In particular, neoclassic economists focus their attention on equilibrium in the economic system, without pausing on readjustment processes in that direction, and considering technology as information rather than knowledge (Stoneman 1983). By contrast, evolutionists dwell longer on non-equilibrium situations, and on innovation processes (system dynamics), and consider technology as multi-dimensional and strictly linked to knowledge (Nelson & Winter 1982). Apart from this divergence, there are also many points of convergence. Of particular importance is the endogenous relationship between market structure and innovation: a more concentrated market structure generates greater technological progress, which, in turn, significantly modifies the market itself.

The international debate on innovation processes and on relations between innovation and science technology has invaded all sectors of production in different ways and with different timing, even the primary sector. In spite of this, interest for innovation in the forestry sector has only started growing in recent years, hand in hand with an awareness of its importance as the key factor in re-launching the economy and development of disadvantaged areas (rural and mountain areas). A full awakening to this fact can be deduced from the declarations of the W2 Resolution of the 4th Ministerial Conference on the Protection of Forests in Europe, held in Vienna from 28th to 30th April 2003 (MPCFE 2003).

In light of these considerations we have applied the basic principles of innovation economics to the reality of forestry. Our particular focus in the present study has been on tools that are available to evaluate, ex ante, the economical and social expediency of bringing a product/service innovation into the forestry section.

2. Innovation and forest utilisation

In order to realise the full value of forest multi-functionality, it is fundamental to extend our basic knowledge of forests, and place particular emphasis on innovation (Mammuccini 2004).

Innovation occurs at the moment when forest owners are able to enhance the value of their territory, and, consequently, the services or functions it offers, turning them into added value and a source of remuneration for the work and capital invested therein. From what has been said we can see how the birth and success of an innovation process plays out on two closely connected basic levels:

1. a cultural level, associated with the entrepreneurial mentality of the forest owners;
2. a technical-managerial level, committed to the valorisation of forest multi-functionality from an ecological, economic and social point of view.

Only the co-existence of both characteristics can ensure a ground of departure that is sufficiently fertile to give life to an innovation process.

Particularly in the forestry sector the innovation process must be accepted as a system (Innovation System) in which two macro groups of actors interact:

- Institutional actors: which can be widely interpreted as including universities and public research institutes, public policies, financial institutions, etc. (Malerba 2000);
- Forest owners: identifiable in three main categories, depending on whether they are private, public or collective.

In reality, it is evident that these conditions – inclination towards innovation on the part of forestry entrepreneurs and interaction between all the actors involved – are at least partially inadequate. This is borne out by the fact that the role played until now by technological evolution in the forestry sector has certainly been smaller than in other sectors. More frequently, forest owners have tended to imitate innovations introduced in other productive sectors. While this strategy may be appropriate in process innovations, it is not suitable for product innovations, which are considered to be more necessary at the present stage.

In agreement with Freeman (1982), product or process innovation concerns the realisation of a new idea (invention) and the consequent commercial exploitation of new products

[1] See Fagerberg (2003) for a review of the literature on innovation.

or services that, in this case, are inevitably associated with the main forest services. Basing our work on the «theory of functions», we can divide forest functions into potential product or potential service innovations. The utility function is more closely linked to product innovations, while the functions of realisation, perception and protection are almost exclusively linked to service innovations (Dieterich 1953; Fernand 1995).

Transforming what has been said at a theoretical level into tangible services, gives us a better idea of which functions would lend themselves to innovation of economic interest to both forest owners and the entire sector. For example, it would seem that tourism-recreational, ecological-conservation and protection functions could be sources of inspiration for service innovations such as:

- Nature conservation contracts (ecological-conservation function): with the aim of initiating environment management actions, it is possible to hypothesise different contractual agreements between forest owners and institutional actors (public agencies), where the owner or service companies assume direct responsibility for management (Brun *et al.* 1998);
- Payment for educational trails (tourism-recreational function): with the aim of financing the creation and enhancement of history, nature, and culture trails for educational purposes, it would be possible, for instance, to introduce payment for access with a local guide, the creation of pay-to-park areas, etc. in forest areas of particular interest to tourism.
- Carbon credit market (ecological-conservation function): sale, by forest owners, of carbon credits for forest sinks (as established by flexible mechanisms set out in the Kyoto Protocol).

3. Evaluating innovations

In most cases the introduction of innovations requires considerable effort by forest owners and institutional actors, in terms of both financial and human resources, in order to create the necessary conditions for the success of an innovation. The absence of such conditions drastically reduces the chances of success. So, in order to avoid starting an innovation process without the certainty of being able to carry it through successfully, it is useful to have appropriate evaluation tools already at the preliminary stage (ex ante evaluation).

In addition, the present lack of radical innovation in the forestry sector clearly demonstrates how a preliminary evaluation of the economic and social expediency of introducing an innovation from another productive sector is of fundamental importance. A traditional cost-benefit analysis is restrictive from this point of view. It is therefore necessary to bring a serie of other instruments into play, which aim to give a concrete response with regard to the actual likelihood of success. To this purpose evaluation tools are introduced after each phase (concept, definition and implementation) has been concluded, and before the manufacturing phase is reached (Hughes & Chafin 1996). In particular, a key role is played by a «go-no-go» management review before implementation, i.e. carried out at the breaking point between the real innovation, when the idea and the invention still belong to the enterprise itself, and the imitative behaviour that occurs at the moment when an enterprise introduces an invention already implemented in another productive sector into its own sector. This process model is a first-generation «phase-review-process» where, at the end of each phase, a decision is taken on whether or not to continue the project (go-no-go; Cooper 1994). Second-generation «stage-gate-processes» consist of a chain of stages separated by gates, in which the engineering and marketing perspectives are integrated (Cooper & Kleinschmidt 1990). Third-generation «stage-gate-models» are the most flexible, and the stages, similar to the previous ones, are not strictly sequential: preliminary investigation, detailed investigation, development, testing and validation and full production, market launch (Cooper 1996).

3.1 Evaluation tools for innovations

Our purpose is to give the theoretical base for a correct evaluation of the innovation to be introduced. First of all, it is important to underline that the evaluation tools cannot be generalised, but must be specific to each type of innovation. In this respect we concentrate here on the evaluation tools for service innovations, with particular reference to the tourism-recreational function of forests. In this case the idea is to charge an entrance fee in an area of particular value, or provide tourist packages with guided tours where the educational aspect is of prominent importance.

In this context the service innovation is the transformation of positive externalities into actual paid goods and public services, and the valuation aims to provide an answer on the expediency – or otherwise – of starting this innovation. Numerous failed attempts to transform certain public and semi-public goods and services into private goods have been amply documented (see for example Merlo *et al.* 1999). The failure of such innovation is very costly, both in economic and social terms. An ex ante evaluation in this context can prove very useful by enabling the cost of failure to be avoided.

Any tool that ex ante evaluates the economic and social feasibility of introducing an innovation must necessarily be able to assess the potential demand for the new product/service and produce a valid, reliable estimate of its «right» price. Both pieces of information are essential for an objective evaluation of whether the revenue to be obtained will counterbalance the total costs of introducing the innovation.

Particularly for the specific innovation under analysis, an ex ante evaluation must provide information on the users' willingness to pay for the forest service in order to establish the «right» price to charge for an entrance ticket. If the price is too high the number of visitors will decrease too drastically. For this reason it must also allow for an estimation of the drop in number of visitors after the introduction of the innovation.

The methods useable in this type of evaluation are based on the criteria of social utility and collective well-being conceived for the evaluation of public goods, in that without excludability and rivalry in consumption their market utility cannot be recognised through a price. Following the criterion of social utility, we must construct the demand function of the goods. The area underlying the demand function is consumer utility, the consumer's willingness to pay to enjoy the goods. If reference is made only to the demand function, and not to the supply function, then the valuation does not reflect market value but a use value (Freeman 1993).

The demand function can be constructed by examining consumer behaviour, from which we can indirectly ascertain preferences, or by gathering declarations that directly express preferences. As we know, the first case includes the so-called indirect methods, the most frequently used being Travel Cost. The latter employs direct methods, first and foremost that of Contingent Valuation.

The Travel Cost Method (Clawson 1959) uses the journey costs sustained to get to the natural resource as a surrogate for the market price system. Conditions for the application of the method lie in the possibility of enjoying the recreational function of the good exclusively by travelling, and in the exist-

ence of a (weak) complementary relationship between the consumption of environmental goods and consumption of private goods. It is the analysis of the latter that enables the demand function of the environmental good to be estimated.

Contingent Valuation (Mitchell & Carson 1989; Gios & Notaro 2000; Carson 2004) is a direct method for evaluating non-market goods, based on preferences, expressed directly through a questionnaire completed by real or potential consumers. The respondent is asked about his/her willingness to pay (WTP) for the quantitative or qualitative increase in the supply of the good described in the hypothetical scenario (a Hicksian compensative surplus), a WTP to avoid a decrease (a Hicksian equivalent surplus) or willingness to accept (WTA) the decrease (a Hicksian compensative surplus).

Critics of the method claim that only intentions, ideals and, at best, behaviour adopted in hypothetical circumstances are expressed. This may occur because contingent valuation markets lack incentives that induce individuals to dedicate the same time and effort to think about the value of the goods and the price they are willing to pay, as they would on the real market (Braden *et al.* 1991). For that reason if the Contingent Valuation Method is to be considered useful in the estimation of non-market value, it is essential that it is sufficiently robust to produce valid estimates of Hicksian surplus (Mullarkey & Bishop 1995).

There are three types of validity to consider. First, content validity concerns the correctness of the structure of the questionnaire. In order to communicate the transaction terms clearly and precisely, we must turn to qualitative research as a support in the design process. Any misunderstanding, commonly unfamiliar language, imperfections, ambiguities or missing information in the questionnaire is revealed by focus groups (Mitchell 2002), and the research tools and procedures are tested on a numerically limited but representative sample in a pre-test stage to identify the main problems, which are apparent even in small samples. These tools have proved essential in constructing valid studies (Mullarkey & Bishop 1995).

Unlike other typologies, it is possible to assess content validity exclusively by subjective professional judgement, (Bishop *et al.* 1997) because there is no consensus on how contingent procedures should be set up (Bishop & McCollum 1995). One tool that may be of help is the check list proposed by Bishop & McCollum (1995), which aims to systematise study assessment to some degree and identify shortcomings in a systematic way.

Construct validity tests concern the degree of consistency between the general lines of the empirical study and economic theory. Values estimated with a Contingent Valuation study should converge with values estimated using other evaluation techniques (convergent validity). At the same time, an analysis of the relationship between WTP and main variables explaining consumer behaviour – such as income – should be consistent in sign and quantity with the respective coefficients (theoretical validity).

Finally, criterion validity is given by a comparison between the contingent valuation estimates and the current market or simulated market experiments (Garrod & Willis 1999).

One of the main advantages of Contingent Valuation is its flexibility. In particular, the Travel Cost Method is not appropriate to evaluate the introduction of an innovation because the evaluation is necessarily based on consumer behaviour in the absence of the innovation. The drop in user numbers for the good under examination is also estimated before the introduction of the innovation, and is therefore not directly linked to it. However, by using Contingent Valuation it is possible to calculate the number of people who would not accept the innovation, even at minimal cost, and the number of people who would not accept it if the cost were to rise, since this is an ex ante evaluation tool able to estimate the value of new goods and services by reference to a hypothetical market. In addition, at our present state of knowledge, it is the most flexible evaluation tool available, able to measure benefits that other methods are able to measure only partially, if at all (Bishop *et al.* 1997). For this reason it is possible to evaluate not only the introduction of an incremental innovation but also radical innovations, when these exist.[2]

An inviting alternative to carrying out original, often expensive and time-consuming research is the application of Benefit Transfer, a transposition of monetary value from the study site to another where decisions must be adopted (policy site[3]; Brouwer 2000). However, from the way this method operates, it is easy to see that it can only be used to estimate the economical feasibility of incremental innovations, certainly not of radical ones. Furthermore, Benefit Transfer can only be used for a feasibility estimate of the introduction of an innovation if an adequate number of valid and reliable studies exist from which to transfer data.

Using the tools described here, it is therefore possible to evaluate the economic and social feasibility of introducing service innovations, such as payment for entry in forest areas of particular scenic, historical or cultural value.

4. Case-study

We shall now present the results obtained using Contingent Valuation as a tool to evaluate ex ante the economic and social feasibility of introducing a service innovation. To be more specific, we verified the possibility of introducing a service innovation in the shape of an entrance ticket for access to an Alpine forest.

The forest of Lavazé, in the province of Trento in north-eastern Italy, is of particular importance for tourism and recreational activities. The current type of management respects and enhances this main function by periodically selecting trees for felling to rejuvenate growth, and to maintain and optimise ecological balance. In an attempt to confirm the possibility of transforming this positive externality into a proper paid public service, interviewees were confronted with a proposed modification to present management methods, whereby the current selective cutting would give way to clear cutting. They were then asked, with a payment card format, if they would be willing to pay to maintain the current method, a measure of hicksian equivalent surplus.

The on-site interviews were carried out during the summer of 2002. The questionnaire was submitted to a random sample of 724 visitors (return rate of 92.54 %).

As we have already seen with Contingent Valuation, it is possible to estimate the number of people who would not be willing to accept the service innovation (in this case to pay an entrance ticket for access to woodland). These can be divided into two classes: those who give a zero bid because they do not evaluate the resource positively, and protest zeros[4], that is, people who give a zero response despite valuing the goods positively but who protest against a request for payment on principle.

[2] See Carson (2004) for an updated, detailed review of literature on the internalisation of positive externalities, including the forestry sector, using the Contingent Valuation Method.

[3] This method has been applied in various contexts, including forest management (Bateman *et al.* 1995).

[4] Protest responses come from people who refuse to assign a monetary value to an environmental resource for ethical reasons or because they believe they have rights towards the goods in question, or because they are convinced that there should be some other party responsible for payment.

The first stage in the data processing served to identify the protest bids. The reasons for unwillingness to pay, as explicitly declared by the interviewees, were analysed. Protest bids constituted 19 % of total answers. Real zero bids counted for 2.8 % of the sample. The first useful information for our particular purposes, therefore, is that with the introduction of the innovation, overall there would be a 22 % reduction in the number of visits to the forest.

We then went on to identify the outliers[5], who represented 3 % of the sample. These observations need to be excluded[6], as otherwise we would obtain biased information about the introduction of the innovation.

After eliminating the protest bids and outliers, we went on to estimate the average willingness to pay, i.e. to calculate the entrance fee. The «right» amount (as in part 3.1) for the entrance ticket came to € 2.67.

To calculate the annual value we first estimated the number of visitors, multiplying the average number of parked cars by the average number of people in each car. The resulting number of visitors, 18651, was then multiplied by the average bid. The result is a total annual value of € 49322 and a value per hectare/year of € 497, while the value of the productive function comes to only € 170 per hectare/year.

However, a more interesting statistic for our purposes is the median, calculated before the sample is cleared of protest bids, which was € 2.00. This means that, at this price, there would be a 50 % drop in visits.

Table 1 shows the number of visits in the sample for different WTP amounts. A reading of this table provides useful information about the size of the drop in visits as the entrance fee is increased. For example, a ticket of € 1.00 would meet with refusal to pay from 26.6 % of the population.

***Table 1:* Willingness to pay for the service innovation.**
Tabelle 1: Bereitschaft, für Dienstleistungsinnovationen zu bezahlen.

Valid	Frequency	Percent	Reduction in the number of visits
0.00	146	22.6	0.0
0.25	5	0.8	22.6
0.50	16	2.5	23.3
0.75	5	0.8	25.8
1.00	67	10.4	26.6
1.25	10	1.5	36.9
1.50	53	8.2	38.5
1.75	7	1.1	46.7
2.00	70	10.8	47.8
2.25	2	0.3	58.6
2.50	47	7.3	58.9
2.75	5	0.8	66.2
3.00	80	12.4	66.9
3.25	6	0.9	79.3
3.50	10	1.5	80.2
3.75	1	0.2	81.8
4.00	24	3.7	81.9
4.25	1	0.2	85.6
4.50	6	0.9	85.8
4.75	2	0.3	86.7
5.00	61	9.4	87.0
5.25	1	0.2	96.4
5.50	6	0.9	96.6
6.00	9	1.4	97.5
6.50	1	0.2	98.9
7.00	1	0.2	99.1
8.25	1	0.2	99.2
10.00	2	0.3	99.4
10.25	1	0.2	99.7
18.50	1	0.2	99.8
Total	**647**	**100.0**	**100.0**

In conclusion, in the case under examination about 80 % of visitors would accept the ticket. Obviously the number of visits would fall as the entrance fee went up. If the ticket were fixed at € 2.75, for example, there would be a 66.2 % drop in visits. Clearly, having this kind of information available before introducing the innovation is particularly useful because it allows us to avoid implementing innovations that would lead to failure.

The content validity of the study was increased using a focus group and a pre-test. It was checked by replying to the twelve questions in the checklist proposed by BISHOP & MCCOLLUM (1995). The result demonstrates the satisfactory validity of the study.

Construct validity was checked using theoretical validity tests, running willingness to pay on explanatory variables. A priori expectations and the sign obtained for these variables are shown in *table 2*. The right sign of the variables with a significant t statistic represents positive evidence of the theoretical validity of the study[7] (see *table 3*).

***Table 2:* Theoretical validity test: a priori expectations and results.**
Tabelle 2: Theoretische Abschätzung mittels Gültigkeitstest: A-priori-Erwartungen und Resultate.

Variables	Expectation	Sign
Satisfaction with the area	+	+
Protection even though costly	+	+
Protection after economic development	–	–
Importance of environmental conservation	+	+
Age	–	–
Number of family members	–	–
Individual income	+	+
Free time expenditure	+	+
Accommodation expenditure	+	+
Time employed to reach site	+	+
City or village	?	–
Reasons for choice of site	?	Not significant

To mention only a few, a positive relationship was seen to exist between willingness to pay and variables indicating attitude towards the environment in general and the environment of the area under study in particular – «protection of the area even if this incurs costs», «satisfaction with the area». A

[5] The concept of outlier refers to observations (WTP) that would seem improbable given their presumed distribution, observations that are not coherent with behaviour models deduced from answers concerning socio-economic characteristics, attitude towards the environmental good and its use, or incoherent with restrictions imposed by the economic theory (GIOS & NOTARO 2001).

[6] Diagnostic regressions were used to identify outliers, a multivariate regression model based on the effect that the removal of an observation has on the estimated coefficient, on the predicted values, on the residuals and on the covariance matrix. By means of diagnostic regression influent observations are removed. The following diagnostic regressions were used: Studentised Residuals, Leverage, Covratio, Dffits, Dfbeta and Dfbetas.
Subsequent elimination of the outliers occurred by comparing, in the case of influent observations, WTP with explanatory variables that economic theory and/or consolidated empirical evidence indicate as crucial factors in determining the entity of the offer. Influent observations were rejected when declared WTPs was clearly inconsistent with the variables in consideration.

[7] The hypothesis that willingness to pay is not in a linear relationship with the variables used in the validity test is checked by examining the value of the statistic F. Since it is high (8.805) the hypothesis is not accepted.

negative relationship was perceived between WTP and the importance of economic development, in spite of the environmental protection of the area.

As usual, in this type of inquiry respondents tend to be less willing to pay as their age increases and more willing to pay if they are used to paying for recreational activities (see the sign of the variables «free time expenditure» and «accommodation expenditure»). Finally, coherent with the economic theory, WTP increases as income increases.

Table 3: **Theoretical validity test: evaluation curve.**
Source: modified from Notaro et al. in press.

Tabelle 3: Theoretische Abschätzung mittels Gültigkeitstest: Evaluation.

Variables	Coefficients		t
	B	Std. Error	
(Constant)	0.658	0.844	0.780
Satisfaction with the area	0.272	0.105	2.597
Protection even though costly	0.232	0.103	2.257
Protection after economic development	−0.156	0.071	−2.212
Importance of environmental conservation	0.265	0.125	2.122
Age	−0.030	0.006	−4.604
Number of family members	−0.113	0.072	−1.575
Individual income	1.185 E-05	0.000	1.935
Free time expenditure	0.000	0.000	2.325
Accommodation expenditure	0.001	0.000	3.921
Time employed to reach site	0.009	0.002	3.926
City or Village	−0.388	0.190	−2.036
Reasons for choice of site	−0.034	0.025	−1.392

5. Discussion and conclusions

The importance of evaluation tools is closely linked to the concept of innovation itself. If we consider innovation as one of the fundamental focus points in improving the competitiveness of the forestry sector, it is easy to see how an ex ante evaluation of the economic and social feasibility of the innovation is a determining factor in the success of the entire process. On the basis of this consideration it was thought appropriate to underline the essential characteristics of an evaluation tool and then proceed to analyse a specific possible tool for the evaluation of product/service innovations. Such an evaluation must, in any case, start from an analysis of forest multi-functionality in order to highlight the potentially interesting group of services that are at present not paid for by the market in order to enhance the value, also in economic terms, of these forest services through the application of a careful innovative process. As far as service innovation is concerned, we have considered the transformation of some forest functions from free utilisation to payment-based. A comparison of the value of the landscape-recreational function of the Lavazé forest with the value of its timber production shows how important the introduction of this service innovation may be for the forest owner/entrepreneur. The need for an ex ante evaluation of the economic and social feasibility of introducing this type of innovation can be seen from the many failed attempts to transform public and semi-public goods and services into private ones, with their resulting costs. Non-market evaluation techniques are suitable tools for this purpose; first and foremost Contingent Valuation. As demonstrated in the case study, this technique enables us not only to verify the acceptability of the innovation by possible users of forest resources, but also to estimate the drop in number of visits in relation to the cost of the entrance ticket. This method therefore possesses the necessary theoretical characteristics of an ex ante innovation evaluation tool. In other words it enables us to estimate the potential demand for the innovation, and the «right» price that the average and/or median consumer would be willing to pay for it.

Undoubtedly, setting up ad-hoc research is expensive and not always possible. In the forestry sector where incremental innovations prevail, using Benefit Transfer is an attractive alternative, but this will only be possible when results are available from a large number of research studies that have passed the validity and reliability tests.

However, the future of these tools in innovation evaluation depends strictly on their capacity to provide reliable, valid estimates. If they do not, they are of no use. Indeed, by producing distorted information, they may give rise to a higher cost than that caused by a lack of information. This validity and reliability condition does not only apply to the evaluation method in itself, but also to data from individual research projects. It is therefore not enough that the evaluation tool is accepted by prevailing literature; it is also necessary that, when applying it, researchers painstakingly follow every step of the estimation procedures found to be correct in the method validity and reliability tests.

Summary

In this paper we focus on service innovations that arise from a potential monetary value being put on forest functions that, up to now, have hardly been exploited from an economical point of view (i.e. tourism, recreation). We present a possible model for the ex ante evaluation of those innovations that aim to provide a potentially useful tool in helping forest owners and other actors involved, and to ascertain whether a successful innovation in another productive sector could meet with equal success in the forestry sector. Contingent Valuation has been put forward as an example of one such possible evaluation tool. The usefulness of this method in evaluating service innovations associated with tourism-recreational forest functions is discussed.

Résumé

La méthode de l'évaluation contingente pour une évaluation ex ante de l'innovation dans les services

Le présent article est consacré aux innovations dans le domaine des services qui dérivent d'une possible valorisation de quelques fonctions forestières encore peu exploitées du point de vue économique (fonction touristique-récréative). Les auteurs proposent une structure d'évaluation ex ante des innovations potentiellement utiles pour comprendre si une innovation qui a eu du succès dans un autre secteur productif peut en avoir également dans le secteur forestier. Nous avons utilisé la méthode de l'évaluation contingente pour évaluer les innovations associées à la fonction touristique-récréative des forêts dans une étude réalisée dans les Alpes italiennes.

Zusammenfassung

Anwendung der kontingenten Bewertungsmethode bei der Ex-ante-Evaluierung von Dienstleistungsinnovationen

In diesem Aufsatz werden Innovationen betrachtet, die sich aus einer möglichen monetären Abgeltung von bisher aus wir schaftlicher Sicht wenig genutzten Waldfunktionen ergeben Tourismus, Freizeit). Präsentiert wird ein Modell der Ex-ante-Evaluierung von Innovationen mit der Absicht zu verstehen, ob das in einem anderen wirtschaftlichen Sektor erfolgreich angewendete Modell nutzbringend auf den Forstsektor übertragen werden kann. In einer Studie in den italienischen Alpen wurde die kontingente Bewertungsmethode angewendet, um Innovationen im Bereich der Tourismus- und Freizeitfunktionen des Waldes zu evaluieren.

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