JOURNAL OF FOREST SCIENCE, 48, 2002 (11): 508–511

The financing of non-market forest services

I. KOLENKA[1], K. PULKRAB[2]

[1]*Technical University, Faculty of Forestry, Zvolen, Slovak Republic*
[2]*Czech University of Agriculture, Faculty of Forestry, Prague, Czech Republic*

ABSTRACT: The article deals with issues of non-market forest services. There is a persistent issue complicating the quantification of adequate subsidy to forest owners – non-existence of market with such forest services. Forest services financing can be made objective by implementation of the following steps: 1. Earmarking of non-market forest services that are becoming market subjects gradually. 2. Earmarking of non-market forest services that create a secondary product of wood production function. 3. Quantification of demand for services. 4. Quantification of costs necessary to cover the demand for those forest services. 5. Quantification of losses caused to forest owners by restricting their economic activities.

Keywords: forestry financing; public goods; public sector; evaluation; market failure; non-market forest functions

The theory and practice of integrated forestry, formulated in the 1970s by PAPÁNEK (1978), has become a classic theory used by many theoreticians and practitioners who (genuinely as well as disingenuously) try to prove that the forest, besides timber production, fulfils many non-market goods and services, called by PAPÁNEK (1978) as "beneficial forest functions".

Nowadays, they are referred to with a stricter term "non-market forest services". The real existence of the services is not disputed by the specialists from the fields of water resources, soil protection, forestry and related fields.

Nevertheless, there are still many unresolved issues concerning financing both the organising subjects involved in implementation of technical or biological activities leading to enhancing or sustaining non-market forest services, and the forest owners whose forest management is restricted by the state claiming that the owners provide "public" interests. In principle, there is a substantial agreement on the fact that it is necessary to support financially both above mentioned parties (owners and organisers) though the argument deepens when it comes to quantification of financial support or compensation.

Papánek evaluated "beneficial forest functions" quite successfully using the theory of value (as the unit of value and use value) formulated by Ricardo and Marx. At the same time, he realised some of the unresolved issues when he said (PAPÁNEK 1978): "The term *social* labour is closely related to the current standard of technology and to meeting the *social demand*. The latter is often neglected though it is very important for appreciation of the value of goods (or service). The point is that the value of goods (or service) cannot be derived from the quantity of labour actually spent, but only from the quantity of labour needed to satisfy the *social demand*". The quoted author, no doubt aware of the difficulties concerning the definition (or rather quantification) of the social demand, passes the problem in silence and proceeds to deal very precisely with evaluation of non-market forest services and defines four basic ways of their evaluation:

1. production costs of the forestry management itself necessary for generating the relevant use value,
2. via backward process from the use value price if the price is (generally) accepted,
3. from the production costs of substitute goods and services, e.g. if the biological object (forest) is substituted by a technical equipment producing the same use value as the forest,
4. from the extent of damage that occurs if the forest does not fulfil the relevant non-market service.

There is no need to object against pragmatic ways of valuation. Obviously, there also exist other ways and techniques of non-market forest services valuation. The point is, though, how to judge the social need impartially. "If we value a certain mechanism, i.e. set the price, we do not know the mechanism's effectiveness nor advantage in specific conditions yet. Consequently, the valuation of non-market forest service does not say anything about the effectiveness of this service from the point of view of the national economy and the life of the society." (PAPÁNEK 1978).

To speak about the price in market economy is purposeful in two cases:

1. If the commodity or service appears in the market, i.e. there exist demand and supply.
2. If the society resists to damage of values by setting a system of penalties, and the price is used as an instrument of repression.

In case there existed a dynamic market of non-market forest services, a great deal of problems concerning their evaluation would already be solved. Demand and supply would quantify the social needs and regulate the prices. In effect, the price would motivate the forest owners to produce or offer services. Unfortunately, the market of non-market forest services has not been established and it is necessary to search for other ways of motivating the service provider.

Extensive exploitation of primary sources and their reduction causes the fact that also natural resources, having been "public property" so far and thus free of charge, gradually become marketable goods. As the best example serve forest recreational or cultural services, or nature in a broader sense, including forests. Entering the forest, natural reserves and parks is often related with paid services, and there is a natural demand for these services. Thus, demand on the one hand, and supply on the other constitute a market. Hence, the market is a historical category and is subject to changes. Some commodities cease to appear in the market while many others start to be demanded and supplied.

NECESSITY OF PUBLIC SECTOR

The economic theory generally acknowledges the necessity of the existence of public sector. In other words, even in the world (society) of private subjects a substantial part of management is liable to some kind of government intervention, instead of being left only to the "invisible hand" of the market.

Government interventions can partly reflect the presence of political and social ideas diverting from both the consumers' choice premises and decentralised decision-making. The point is that the market mechanism is in fact unable to perform all the economic functions. It has to be corrected and complemented via public policy-making. It is thus important to realise that the proper size of the public sector is, to a great extent, a matter of technology rather than ideology. The reasons can be summed up as follows (MUSGRAVE, MUSGRAVE 1994):

1. The argument that the market mechanism leads to effective exploitation of resources is based on the existence of competition. No barriers must be imposed on free entry to the branch, and both the consumers and producers must be totally informed about the market.
2. Government intervention might be needed where competition is ineffective owing to increasing costs.
3. Altered contract relations and changes needed for the market functioning cannot exist without protection and enforcement of law structures provided by the government.
4. Production characteristics of a certain commodity make it impossible to be offered in the market. Problems of "externalities" arise leading to "ineffectiveness of the market" and they need to be corrected by the means of the public sector using budget measures, subsidies or taxation.
5. Social preferences may ask for an intervention in the income and welfare allocation resulting from the market mechanism and from the transfer of property rights.
6. Market system, especially in highly developed market economies, does not always mean high employment, price stability and socially desired rate of economic growth. Public policy is necessary to reach these objectives. It applies especially to the economy exposed to international impacts.
7. Public and private view of the discount rate used when evaluating future consumption can differ.

We present arguments, generally valid in the theory of public finance, to judge the financing of non-market forest services in general. From the standpoint of forestry financing, arguments mentioned in subparagraphs 2, 4, and 6 are especially important and we will refer to them in sequence.

MARKET FAILURE

As we have stated above, market can help to solve many problems of the specification of social needs, demand and price of commodities. Unfortunately, the market fails in most cases of non-market services.

The main reason for market failure is not that the need of their utilisation is felt by an individual, but by a group of individuals. Even though people's preferences are influenced by the social environment, individuals are the final instance who determine their desires and set the preference.

The difference is that the benefit derived from the public goods is not limited to an individual consumer willing to buy the public goods, but the benefit is available to the others as well. If we increase the water-protection service of the forest, for instance, all the people who use water benefit from it. Generally speaking, consumption of products by individuals is "non-rival" in the sense that the benefit from the goods does not diminish the benefit available to the others. It influences notably the consumers' behaviour and the way the goods could be provided. The market mechanism is suitable for providing private goods. Here, the market provides "signals to the system" where the producers follow the consumers' demand. This mechanism works in the case of private goods. Nothing is lost and a lot is gained. In case there are consumers unwilling to pay, they are excluded from the market. Application of excluding system leads to effective solution.

In the case of public goods, excluding of consumers from appropriation of benefits would be ineffective because the use of goods by some people does not diminish it for the others. Application of the exclusion principle is undesired here, even though its implementation did not encounter more important problems. In such conditions the benefit from the public goods is not related to the property rights of individuals and the market must fail. If the benefit is available for everybody, the consumer is not willing to pay the producer for the goods. An individual will equally benefit from the consumption as anybody else

and his payment would make an unimportant part of the overall sum. The link between the producer and consumer is interrupted and the government must intervene to provide the goods.

The need of public financing might occur as well in the situation when the consumption is "rival" and the excluding would be advisable, e.g. in cases where excluding is impossible or immoderately costly. For instance, forest berries and mushrooms collection is becoming scarce but the mechanism of charging every picker would be very difficult to accomplish. Also here, the state must intervene as the market is not able to deal with this situation.

Another problem the state authorities (government) have to face is to judge impartially the amount of certain goods. The fact that the consumer refuses to pay for public goods is not the main point to be dealt with. This problem could be solved quite easily, e.g. by taxation of consumers who benefit from public goods. The difficulties arise where quantification, quality and price of the goods to be provided is concerned. The issue is complicated by the problem of how to determine the extent of benefit the consumer obtains. It is not in the consumers' interest to offer their quantification of the benefit public goods bring them unless they are sure the others would do the same. Users (people) behave like stowaways – they benefit from goods paid by somebody else. Therefore, it is necessary to find another way of setting the extent of public goods supply and allocating the provision costs. Again, the state (political procedures) has to enter the process and substitute the market mechanism.

It is also possible to tackle the problem without quantification – to finance it from the national budget, e.g. by means of taxation. It is though widely accepted that taxation leads to decreasing the effect and to total losses – it is a much less effective mechanism than the market.

NON-MARKET FOREST SERVICES AND THE MARKET

As we stated above, the existence of market can, to a great extent, solve the problem of the level of demand, initiate supply, and finally set the price. Again, we have to turn to Papánek who says: "Beneficiary forest functions can be executed only in exceptional cases by the direct supply of the service to the consumer; they are usually not related to the market." We cannot bear a grudge against PAPÁNEK (1978) on the ground of two reasons:

1. he is right, to a great extent,
2. his theory of integrated forestry formulated in the 70s is influenced by the existing system of centrally planned economy, common ownership of production means including forests and deformation of market relations.

We have already mentioned that market is a historical category and a lot of commodities and services now become subjects of market. In consequence of changed conditions, also demand is changing – both from the qualitative and quantitative point of view – and it strongly affects motivation and thus the owners' behaviour.

The situation is even more complicated in countries with underdeveloped market economy where deformation of the market (demand and supply) related to deformation of prices persists and acts as an obstructing agent. The lobby tries to explain the lack of financial resources from timber production service by evaluation of non-market forest services claiming that the society (state) is obliged to pay for them. It is a natural effort and natural lobbying, quite usual in every social or economic system. These trends, though, induce shortcomings in two ways:

1. High budget deficit does not allow any increase of subsidies to the forest owners, and the subsidies tend to decrease.
2. The demand for non-market forest services is not objectively quantified, which considerably distorts objectivity of viewing necessary public resources. Comparison of trends and ways of financing from the period of centrally planned economy is problematic, in the least.

In consequence of what has been said, it is necessary to answer the question of whether it is possible to evaluate objectively the demand for non-market forest services. The attempts to quantify demand for some non-market forest services have been partially successful and they led to zoning of forests in accordance with their services. It was, though, based on not objectively set prices. And here the cause and effect were confused, i.e. forests were categorised according to the price set this way. The logical and economically correct view is to set the demand and then derive the price. It is not possible to set the demand artificially, base the price on it and claim that the society has indefinite demand and has to pay for it. Or rather, pay for the supply. Demand must be in balance with supply and this sets the optimum price.

Financing is a practical issue and therefore academic debate needs to be cut to minimum.

Operative steps leading to impartially judging the non-market forest services financing can be logically regulated and well-timed.

1. Set off non-market forest services that are becoming subject of the market, or let us say, they are directly or indirectly related to the market.
2. Set off non-market forest services that are in balance with timber production functions and form secondary product of timber production function.
3. Quantify (according to region) demand (social requirements) for non-market forest services.
4. Quantify costs necessary for covering demand for non-market forest services, set in 3.
5. Quantify forest owners' losses caused by restriction of economic activities.

References

MUSGRAVE R.A., MUSGRAVE P.G., 1994. Veřejné finance v teorii a praxi. Praha, Management Press: 581.

PAPÁNEK F., 1978. Teória a prax funkčne integrovaného lesného hospodárstva. Bratislava, Príroda: 218.

Received 10 July 2002

Financování netržních služeb lesa

I. KOLENKA[1], K. PULKRAB[2]

[1]*Technická univerzita, Lesnícka fakulta, Zvolen, Slovenská republika*

[2]*Česká zemědělská univerzita, Lesnická fakulta, Praha, Česká republika*

ABSTRAKT: Příspěvek se zabývá problematikou financování netržních služeb lesa. Přetrvávajícím problémem, který komplikuje kvantifikaci adekvátní podpory pro vlastníky lesa, je neexistence trhu těchto služeb. Objektivizace financování služeb lesa je možné dosáhnout realizací těchto postupných kroků: 1. vyčleněním netržních funkcí lesa, které se postupně stávají předmětem trhu, 2. vyčleněním netržních funkcí lesa, které tvoří sekundární produkt dřevoprodukční funkce, 3. kvantifikací poptávky po službách, 4. kvantifikací nákladů nutných na zabezpečení poptávky na tyto služby lesa, 5. kvantifikací ztrát, způsobených majitelům lesa z důvodu omezení jejich ekonomických aktivit.

Klíčová slova: financování lesního hospodářství; veřejné statky; veřejný sektor; oceňování; selhání trhu; netržní funkce lesa

Příspěvek se zabývá problematikou financování – ať už subjektů, které realizují technická či biologická opatření k udržení nebo intenzifikaci ostatních mimoprodukčních funkcí, nebo vlastníků lesa, kteří jsou omezováni státem z důvodů zajišťování těchto funkcí. I když v podstatě existuje shoda o nutnosti podporovat obě zmíněné skupiny (vlastníky i realizátory), prohlubuje se spor v oblasti kvantifikace finanční podpory či kompenzace.

Hlavní příčinou potíží stanovení adekvátní podpory pro udržení, resp. zlepšení netržních služeb lesa je neexistence trhu těchto komodit. Je zřejmé, že pokud by existoval fungující trh s netržními službami lesa, byla by vyřešena velká část existujících problémů, nabídka a poptávka by kvantifikovaly společenskou potřebu a regulovaly ceny. V konečném důsledku by ceny stimulovaly vlastníka lesa k produkci, resp. poskytování služeb. Bohužel, trh netržních služeb lesa neexistuje a je potřeba hledat jiné prostředky stimulování poskytovatelů těchto služeb.

Základním důvodem selhání trhu těchto služeb je skutečnost, že potřebu jejich využívání nepociťuje jednotlivec, ale kolektiv. I když společenské prostředí preference lidí ovlivňuje, konečnou institucí jsou jednotlivci, kteří předurčují přání a udávají preference. Rozdíl spočívá v tom, že poskytnutí těchto služeb jednotlivci činí tento statek dostupný všem ostatním jednotlivcům; ty pak nic nenutí k tomu, aby za služby platili (mohou se uchýlit ke strategii černého pasažéra). Když např. zvýšíme vodoochrannou fukci lesa, prospěch z tohoto opatření mají všichni jednotlivci, kteří využívají vodu. Tento jev, označovaný jako nerivalita, je charakteristický pro všechny veřejné statky.

Poskytování statků či služeb tohoto typu proto vyžaduje zásahy státu.

Potřeba financování z veřejných zdrojů ale může vzniknout i v situaci, kdy je spotřeba rivalitní. Jde o případy, kdy vyloučení je nemožné nebo příliš nákladné (např. sběr lesních plodin). I v těchto případech má aktivní úlohu stát, protože tržní prostředí není schopné tuto situaci řešit.

Další problém, který musí stát řešit, je objektivizace množství a kvality statků (služeb), které je nutné zabezpečit, a za jakou cenu.

Zůstává otázkou, zda je možné objektivně stanovit poptávku po netržních službách lesa. Pokusy o kvantifikaci poptávky po některých netržních službách nebyly zcela neúspěšné a vedly k rajonizaci lesů podle jejich funkcí. Poptávka se většinou určovala na základě neobjektivně stanovených cen. Tak ovšem došlo k záměně příčiny a následku, tzn., že takto stanovená cena byla příčinou, že se lesy zařazovaly do určité kategorie. Logické a ekonomicky správné je stanovit poptávku, a z toho odvodit cenu. Není tedy možné na základě uměle vytvořené nabídky stanovit cenu a tvrdit, že společnost má neomezenou poptávku, za kterou musí platit – nebo lépe řečeno platit za nabídku. Poptávka musí být v rovnováze s nabídkou; tak se vytváří optimální cena.

Financování je praktickou záležitostí a je třeba omezit akademickou debatu na minimum.

Praktické kroky, které by vedly k objektivizaci financování netržních služeb lesa, je možné regulovat logicky a časově uspořádat:

1. vyčlenit netržní služby lesa, které se postupně stávají předmětem trhu, resp. mají přímou nebo zprostředkovanou vazbu na trh;
2. vyčlenit netržní služby lesa, které jsou v souladu s dřevoprodukčními funkcemi a tvoří sekundární produkt dřevoprodukční funkce;
3. kvantifikovat (podle regionů) poptávku (požadavky společnosti) na netržní služby lesa;
4. kvantifikovat náklady nutné na zabezpečení poptávky na netržní služby lesa;
5. kvantifikovat ztráty majitelům lesa, které jsou způsobené omezením ekonomických aktivit.

Corresponding author:

Prof. Ing. IVAN KOLENKA, DrSc., Technická univerzita, Lesnícka fakulta, T. G. Masaryka 24, 960 53 Zvolen, Slovenská republika

tel.: + 421 45 520 63 14, fax: + 421 45 533 26 54, e-mail: i.kolenka@vsld.tuzvo.sk