

THE ECONOMIC ROLE OF NON-WOOD FOREST PRODUCTS AND SERVICES IN RURAL DEVELOPMENT

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When considering the role of non-wood forest products and services (NWFPs) in rural development it is useful to recall the definition of these products given by FAO (1991): NWFPs "refers to market or subsistence goods and services for human or industrial consumption derived from renewable forest resources and biomass bearing promise for augmenting real rural household incomes and employment. The products include the use of plants for food, forage, fuel, medicine, fibre, biochemical, as well as animals, birds, reptiles and fishes for food, fur and feathers. Wood used for handicrafts is included, as are the services derived from the standing forest that generate such benefits as tourism revenues and preservation of biodiversity".

This definition points out two economic aspects of NWFPs which are interesting to analyse further: (a) the problems of classification and evaluation of non-wood forest products and goods, given their great variety, and (b) the economic role of NWFPs in terms of forest management and development of rural areas.

(a) The distinction, adopted in organising the paper, among products (i.e. physical products which are harvested and/or consumed, or eventually processed and/or sold - NWFPs) and services (i.e. non-material benefits)⁽¹⁾, refers to an aspect of great economic interest: the possibility of internalising the benefits deriving from forestry resources. Most of the forest products (both wood and non wood) are generally included in internal benefit: the subject who obtains economic benefits from supplying the product on the market is the owner (or manager) of the woodland resource. On the other hand, most of the services (and not only services) are externalities whose costs are born by the forest owner or manager, while the benefits are available to the entire community.

The external/internal nature of NWFPs may be modified by various forestry policies ranging from the system of property

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⁽¹⁾ In reality this distinction between the two categories is often not so clear. An example might be hunting which is carried out both as a sport and for obtaining meat. Grazing in the forest is one other remarkable example.

Abstract

The major aim of this work is to identify the principal regional differences in non-wood forest products and services in European countries. Analysis will be made of the available data regarding the production of non-wood products and services with respect to the different countries in the European Community as well as a number of non-EU countries (Scandinavia and countries in transition). A classification of non-wood products and services will be made in the introduction, emphasising the major problems arising from analysis of non-wood products and services. The first part of the paper takes account of non-wood products in different European countries. The attempt is first of all to provide an outline of the major differences among the individual countries, in particular between the Mediterranean area and Northern European countries. In the second part of the paper attention will be placed on the issue of quantification of services provided by European forests, underlining the problem of the lack of information and the difficulty of putting a monetary value on many of the non-material benefits from woodland. Finally, some suggestions are put forward for a policy of valorisation of non wood forest products and services in the EU.

Résumé

Ce travail essaye de faire ressortir les principales différences régionales des services et des produits forestiers non ligneux dans les pays Européens. On analyse les données disponibles sur la production des services et des produits forestiers non ligneux tant dans les pays de la Communauté Européenne que dans un certain nombre de pays non Européens (Scandinavie et pays en transition).

Dans l'introduction on donne une classification des services et des produits forestiers non ligneux, en soulignant les problèmes principaux qui découlent de l'analyse de ces services et de ces produits. La première partie du travail porte sur les produits forestiers non ligneux dans les pays Européens. Il s'agit tout d'abord d'essayer de donner un aperçu des principales différences entre les différents pays, en comparant en particulier la région méditerranéenne et les pays de l'Europe du nord. La deuxième partie du travail se concentrera sur le problème de la quantification des services assurés par les forêts Européennes, en soulignant le problème du manque d'information et de la difficulté d'attribuer une valeur monétaire à un grand nombre d'avantages immatériels dérivant des forêts. Enfin, on propose des suggestions pour une politique de valorisation des services et des produits forestiers non ligneux dans l'UE.

rights to organisational choices on the part of the owners. An example is mushroom picking which in the case of public woodland is generally considered an external benefit (in the sense of free access to the woodland), but it may be internalised by the public body or the private owner who regulates the sale of permits for picking. However, with the present system of property rights, despite the growing interest in NWFPs, there is normally little incentive for forest owners to produce many services of this nature as the community at large has the right to collect a wide range of woodland goods free of charge.

The major problem in pricing NWFPs thus arises from the frequent confusion between value (which is often very high) and price (often zero).

(b) The second aspect calling for attention has to do with the economic role of NWFPs in the context of management of woodland property and the development of rural areas. In the past the economic role of forests was linked essentially to wood production, but NWFPs in fact play a notable role as economic stabilisers, even though they are used for the purpose of home consumption or for small local markets. One

of the reasons why NWFPs is so important in forest economics is the question of the length of the productive cycle: unlike wood production NWFPs are collected on an annual basis with a few exceptions (cork for example), thus reducing the expectation time and the connected risks.

It should also be noted that, in both developed and developing countries, the utilisation of NWFPs – which widen the range of benefits obtainable from the forests – may be a further reason for managing and conserving the woodland resources themselves (Lamb, 1993) and hence a means for reducing the costs connected with the phenomenon of land abandonment (fires, pest attacks, uncontrolled grazing, etc.). At macro-economic level it seems that the importance of wood production in European traditional forests is now decreasing, leaving space for other products. A major reason for this shift is urbanisation and the growing demand for environmental goods and services. Urbanisation and industrialisation at the same time mean less intensified use of woodland for NWFPs, and it seems that the demand for NWFPs is likely to grow less than the demand for woodland service functions, although there is

scope for the promotion of NWFPs as natural health products.

In the past NWFPs were often underestimated in woodland planning as they were not subject to economic exchange (FAO, 1991).

One of the most evident reasons for this underestimation of NWFPs in public forestry interventions is the generally low level of statistical data available on these products. In the few cases where such data are available, the information is rarely of statistical quality. A reason is the confusion that arises between woodland production and specialised crops produced outside the forests (for example production of berries).

After presenting the information available on the supply of non-wood products and services in various European regions, the paper will conclude with some remarks on the potential for regional development in connection with valorisation of NWFPs.

Non-wood forest products with actual or potential markets

The importance of non-wood forest products is rather well known in developing countries, while in Europe and in particular in the EU the role of NWFPs has neither been well analysed nor recognised. In Europe NWFPs merely entails functions related to a physical product that is harvested, and eventually processed and/or sold. Presumably, a wide range of physical products are harvested and consumed in Europe, but on a much smaller scale as

compared to their potential importance in developing countries. The difference in availability and scale within Europe and between Europe and developing countries derives from :

- climate conditions and land productivity (wood vs. non-wood productivity of forests),
- diversity and variety of species,
- traditions, historical development and cultural heritage.

- economic conditions and rural structure. The general regional differences in NWFPs availability and use in Europe can be studied by looking at different areas with similar climatic, plant geographic and cultural characteristics: (i) the *Mediterranean* (Portugal, Spain, Italy and Greece), (ii) *Central Europe* (Austria, Switzerland, France and Southern Germany), (iii) *Northern Europe* (Belgium, Netherlands, Northern Germany, UK, Ireland, Denmark, Luxembourg), (iv) *Scandinavia* (Norway, Sweden and Finland), and (v) the *countries in transition* (Eastern Europe) (see **figure 1**).

In order to analyse NWFPs, we provide a three-level classification:

- edible products (e.g. berries and nuts of different kinds, mushrooms, hunting meat, honey) and non-food products (e.g. Christmas trees, green plants, aromatic and medicinal plants, resin, fodder/hay, cones);
- source of the product (e.g. trees in the high forest, shrubs, flora, fauna, soils);
- marketed or non-marketed products (economic importance).

Edible and non-food products should be self-explaining while the source of the products is outlined in **table 1**.

Their economic importance varies among different countries depending on traditions

(demand structure) and forest types and availability (supply structure). Some actual and estimated figures for the market value of some NWFPs in EU countries are shown in **table 2** which, like the other tables reproduced here, are based on the recent UN/ECE-FAO report (1993).

Clearly, within the EU the range and economic importance of NWFPs is by and large more significant in the Mediterranean area (ECE-FAO, 1993), and further details on Italy, Portugal and Spain are shown in **tables 3** and **4** and **boxes 1** and **2**. In the other parts of EU NWFPs are apparently of very little importance, or based on very few products, and few statistics exist. The reasons are that the woodland is converted to intensively managed forest that provides only a small space for other products, but also the fact that consumers in these regions are used to purchasing the goods in shops, and the tradition of picking supplementary goods from the forest, for example, has more or less disappeared. The Scandinavian countries (Norway, Finland and Sweden - **table 5**) use the abundant forest areas to collect berries (lingonberries, blueberries, cloudberries and cranberries) and mushrooms in amounts that are economically significant and also serve as traditional ingredients in the Northern cuisine. This intense use of the woodland has a traditional, cultural base, and the most Northern forests in Scandinavia are important grazing areas for reindeer (see **box 3**).

The figure on berries from Sweden are shown in detail in **table 6** to underline that there are important differences even within this commodity, where cloudberries are less abundant and more expensive. For

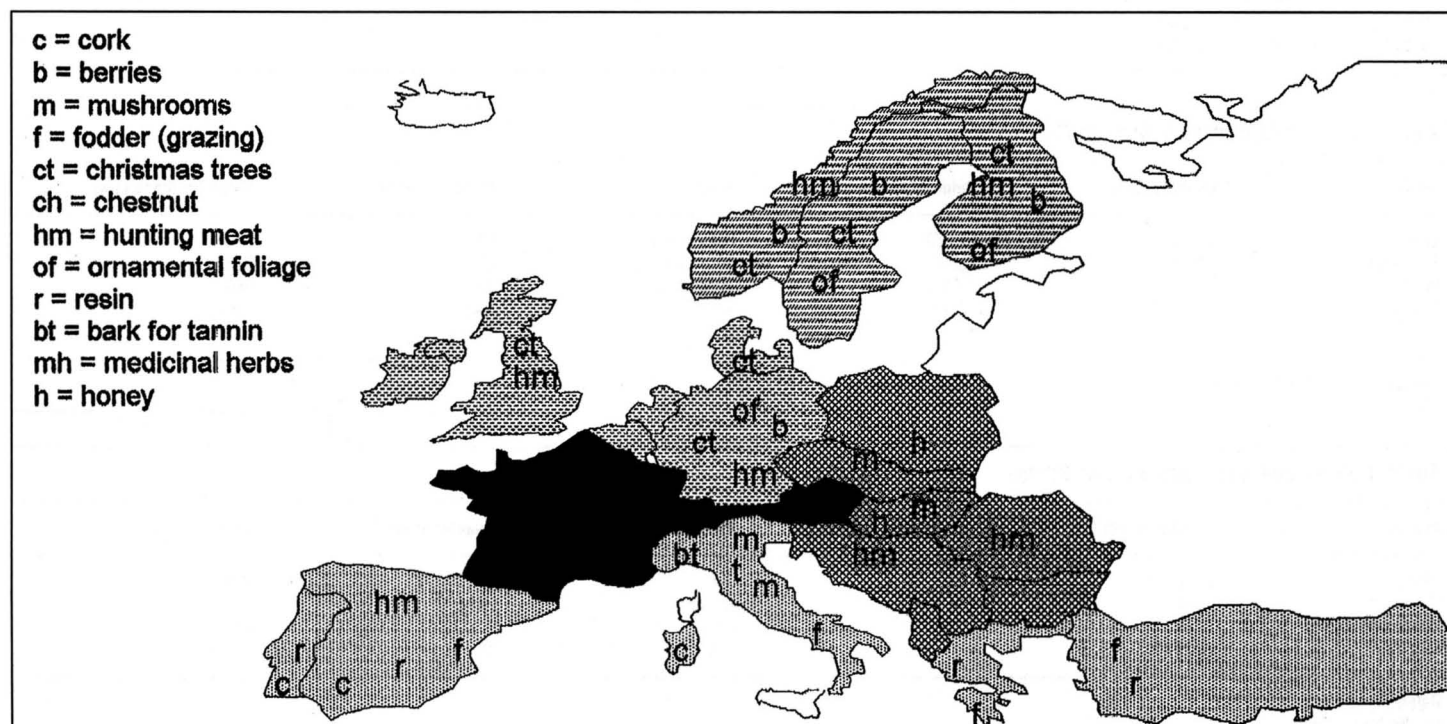


Figure 1 - Localisation of NWFPs in Europe.

Table 1 Classification based on the source of the product.

Trees in forest		Flora and fauna	
By-product	Main product	Flora	Fauna
acorn/bark (tannin)	Christmas trees (not high forest)	mushrooms/truffles (*)	honey (depends on plants) (*)
gum/resin/sap (naval stores)	ornamental foliage	aromatic/medicinal plants	venison/wildfowl (*)
seeds (propagation)	cork	moss/lichen	trophies
seeds/nuts (edible) (*)	seeds	nuts/berries (*)	snails/fish (*)
litter/animal bedding		fodder/hay	
needles/aromatic oils		mistletoe	
cones (decoration)			

(*): edible products

Table 2 Market value of some non-wood forest products (EU countries).

Country	Product	Value
Denmark	Christmas trees	DKK 240 millions
	Ornamental foliage	DKK 160 millions
	Game	DKK 25 millions
Ireland	Christmas trees	IRP 600,000
Italy (*)	Chestnut	LIRE 56,452 millions
	Mushrooms	LIRE 19,406 millions
	Truffles	LIRE 17,656 millions
Netherlands	Game	DFL 3.3 millions
	Christmas trees (**)	DFL 5.6 millions
Spain (*)	Game	PTS 8,714 millions
	Fish	PTS 7,629 millions
	Cork	PTS 4,647 millions
United Kingdom	Christmas trees	GBP 17 millions
	Venison	GBP 1,7 millions

(*): more details in separate tables for Spain and Italy. (**): 80% produced on farm land.
Reference: UN/ECE-FAO (1993, p. 49).

Table 3 Non-wood forest products in Italy.

Product	Quantity (tons)	Value (millions Lire)	Product	Quantity (tons)	Value (millions Lire)
Chestnut	52,300	56,452	Blueberries	516	2,674
Pine seeds	1,390	2,218	Strawberries	56	528
Mushrooms	1,410	19,406	Raspberries	70	480
Truffles	75	17,655	Acorns	6,480	3,608
Walnuts	19,830	17,148	Bark	3,230	2,025

Reference: UN/ECE-FAO (1993)

Table 4 Non-wood forest products in Spain.

Product	Quantity (tons) (*)	Value (millions Lire)	Product	Quantity (tons)	Value (millions Lire)
Chestnut	35,721	2,650	Resin	15,225	709
Pine seeds	8,381	1,661	Fodder, hay	759,377	-
Hunting meat	17,790	8,714	Cork	71,035	4,647
Truffles	25,361	411	Fish	16,293	7,629

Reference: UN/ECE-FAO (1993).

(*): Kg for truffles.

Box 1: truffles and mushrooms in Italy. In the Alba area in Piedmont region every year some 120 quintals of truffles are officially collected (though a similar amount is collected "on the side" and sold unofficially), at an average price of 3,000,000 lire/kg (1,500 ECU). Thanks to collection and processing of the truffles (along with other typical agricultural products, particularly wine), Alba appears to be one of the boroughs in Italy with the highest percentage of agricultural workers, and at the same time, with one of the highest average income rates. However, what counts is not so much picking the truffles as the economy that revolves around this activity (food processing industries, restaurants and on-farm tourism, etc.) which is growing very quickly. According to a number of estimates, the value of the food production connected to truffles in the Alba area alone is around 50 milliards lire, half of this deriving from exports (Japan and Northern Europe). Both the Alba truffle and the mushrooms (*Boletus edulis*) from Borgo Val di Taro in the Emilia Romagna region have been recognised by the Italian Ministry of Agriculture and Forestry with an official trade mark. According to F.A.O. (Lamb, 1993) the potential for mushroom production in a hectare of woodland is equal to 250 USD per annum. Such high profits might bring about a modification in the criteria adopted in woodland management (coppices are generally more productive than highforests as far as mushrooms are concerned) which have traditionally been oriented towards timber production.

Box 2: cork in Portugal. 55% of cork produced in Mediterranean basin (\pm 307.5 thousand tons) is produced in Portugal. Cork oak plantations in Portugal cover 668.7 thousand hectares, representing about 22% of the country's forest area and 8% of the surface area. In the 1980's average annual extraction was about 125 thousand tons. Admitting an average productivity of 13.5 "arroba" per hectare per year the production value may be estimated as about 313 USD/ha. Industries connected with cork include more than 600 operational factories with about 14 thousand workers. Traditionally, three industrial subsectors are considered: preparation, processing by simple cutting and granulation-agglomeration. The balance in Portuguese foreign trade on cork products is plainly positive (in 1989 47 million USD imported and 486 million exported). Most of cork exported goes to EU countries though Portuguese cork is exported to more than one hundred countries (source: Casquilho, 1990).

Box 3: berries, lichens and reindeer in Finland. In Finland, of a potential harvest of some 400,000 to 700,000 tonnes of wild berries, some 5% is harvested each year (10,000 to 20,000 tonnes) mainly for household consumption, though between 300 and 800 tonnes comes to market in larger urban centres like Helsinki. Commercial trade in lichens (used, for example, in production of food additives and industrial chemicals) is substantial: the annual production of 0.5 million kilograms is mainly exported and revenues from this sector average FIM 8.6 million. Herding of semi-domesticated reindeer as meat animals is a lucrative business and most Finnish forests, both private and public, are important as reindeer grazing ground. Annual trade in reindeer meat grosses 3,400 tonnes of product, worth some FIM 100 million. But trade in wild game from forest lands out-performs the reindeer meat trade almost two-fold both in quantity and value (taken from: Lamb, 1993).

Sweden Wibe (1992) presents an analysis of the relative importance of non-wood benefits in forest economy.

The countries in transition in Eastern Europe, the Baltics and CIS also had a traditional use of NWFPs (table 7) which was either organised in state business (roughly non-food products) or unorganised collection (roughly edible products). In centrally planned economies it was a policy in several countries, e.g. to have mandatory collection of pine resin over a few years before clear felling despite collection costs in order to extract raw materials for turpentine production. In the former GDR the production of pine resin dropped from about 12,000 tons to virtually zero after reunification. The transition to open economies has reduced the need for self-sufficiency at any cost. The availability of a wider range of industrial products in the countries in transition may have lowered the interest to continue to collect edible products in the forest, while the prevailing economic situation with increasing unemployment would suggest that the unorganised gathering of edible NWFPs remains unchanged. In some of the countries in Eastern Europe NWFPs have economic importance for the forest authorities, e.g. (i) in Bulgaria taxes have been introduced on NWFPs collection and the revenue is used to regenerate forest ecosystems, (ii) state enterprises in Poland harvest NWFPs, e.g. with an annual sale of 3-4,000 tons of mushrooms, (iii) in Rumania income from NWFPs finances State forest service, (iv) in the Czech and Slovak republics the role of NWFPs is recognised, but the statistics are inadequate, and (v) in Hungary NWFPs previously supported a large industry, but the direction is now towards local consumption.

The potential markets for NWFPs vary between different European regions. Mushrooms for example are collected as an open access resource in Scandinavia as part of a cultural tradition and as a recreational experience. In the UK mushrooms are hardly regarded as edible. In Italy the demand exceeds the natural supply and use is re-

Table 5 Non-wood forest products, Scandinavian countries (Norway, Sweden and Finland).

	Sweden (*)	Finland	Norway (1988)
Berries	75.3 millions Kg 574 millions SEK	30 millions Kg 300 millions FIM	28 millions Kg
Mushrooms	22 millions Kg 550 millions SEK	15 million Kg 120 millions FIM	1.2 millions Kg
Game meat	467 millions SEK	6.3 million Kg 100 millions FIM	5.5 millions tons
Lichen		0.5 million Kg 8.5 millions FIM	
Fur skins		(10 percent of hunting value)	55,000 pieces

References: UN/ECE-FAO (1993), Hultkrantz (1992) and Mattson (1990).

(*): 1977 yield for berries and mushrooms; 1987 f.o.b. prices.

Table 6 Berries in Sweden.

	Value (1977 harvest)	Harvest of total growth	Value (1987 f.o.b.)
Cloudberries	4.5 millions SEK	3.7 millions Kg	123 millions SEK
Lingonberries	34.5 millions SEK	34.5 millions Kg	258 millions SEK
Blueberries	28.8 millions SEK	11.3 millions Kg	153 millions SEK
Raspberries	7.5 millions SEK	-	40 millions SEK

Reference: UN/ECE-FAO (1993) and Hultkrantz (1992).

Table 7 Non-wood forest products, countries in transition (former USSR, Ukraine, Belarus and Rumania).

Products	Former USSR 1,000 tons	Ukraine 1,000 tons	Belarus tons	Rumania tons
Berries	120	20	2,100	18,220
Mushrooms	20	4	400	480
Nuts	15.1	0.1	-	-
Birch sap	-	50	34	-
Honey	27.6	-	63	-
Game meat	-	-	780	545
Resin	152	12.5	-	-
Medicinal plants	210	1	79	2,808

Reference: UN/ECE-FAO (1993).

stricted, i.e. prohibited at some locations and sold under collection permits at others. There is international trade in chestnuts and hazelnuts, mushrooms and truffles, some in Christmas trees and green plants (e.g. from Denmark). There is only some trade in hunting meat (e.g. venison), but that trade is subject to veterinary regulation. The scope for further international trade is supposed to be limited with the exception of very specialised and high value products. The potential for marketing NWFPs lies at the regional and national level.

In general the value of NWFPs is *implicit*, i.e. the value is expressed as an estimate often based on the market value of a fraction that is actually marketed. The true market value is difficult to assess without clear evidence of, e.g. price elasticity and demand pattern for the product concerned. There is little knowledge about the demand pattern of NWFPs, but it appears that most NWFPs do have a reputation of being natural and healthy products, thus being in demand from consumers shifting their demand towards quality products.

Other aspects determining demand are: (i) availability and processing, i.e. cost structure, (ii) proximity to markets, i.e. urban areas, and (iii) legal rights to collect NWFPs which are embedded in national legislation in many countries, e.g. berries and mushrooms as a non-exclusive resource, and only the collection and processing costs can be capitalised at market rates, but not the property rights.

As far as the legal rights to exploit NWFPs are concerned, in Denmark visitors have the right to collect nuts, berries, mushrooms, etc. for their personal consumption, and provided there is no harm done to the trees and visitors stay on paths and roads in private forests. Similar rules exist in most

European countries (see, for Sweden, Hultkrantz & Mortazavi, 1993) due to the traditional land-uses that only need reform if excess use and hence conflicts arise.

Regions with declining rural structures and increasing unemployment are likely to be more exploited for edible NWFPs (e.g. nuts, mushrooms and berries) because of more time available and an incentive to extend income. This is assumed to be subject to traditions and cultural heritage in the region, i.e. whether it was commonplace to exploit forests for these products in the not so distant past. Future use of NWFPs will be subject to historic use, in particular of edible products.

Services provided by forests without actual or potential markets

Soil conservation, watershed protection and game provided for hunting have always been services offered by forests: as such they have been recognised and legally protected. Over the past decades, however, the interest in these services has increased and hence there has been greater interest in academic studies regarding methods of analysis that take account of non marketable benefits, as well as specific case study applications (the latter regarding mainly the benefits from recreation and tourism).

In the UK, for example, Benson and Willis (1992) have applied the Travel Cost Method (TCM) and the Contingent Valuation Method (CVM) in order to estimate the recreative benefits from 6 forests managed by the Forestry Commission; they recog-

nised the usefulness of the data that emerged from these studies. In Italy Merlo and Dalla Pupa (1993) recorded 24 applications of CVM studies and 28 TCM studies in estimating the recreational benefits from forests. The problems involved in such applications are connected with the costs of the surveys and the difficulty of generalising the results. Normally the available data refer to areas with peculiar naturalistic and recreational features and the results obtained from such elaborations often show an ample range of variability. Same differences in magnitude of prices can be found when comparing the results of some methods of pricing the benefits from carbon fixing and climate stabilization (table 8).

In general terms, in evaluating the various services supplied by forests, and not only as far as recreation is concerned, three types of problems emerge:

- failings in systematic collection of basic data: the prevalent type of land use, utilisers of the services, management costs of the services, etc. (the UN/ECE-FAO research mentioned in the former section is in fact the first, although still an inconclusive attempt at statistical research in forestry services);
- the lack of agreement with regard to the methodologies of economic evaluation to apply in environmental statistics regarding forestry services and,
- the difficulty of comparing the results of economic estimates which are undertaken occasionally, using different methodological approaches.

As a consequence of these problems, there is no national record regarding the services provided by woodland. The negative externalities connected with industrial and urban activities appear to draw much more

Table 8 Methods and results of pricing benefits from carbon fixing.

Methods of pricing	Exponents	Results
Impact on GWP of reduced consumption: bottom-up	National Academy of Science (1991)	£ 24-240/tonne
As above: top-down	Jorgenson and Wilcoxon (1990)	£ 4-28/tonne
Extra cost of carbon-free fuel	Price (1990)	£ 125/tonne
As above, but discounted from time a carbon constraint is imposed	Anderson (1991)	£ 24/tonne
Cost of removing CO ₂	Sedjo and Solomons (1989)	£ 5/tonne
Cost of altering radiative balance	National Academy of Sciences (1991)	trivial?
Loss of production and cost of warming damage	Nordhaus (1991) / Cline (1992)	£ 1-90/tonne
Carbon tax required to reach the optimal strategy	Cline (1992)	£ 65-180/tonne

Reference: Price (1993).

interest, especially as far as the EU is concerned (see the regulations on EIA – Environmental Impact Assessment – and EMAS – Eco-Management and Audit Scheme).

In the lack of a systematic record of the services provided by woodland, in order to present a general description of the differences existing between European countries with respect to woodland services⁽²⁾, the data given in the UN-ECE/FAO study (1993) have been re-elaborated. This study reports data on the forest areas having low, medium and high importance with regard to the major services offered (wood production, soil protection, water, grazing, hunting, nature conservation and recreation)⁽³⁾. These data have been re-elaborated on the basis of 5 geographical groups (Mediterranean countries, Central-Northern European countries, Scandinavia, countries in transition and the former USSR) and are shown in the following graphics.

In **figure 2** it can be seen that the geographical area with the highest percentage of productive forests is Scandinavia and Central and Northern European countries (respectively 70 and 75% of forest land is classified as highly productive). There is a rather peculiar situation in the Mediterranean area, where 50% of woodland is considered to be of low importance and only 15% highly productive. The situation in the countries in transition is similar to that of Central Europe, where most of the woodland is considered to be of average or high productivity.

We find the opposite situation when considering the role played by forests in soil protection (**figure 3**): this is very similar

in Central-Northern Europe, in the Mediterranean and transition countries, where 15-20% of the forest land is very important as far as soil protection is concerned, whereas this role is practically non-existent in the Scandinavian countries.

As far as grazing is concerned (**figure 4**), notable differences may be observed between one country and another, as well as between private and public forests in the various countries. The latter occurs, for example, in Finland, where 80% of the public forests provide high levels of fodder productivity, due to the importance of reindeer management on public land in the northern part of the country. Among Mediterranean countries, in Greece and Spain half of the forest land is of medium importance with regard to grazing.

The role of hunting (**figure 5**) appears to be of great importance in Central and Northern European countries (71% of the woodland classified as of high importance, with a significant difference between public and private forests: 76% and 21% respectively) and in the transition countries. In Scandinavia 96% of forest land is considered to be of medium importance for hunting.

Finally, as far as tourism and recreation is concerned (**figure 6**), this is obviously concentrated in areas that are easier to reach, with better road networks and higher population densities. For this reason the forest areas with high figures for tourism are only a minimum part of the total (15-18% in Central and Northern Europe and Mediterranean countries, 8-9% in Scandinavia and countries in transition, and only 2% in the former USSR).

Final remarks

Some general valuations may be made on the basis of the above analysis:

- NWFPs may play a remarkable economic role in stabilising income from forest ownership and are important niches in many rural contexts, especially in disadvantaged areas and in the Mediterranean regions, where forest productivity is lower as far as timber is concerned.
- There is growing awareness of the importance of NWFPs and especially some services which are not reflected in the statistics. On the demand side, there is willingness to pay for NWFPs which is not satisfied by adequate supply.
- Economic valuation of some NWFPs often conflicts with various organisational

⁽²⁾ As mentioned in note (1), some of these services can also be considered as NWFPs.

⁽³⁾ The degree of importance of the different forest services has been defined on the basis of the following criteria:

1. Wood production: High: annual cut exceeds 3 cm/year; Medium: annual cut not exceed 3 cm/year; Low: land on which cuttings are negligible.
2. Soil protection: qualitative index defined on the basis of the importance of forests in watershed management and prevention of soil erosion.
3. Grazing: High: more than 1000 megacalories of food for grazing animals produced per year; Medium: less than 1000 megacalories/ha year; Low: areas with no importance for grazing.
4. Hunting: High: areas with high annual capture and specific arrangement such as regular feeding; Medium: game of various species, hunting occurs regularly; Low: low level of hunting and trapping activities.
5. Recreation: High: areas that are frequently visited (at least 10 recreational visitor days per ha and year); Medium: a reas with recreational interest; Low: forests rarely used for the purpose of recreation.

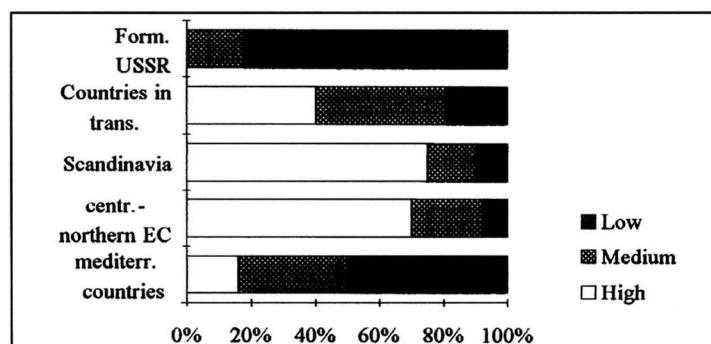


Figure 2 - Importance of wood production in European forests.

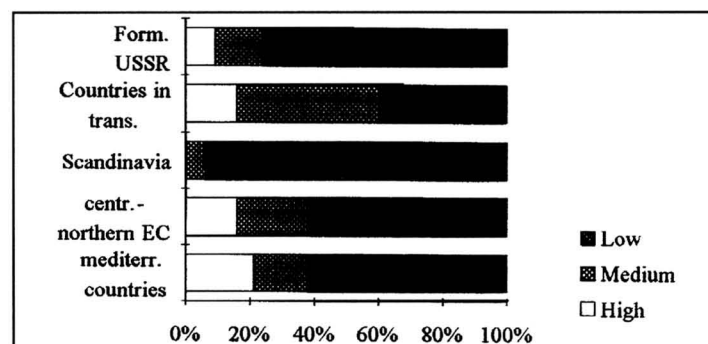


Figure 3 - Importance of soil protection in European forests.

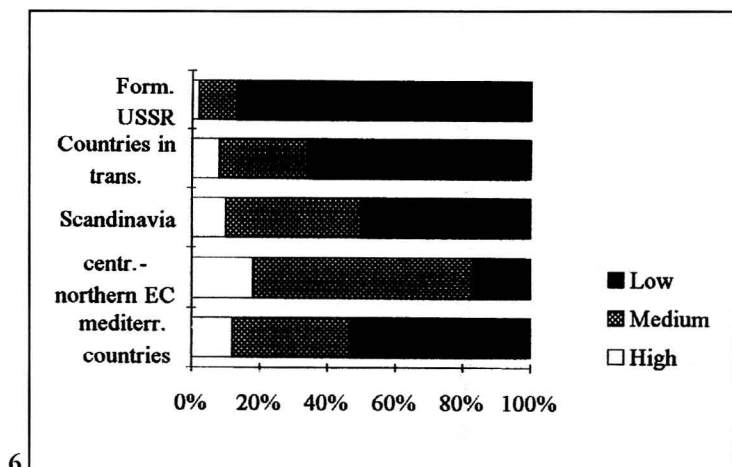
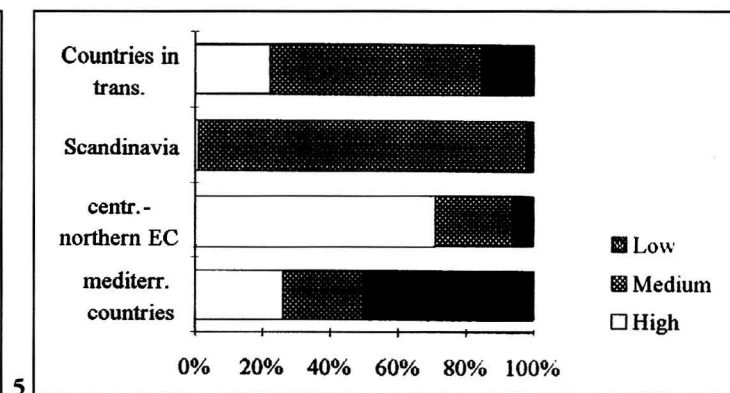
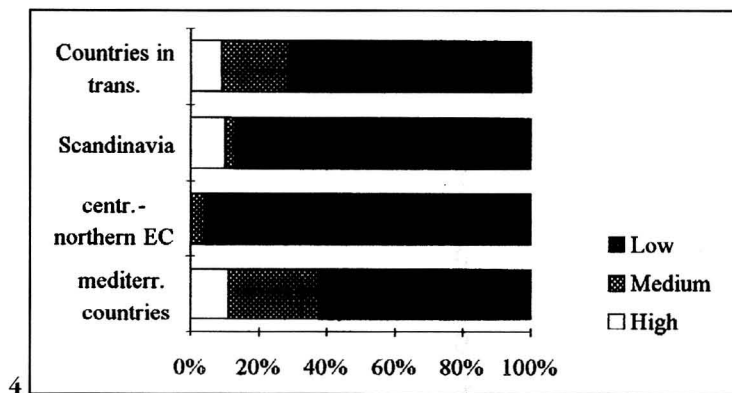


Figure 4 - Grazing production in European forests.

Figure 5 - Importance of hunting in European forests.

Figure 6 - Importance of recreation in European forests.

economic techniques. This process has already taken place with regard to many types of berries, medicinal and aromatic herbs and should obviously be encouraged as it is a means by which income may be increased along with employment in rural areas. In order to defend the quality of the products it would be a good idea to ensure that the origin of NWFPs (whether from woodland or from farms) should always be recognised.

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problems (in production, collection and sales, financing, legal issues such as the right to collect, as well as cultural ones such as public access to the forest. Since the potential of NWFPs as instruments of rural development is greater in the economies of marginal areas, the problems of a technical and organisational nature, as well as financial ones, act as constraints on the development of NWFPs supply.

– On the part of policy makers at national and EU level there are therefore different reasons for promoting NWFPs: to sustain rural development, diversify agricultural and forest production, control the processes of extensification and abandonment of woodland. These processes often involve negative phenomena such as forest fires, uncontrolled grazing, pest attacks and reduction of the public services actually provided by the forests themselves. In the light of these remarks some suggestions may be made for a policy to encourage the economic role of non-wood products and services in regional development (FAO, 1992).

i. It would be more than worthwhile to improve basic knowledge regarding the means of production, collection and processing of NWFPs by promoting R & D activities. At EU and national levels co-operation should be developed through networking of R & D institutions and pilot experiences. Regulations already passed by the EU (see art. 3d, Reg. 2080/92 on woodland improvement; art. 2e Reg. 2078/92 on

management of abandoned woodland and art. 7 Reg. 1765/92) could be used to enhance NWFPs.

ii. Standard methods should be defined for collecting statistical data regarding the availability and production of NWFPs in order to have, at national and EU levels, complete and updated statistics on this sector (a requirement which is connected with the need to realise national and Community accounts which would include the environmental impacts of production and consumption).

iii. The problems connected with trading in NWFPs should be dealt with through market research, promotion of marketing information systems and commercial know-how (definition of varieties of controlled origin, use of labels, trade marks, etc. - see Reg. 2081 and 2082/92).

iv. Finally, it would be useful to promote adequate instruments for public financing of production of NWFPs which would encourage production in this sector in an ongoing, coherent manner (see Reg. 866 and 867/90). An *ad hoc* Regulation could be passed on this subject, like Reg. 2092/91 regarding organic agriculture.

It should however be born in mind that, according to a spontaneous process which has always involved agricultural products, the increase in the profits connected with NWFPs generally involves a process of specialisation and hence a passage from the phase of spontaneous woodland production to that of cultivation based on agro-

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