

CHAPTER VI: SOCIO-ECONOMIC FUNCTIONS OF FOREST AND OTHER WOODED LAND¹

Overview

Chapter VI summarizes information from the TBFRA-2000 *Enquiry Tables 21 to 25* on the socio-economic functions of forest and other wooded land. These functions are recognized as extremely important, but are often difficult to quantify because of the lack of both reliable and comparable data. Therefore, much of the information for this section is descriptive rather than quantitative. The data collected in these tables are summarized in four sections: protective functions of forests and other wooded land, use of forests and other wooded land by indigenous and tribal peoples, public access to forest and other wooded land, and goods and services from forest and other wooded land.

Protective functions of forest and other wooded land

The primary source of quantitative data on protective functions was *Enquiry Table 21*, which focused on the management of forest and other wooded land for soil protection. A number of country replies provided information on additional protective functions either in their comments to that table or in response to section 5 of *Enquiry Table 24*. The information from both sources is summarized in this section.

Thirty-seven countries provided complete data in *Enquiry Table 21* on the amount of forest and other wooded land managed primarily for soil protection in two reference periods. Three countries provided data for one reference point. Although Cyprus did not provide quantitative estimates, the response indicated that between 5 and 10 per cent of forest and other wooded land is managed for soil protection. In some cases, data were not available for the entire country. For example, Australia reported that about 3.6 million ha on some State Forests are managed for soil protection, but data are unavailable on other forests and for other wooded land. Belgium included only public forests in Wallonia, where rules exist for protecting soil where slopes exceed 15 degrees. Estonia was not able to estimate the protective area on other wooded land.

In the 40 country responses, the proportion of forest and other wooded land area being managed primarily for soil protection varied from 0 per cent to 100 per cent in the most recent reference period (Table 6.1). Finland, Ireland, Norway, Sweden and the United Kingdom reported that soil erosion is not a problem on forest and other wooded land, resulting in either zero or a small percentage of land managed for soil protection. Therefore, a zero or low percentage of area designated does not necessarily indicate inadequate soil protection. For example, in the Netherlands, tree planting undertaken in the 19th century continues to protect against wind erosion, so that little area is currently designated for protection. Most countries (29 of the 40) reported an area less than 30 per cent being managed primarily for soil protection. Two countries (Greece, Kazakhstan) reported 100 per cent of the forest and other wooded land being managed primarily for soil protection.

Of the 37 countries which provided trend data, 25 countries showed an increase in the area managed primarily for soil protection. Countries that indicated a change in area greater than 30 per cent between the two reference periods included Albania, Belgium, Bulgaria, Poland, Turkey, and Yugoslavia. Only one country showed a decline (Slovenia), but the area affected was small. The remaining countries showed no change.

The importance of forest and other wooded land for soil protection is particularly significant for countries with extensive problems of soil erosion. Countries as disparate as Iceland and Turkey emphasized the role of forests in soil conservation. Soil erosion from deforestation and overgrazing is the greatest environmental problem facing Iceland. As a result, conserving existing forest and other wooded land and land reclamation by afforestation is important. Soil erosion is a serious threat to natural resources in Turkey, caused by natural climatic conditions, loss of vegetation covers, overgrazing, human settlement and other factors. Over 3 million ha of Turkish forest and other wooded land are managed for soil and water protection, and no production activities are allowed.

Although soil protection is important, numerous difficulties exist in evaluating the data for this indicator. First, countries seemed to be using different interpretations of “managing primarily for soil protection.” A very strict

¹ This chapter was prepared by Ms. Linda Langner (see Appendix V).

interpretation was taken by most countries that have specific designations for protective functions. The Czech Republic classifies forest in three categories: protection forests, special purposes forest, and commercial forest. A subset of forest within the special purpose class is considered important primarily for soil protection. The protected area in Japan included only forests managed to protect against soil erosion and landslide. The Russian Federation also has a strict classification process for protective forests, including 20 subdivisions for particular protective functions such as pollution abatement and water retention. Protection forests are a specific designation in Slovenia, where protection is the chief determinant of management actions. Portugal did not include more than 1 million ha of cork oak and green oak that combat desertification, even though soil protection is clearly one of the purposes of that forest area. Denmark included forest area managed for protection against sand dunes, protection against water pollution, and other wooded land in shelter belts and windbreaks. For those countries that explained the basis of their estimates, the tendency was to narrowly define the area that qualified as primarily for soil protection. However, other countries may have taken a less strict approach.

Second, several countries commented on the difficulty of responding to the question in cases where multiple use management is the dominant approach to forest management. Australia commented on the difficulty of reporting data when protective functions clearly overlap. Denmark noted the difficulty of estimating the area of forests with special purposes for protection when the main concept of Danish forestry management is multiple use. Canada and the United States did not provide data for *Enquiry Table 21* because it was not possible to isolate separate protection functions, although soil and water protection is an overriding consideration in development of forest policy and forest management. Both Australia and New Zealand noted that it was not possible to estimate such an area separate from other functions. However, New Zealand noted that removals of forest cover in the past led to severe erosion and flooding in some areas. As a result, much of the plantations have been and will continue to be planted on lands withdrawn from more erosive uses.

Because of difficulties with the comparability of responses, different approaches to management, and variations in the importance of soil erosion across countries, drawing conclusions from the current data must be done cautiously. Of particular concern is the number of protective functions that are excluded from Table 6.1, but are equally important as described below.

The country responses clearly indicated that public awareness of the value of the protective functions of forest and other wooded land has grown. As a result, demand for these functions is increasing throughout the temperate and boreal regions. Forests play a major role in protecting communities against avalanche, landslide, flood, noise, wind erosion, soil erosion, and air and water pollution. In coastal areas, forests play a key role in dune stabilization. Trees are often used in reclamation of mineral workings and other sites. Tree planting and afforestation programmes are often undertaken to address protective functions. The placement of trees in urban areas for screening noise, absorbing pollutants, and providing energy savings, is increasingly important. The increasing importance of the urban forest for providing climate, biodiversity, and social values was noted by several countries. Malta noted the importance of afforestation for watershed management and for amenity purposes, as well as enhancing the rural landscape to attract tourists. In the United Kingdom, trees are important on industrial sites to provide screening and for landscaping. Roadside plantings are used as noise barriers.

Numerous quantitative examples were provided of management for protective functions. France responded that about 350,000 ha of public forests are managed primarily for protection of the physical environment; only 55 per cent of that area was included in Table 6.1, the area that protects against avalanche, rock slides, and gullying. Lithuania only reported 2 per cent of its forest and other wooded land managed primarily for soil protection, but 13.2 per cent of the total forest area is classified as protection forests. Norway estimated only 1,000 ha were important primarily for soil protection, but a total of 4.38 million ha of forest and other wooded land (FOWL) are officially declared protection forest which included multiple protective functions. In addition to the area protected for soil protection, Poland has increased the area of FOWL providing protection for water, climatic reasons and for emissions control. Switzerland included 40 per cent of FOWL area in Table 6.1, but 52 per cent of the total forest area has the potential to protect against soil erosion.

Forests on mountainous or hilly terrain play a key role in preventing soil erosion in Armenia, Albania, and Azerbaijan because much of the forest is located on steep slopes, about 70 per cent in Armenia. The forests in Azerbaijan serve to retain water and soil and serve as the public's main protection against avalanche, landslide, and noise, while forests in the foothills and valleys serve for soil protection, climate regulation, and other environmental purposes. Tree strips are often planted as field protection by the Belarus Ministry of Forestry on collective and state farms. Hungary, United Kingdom, and the United States also mentioned the importance of forests in protecting agricultural lands. In Croatia, forests provide protection from water and wind erosion in coastal and hilly terrain, protection from air pollution in cities and industrial plant surroundings, and protection from floods. In Cyprus, forests play an important role in prevention and control of soil erosion from torrential rains, which is increasingly important in preventing siltation in water dams. About 30 per cent of the forests in Estonia provide some type of protective function, although only 4 per cent of the area was considered managed primarily for soil protection. Lithuania's protective forests include areas that protect water, and agricultural fields.

Several responses emphasized that forestry management practices are designed to minimize soil erosion and other environmental degradation. All Australian States and Territories have codes of practice or similar procedures in public forests for avoiding soil erosion in wood harvest and road operations. Efforts are being made to extend these codes onto private commercial forest land, especially on plantations. In addition to riparian strips, wildlife habitat strips, and special protection zones (e.g., steep areas), areas of forest are also managed for water catchment protection purposes. "Best management practices" are used in Canada and the United States to protect soil and water resources during management activities. Similar management approaches are used in other countries.

Given the broad array of protective functions described by countries, it would be safe to conclude that the area shown in Table 6.1 underestimates the total forest and other wooded land area managed for protective functions. Countries are giving increasing attention to the role of forest and other wooded land in providing environmental protection. Five countries provided estimates of the value of protective functions of forest. Germany estimated the additional cost per ha of managing forests to ensure the welfare functions at \$25/ha. Poland provided estimates of the per ha value of several protective functions, ranging in value from \$7 to \$12/ha/year. Similarly, Slovakia provided estimates of several protection functions ranging from \$.10 to \$.20/ha/year. Switzerland estimated the replacement value of protection functions at \$2.3 billion per year, while the management cost of ensuring those functions was estimated at \$96 million per year. Austria estimated the total value of protective functions, including water protection, to range from \$1 to \$3 trillion per year.

Indigenous and tribal peoples

Few of the countries in the TBFRA regions have populations of indigenous and tribal peoples as defined by ILO. Seven countries reported information about indigenous and tribal peoples. There are several distinct geographic areas within the temperate and boreal zone covered by TBFRA where indigenous cultures remain in close contact with forest environments: the northern boreal zones of Scandinavia and the Russian Federation, North America, and Australia and New Zealand in the Pacific.

Northern Scandinavia is the traditional home of the Saami people. Norway and Sweden reported an estimated total population between the two countries of 57,000. The Saami have traditionally used the forest and other wooded land for reindeer grazing. Occasional harvesting of fuelwood or fencing materials also occurs. In Norway, approximately 3.24 million ha of forest and other wooded land are used by the Saami. On most of the land, only occasional grazing occurs, so that no significant conflicts exist between grazing and forestry. The domesticated reindeer population is estimated at 190,000. Total annual income to reindeer owners is estimated at \$7.3 million.

Saami who own reindeer have the right to graze reindeer in Sweden. They do not own the forest collectively. Reindeer grazing is allowed on 16.5 million ha, of which 10-13 million ha is forest and other wooded land. The Saami also have the right to hunt and fish on some areas, mostly in alpine and sub-alpine regions. The reindeer population in 1991 was estimated at 310,000. The value of the lichen production, which is the main reindeer food, was estimated at about \$100 million per year.

Finland reported no indigenous and tribal peoples.

The Russian Federation has an estimated indigenous peoples population of 504,900 individuals. Seventeen different groups of indigenous people were identified, some of which belong to larger groups and families. The majority (380,000) are Yakuts, followed by Nenets (34,200). The population figures primarily counts those indigenous people currently having difficulty in surviving, so the total is not limited to indigenous people associated with forests.

Of those indigenous peoples using Russian forest resources, the main uses are hunting, fishing, gathering berries, fungi, nuts, medicinal herbs, and wood cutting for personal use. In 1995, the Northern Minorities (Nomadic Community) Act initially granted 13.2 million ha of forest for the long term use of indigenous populations of the Republic of Sakha (Yakutia); another 2.1 million ha was subsequently granted. Long-term use was defined as 49 years. The Russian Forest Code imposes legal constraints on the use of forests in areas traditionally inhabited by indigenous minorities and ethnic groups. Use of these areas must uphold the traditional lifestyle of such people and ethnic communities, and the land must not be diverted to other uses.

North America has the largest population of indigenous peoples among the regions covered by TBFRA. Canada had 799,010 Aboriginals in 1996, of which 554,290 were North American Indians and the remainder were Métis or Inuit. The United States had 1,937,391 Native Americans, Eskimos, and Aleuts, according to the 1990 Census. A more restrictive definition of Native Americans is individuals who are enrolled in federally recognized tribes, which was estimated at 1,426,270 individuals.

Canada had 1,132,000 ha of Aboriginal land in 1994. About 72 per cent of those lands were managed. The ownership statistics are continually changing, as land claims are resolved. The actual area used is greater than land owned. For example, Aboriginal peoples are significant users of the public lands. Legal access to public forests is evolving as a result of land claims negotiations, treaty development, and/or modernization and other interpretations by

the courts. Generally, it is recognized in Canada that Aboriginal peoples have unique and special rights relative to public forests. A number of provinces have amended their forest legislation and regulations and practices to address Aboriginal rights.

The United States has the largest population of indigenous peoples in the temperate and boreal region. There are 555 federally recognized Native American tribes in the United States. No information exists on the percentage of the Native American population which uses forest for subsistence or other uses. Tribes own about 6.9 million ha of forest and other wooded land. In addition, they have rights of harvest and collection on an estimated 70 million ha of federal lands.

The uses of forest lands by indigenous and tribal peoples are similar in Canada and the United States. Many of the tribes have aboriginal-owned and managed forest products businesses, commercial fish operations, and guiding and outfitting operations for hunting and other types of recreation. Products harvested for tribal use include fish, furbearers, game for meat and hides to make clothing and other goods, firewood, plants for food and medicinal uses, and materials for crafts such as basketry. The forest also has important symbolic and cultural values, often associated with sites of spiritual or cultural significance.

Australia and New Zealand also have indigenous populations. New Zealand is the home of the Maori. About 15 per cent of the population of New Zealand is Maori, although most are not living in traditional style. The Maori have a spiritual and cultural relationship with indigenous forests, as these forests were traditionally a source of food and materials for health and shelter. Their cultural heritage and customary law is deeply embedded in the natural environment. Some of these traditional uses remain. All indigenous forests that contribute to the cultural, social, and spiritual needs of the Maori are subject to protective legislation. The whole question of indigenous rights in New Zealand is currently the focus of considerable attention. Forest ownership will continue to change as land claims are resolved under the Treaty of Waitangi Act.

In Australia, the population of Aboriginal and Torres Strait Island people is estimated at 352,970. About 12.6 per cent of the total area of forest and woodlands (almost 20 million ha) is under Aboriginal tenure, and is used by indigenous peoples for collection and harvesting of non-wood goods and services. This area includes Aboriginal freehold, Aboriginal leasehold, and Aboriginal reserve. Because of the intricate linkages between nature and the Aboriginal culture, it is important to identify and protect indigenous heritage values when undertaking assessments of forest and woodlands.

The main difficulty in providing useful data on this topic is trying to isolate the use of forest environments by indigenous and tribal peoples. Population censuses do not provide information on the percentage of the indigenous people living in or using forest and other wooded land. Not all indigenous peoples have strong ties to forest land. As a result, the data must be carefully interpreted since the total indigenous population may not be forest dependent, and traditional use is not necessarily tied to forests.

The legal rights of indigenous peoples, and their ownership of land tend to be complex and vary greatly between countries. In both the Pacific and North American countries, legal rights and land ownership are still evolving.

Access to and use of forest and other wooded land

Ownership patterns and property rights affect public access to forest and other wooded land. The data in *Enquiry Table 23* were used to summarize current access policies, show trends in access, and describe differences in the temperate and boreal region. Information on visitation from *Enquiry Table 23* is discussed in the section on leisure services of forest and other wooded land.

Access to public forest and other wooded land

Most countries that responded to *Enquiry Table 23* indicated that the public has access to most public forest and other wooded land for the purposes of recreation and gathering of forest products for personal use (Main Table 81). The exception is Azerbaijan, which reported that only 100,000 ha of the public forest are available for visits by the public.

Some types of public land restrictions occur in all countries, but these restrictions normally affect a small percentage of the public lands. The most common restrictions were related to protection of scientific reserves, ecologically sensitive areas, wildlife reserves, water catchment areas, and health and safety concerns. Restricted access to military lands was mentioned by numerous countries. Areas under specific management regimes often have restricted access. For example, forest regeneration areas, experimental plots, and stands for seed supply have restricted access in Poland. Belarus and the Ukraine reported restricted access to areas with radiation contamination. Restrictions may also exist for collection of forest products, such as mushrooms and berries.

The rules governing public access often vary by the type of public ownership. Forest and other wooded lands in the countries of the Commonwealth of Independent States (CIS), Albania, Bulgaria, and Malta are unique in that all

forest and other wooded land is owned by the central government. Other countries have a mix of public ownerships, including national and sub-national units such as states, provinces, cantons, counties, and local municipalities.

Laws that address access to public forest and other wooded lands vary by country. Albania has special articles in law that address protection of forest resources with national and international values, fees and payments for forest uses aimed at recreation, health, climate, and tourism, and for entrance and payments in national park territories and forest fund parks. Several countries described national laws that govern hunting, including Albania, Cyprus, Hungary, Liechtenstein, and Lithuania. In other countries, hunting laws and regulations are determined by provinces, states, or other units of government, so they often vary in different regions of the country. Many countries use a combination of licenses, season limits, quotas, and penalties in regulating hunting. Hunting may be prohibited entirely on some types of public lands, such as national parks in the United States.

Laws and regulations governing use of non-wood goods on public lands also vary considerably, although most countries allow personal collection of non-wood goods. Both Austria and Slovenia indicated that personal collection of mushrooms is limited to 2 kilos per person per day (on private land as well). Lithuania has a Mushroom Gathering Act and a Small Non-Wood Products Act that govern uses. Liechtenstein has a Nature Conservation Act that includes rules on gathering mushrooms. In the Flanders area of Belgium, access to public forests for gathering non-wood products such as mushrooms, mosses, and ferns requires special authorization from the Forest Inspection. Cyprus also requires a license to collect products from state forests. In Italy, specific regional rules guide the collection of forest products. Slovakia has limits on the collection of fruits in national parks.

Commercial use of forest and other wooded land normally requires special permits and some type of payment to the State, particularly for the harvest of wood products. Canada closely regulates the wood harvest on public lands, usually through a tenure system. In the United States, permits are issued for the collection of non-wood goods on national forests, while the wood harvest is conducted using a bid system. In Poland, commercial harvest of non-wood goods requires an agreement with the local forest district. Harvest for manufacturing or commercial purposes in the Ukraine requires payment for a special permit.

In addition to the types of access restrictions described above, there are often restrictions to prevent conflicts between uses. For example, access to timber harvest areas is often restricted for public safety purposes. Some types of recreation use are confined to specific routes to avoid resource damage. These types of restrictions are often seasonal or temporary, to adapt to changing resource conditions and shifts in harvesting activity.

Access to private forest and other wooded land

The countries in the TBFRA area generally fall into one of two categories of private land access policies. The majority of countries that have private forest land have a policy of open public access for recreation and gathering of forest products for personal use. In these countries, there is little difference between access to public and private lands, although the rights of landowners to restrict access varies. In most countries, access can be restricted for health and safety reasons, and during hunting seasons. Several countries restrict access to private lands to the daylight hours, including Denmark and Estonia. In some cases, use is restricted to paths and roads, or traditional routes of access. In Sweden, the public is not allowed to collect logging waste, branches, or the cones of wind-thrown trees without landowner permission. Although New Zealand and Turkey fall into this first category, both countries indicated it is customary to seek permission from the landowner before entry.

The second policy is to allow access only with the permission of the landowner. Only nine countries reported a policy where private property rights supersede public access (Australia, Belgium, Canada, France, Hungary, Ireland, Poland, United Kingdom, United States of America). Even in these countries, access is often allowed. Poland passed a new Polish Forest Act that allows owners to forbid access, but that right has not been commonly applied. In France, access is most often denied for the hunting season, or when the pressure from tourism is intense, or when the landowner is reserving the right to harvest products. At the same time, communities and user associations in France are working to make access to private lands easier. Finland requires that hunters receive a permit from the landowner in order to hunt on private land. In Hungary, the written permission of the landowner is needed to collect non-wood goods. In the United Kingdom, the public is allowed to use traditional rights of way through private land.

The effect of access restriction on public opportunities is difficult to assess. In countries such as Canada, the effect is likely to be minor, since more than 90 per cent of the forest and other wooded land is in public ownership. However, eastern Canada has a higher proportion of private land, which could affect public opportunities. In countries where a majority of forest and other wooded land is privately owned (Belgium, France, United Kingdom, and United States of America), access restrictions may limit public opportunities to enjoy forest land. However, access restrictions protect the interests of landowners to manage and use their lands for their own goals. The potential for commercial exploitation of non-wood goods is limited if harvest rights cannot be guaranteed. Access policies will remain an important factor in addressing increasing demand for many non-wood goods across the TBFRA area.

Trends in access to public and private forest and other wooded land

Forty-three of the responses provided information on trends in access to public and private lands: opportunities for recreation and gathering of forest products can be affected by changes in the area of forest and other wooded land, changes in the ownership distribution that changes access rights, changes in property rights, and policy changes. The restitution process being undertaken in several eastern European countries has affected ownership distribution. Increased use of legal protection for ecologically sensitive sites has also affected access.

Twenty-three countries reported that the trend in access to public and private land was stable. In most of these countries the ownership distribution and access policies remained stable. In cases where ownership distribution changed (e.g., the Czech Republic), public access is guaranteed on private and public land so that access was not considered to be affected.

Five countries (Albania, Armenia, Belgium, Ireland, Slovenia) reported a trend toward increased access on public lands. Increased access in Belgium was a result of public land acquisition. In Ireland, afforestation of public land has increased the area of public forest land. The increase in Slovenia was a result of a transfer of about 16,000 ha of military lands to other public ownership which had fewer access restrictions.

Seven countries (Estonia, Hungary, Japan, Lithuania, Slovakia, Ukraine, USA) reported decreasing access to public lands. In most cases, decreasing access was not attributed to a decrease in the area of public lands. Instead, increased restrictions or other barriers to access were the cause. In Hungary and Ukraine, the public is not allowed access to new forest reserve areas. The area of public land decreased in Lithuania as a result of restitution. Increasing restrictions on public land to protect sensitive nature areas, and a banning of economic activity has resulted in decreased access in Slovakia. In the United States, decreased access is a result of private development adjacent to public lands that has affected traditional routes of access.

Private land access has changed in twelve countries. A trend of increased access was indicated in six countries (Albania, Denmark, Estonia, Japan, Lithuania, United Kingdom). Increased access in Denmark was attributed to a recent law on nature protection that opened most privately owned forest to public access. In Lithuania, the area in private land has increased as a result of restitution. The United Kingdom has several incentive programmes for private landowners to allow public access.

Decreasing access to private forest land was reported by six countries (Hungary, Iceland, Poland, Slovakia, USA, Yugoslavia). The new Forest Law in Hungary allows forest owners to restrict access during forest activity, hunting, and to protect public safety. In Iceland, fragmentation of private land for summer cottage development has limited public access, since the public is not allowed on small lots with summer houses. Poland has seen an increase in private land area and has allowed private owners to forbid access. Therefore, the potential exists for decreased access. Decreasing access in the United States is based on a survey of landowners that indicated a smaller percentage of owners allowing general public access than 10 years ago. Fragmentation is one reason for the reduced access.

Overall, access policies to forest and other wooded land have remained fairly stable. The restitution process in several countries has shifted the distribution of land between public and private owners, but does not seem to have had major impacts on access to date. Increasing restrictions for environmental purposes reflect increased interest in protecting sensitive ecological areas and wildlife species. At the same time, development pressures are affecting forest and other wooded land, particularly adjacent to growing urban areas, which tends to negatively impact the land available for public access.

Goods and services from forest and other wooded land

The final section addresses the non-wood goods and services of forest and other wooded land. *Enquiry Table 24* asked for descriptive information about goods and services, while *Enquiry Table 25* asked for data on the quantity and value of goods harvested or collected from forest and other wooded land. This section organizes the information from *Enquiry Tables 24 and 25*.

The responses to the Enquiry demonstrated that forest and other wooded land produces an extremely diverse list of goods and services. Fortunately, several groups of goods and services were reported by a large number of countries. Therefore, the following summary primarily focuses on common goods and services. The section is broken into the following categories: wood products, mushrooms and berries, medicinal plants, decorative foliage, fodder and forage, hunting and game products, other non-wood products, leisure services, and aesthetic, cultural, historic, spiritual, and scientific values.

Not surprisingly, data about wood products were the most widely available across countries. Data availability for non-wood goods and services varied widely. Despite the lack of complete and consistent data across these goods, several messages were clear. First, the general trend is increasing demand for most of the goods and services. Second, the lack of supply information limits current ability to manage these resources. Finally, existing and potential conflicts between users, combined with the increasing demand are creating immediate challenges for managers.

There are several groups of users that affect demand, although in many cases the distinctions between the groups are not clear. Commercial demand is the dominant force for most wood products, but is less important for many of the non-wood products. However, the growing demand for “natural” products in many countries has spurred commercial interest in products such as mushrooms and medicinal plants. Therefore, commercial demand was reported as increasing for many products. Although many of these goods are produced in relatively small quantities, “wild” species often command a significant price premium over the cultivated species. Commercial collection includes a variety of users, from small-scale collectors that sell in local markets, to leases of large areas by multinational corporations.

Subsistence demand, personal use demand, and recreation demand were also used to describe different users. Personal use demand seems to be a more general term that includes both subsistence and recreation demand. Subsistence use is difficult to define. Indigenous people are often dependent on non-wood products for in-kind income. Gathering non-wood products is also an important part of their culture and the social fabric of the community. However, a number of other people also collect non-wood goods for food, to use in barter, or as inputs to other products that are then sold. A few countries indicated that demand for traditional collecting of non-wood products has declined as populations have become more urban. The recreation demand component of personal use was seen as increasing in most countries.

Lack of information about the supply of non-wood goods makes it difficult to assess the sustainability of current use, or appropriate management techniques. Many of the non-wood species are highly variable in production in response to climatic variation, and therefore are difficult to inventory and monitor. The growing demand, both domestically and internationally, for many of these products has led to the potential threat of over-use, destructive production techniques, and possible harm to the productivity of the resources. Few countries have a coherent management policy for non-wood products. Planning and control of sustainable harvest of non-wood products is growing in Australia. Two States currently have management programmes for the harvest of native flora for trade; other States are developing programmes. In the Russian Federation, the Russian Federal Forestry Service oversees harvest of a variety of non-wood products from their enterprises.

Conflict between users is growing in many countries. For example, an increasing number of recreation users from urban areas in Italy are travelling to rural areas to collect mushrooms and berries. Lack of knowledge and inexperience can cause damage to the resource and also provide direct competition to local users who have traditionally used the resource.

The quantities and value of the goods and services were provided for different years and in different currencies. In some cases, countries provided an average of production over multiple years. As a result, it is not possible to present the data in a common year. All currencies were converted to U.S. dollars, using an average exchange rate as close to the year of the data as possible (Table 6.2). The dollar values are nominal values, not real values. Therefore, any comparison between countries must be done with caution. The basis of the value estimates was often not provided by the countries. Where information was provided, the source of the value is described.

Wood products

Thirty-eight countries were able to quantify wood production and value. In addition to wood, a number of countries provided data on Christmas trees, and four countries provided data on cork production.

Demand for wood products was reported as increasing by most countries that commented on demand. It was difficult to determine whether the assessment of demand was limited to domestic demand or total demand, since international demand is important for countries that export wood products. New Zealand specifically reported that domestic demand was stable, and that increasing domestic production would be used to meet export demand. Belgium and Latvia reported stable demand, while Liechtenstein reported stable or possibly declining demand. Turkey reported that demand for fuelwood is declining.

The outlook for wood supply was reported by only 11 countries. Countries with active afforestation programmes or increasing plantations, which includes Ireland, New Zealand, and the United Kingdom, expect increasing supply in the future. Increases in growing stock are expected to increase wood supply in Finland, Poland, and USA. Supply was expected to be stable in Lithuania and the Ukraine, and decreasing in Slovenia. Latvia reported a potential supply of 8.5 million cubic metres per year. Although actual growing stock may be increasing in many countries, Finland's response raised the point that measures such as protecting old growth forest and conservation of rare biotopes may limit the availability of the supply. Azerbaijan indicated that much of the current merchantable wood in the country cannot be harvested for economic or environmental reasons. Therefore, current production is only a fraction of total potential supply.

The data on quantity and value of wood are shown in Table 6.3. Quantities of wood production were generally reported in cubic metres, although Israel reported wood production in metric tons. A number of countries provided information on a variety of wood products, some of which were not in comparable units. The data in Table 6.3 include only production reported in cubic metres. The Russian Federation data do not include pulp, paper, and cardboard production, which totalled 7.8 million tons valued at more than \$5 billion. Fuelwood was included in some country

totals, but not in others. Japan reported 140.6 million cubic metres of fuelwood, valued at almost \$18.4 million, which was not included in Table 6.3. In many cases, standard economic accounts do include all wood products. Armenia reported that 150,000 cubic metres of wood were harvested in 1996, but only 85,000 cubic metres are included in the production data. The Netherlands data included 100,000 cubic metres (valued at \$500,000) that do not enter standard economic accounts.

Although cubic metres were the standard measure, most countries did not indicate whether the quantity was measured overbark or underbark. If total wood production reported in Table 6.3 are compared to total fellings data, production was usually equal to or less than reported overbark fellings. The exceptions included Belarus and Slovenia, both with production slightly greater than overbark fellings. Croatia and Cyprus also had greater production, but the data for production was for 1996, while the felling data were an average over a 10-year period.

Several types of values were provided. Denmark provided net national income, while Portugal provided estimates of income to forest owners. Canada provided total sale value of the forest industry. Finland provided gross stumpage earnings. France, Lithuania, New Zealand, and Norway provided values based on roadside value. Croatia, Japan, Slovakia, and Switzerland provided market prices. Wholesale prices were indicated for the Netherlands, Russian Federation, and the United States. If per unit values are calculated from these data, it is clear that countries are not valuing wood at the same stage of production. For example, the values for Japan and USA were based on wholesale product prices, not raw wood values. Therefore, wholesale values for Netherlands and Russian Federation are not comparable to Japan's value. Given the wide range of values provided, and the lack of clear definitions, caution must be used in any comparisons across countries.

Seventeen countries reported data on Christmas tree production and/or value, and four countries reported cork production (Table 6.4). Christmas tree production may include trees from Christmas tree plantations as well as harvest of individual trees from other forest areas, but not all countries included both sources of trees. Export of Christmas trees accounts for a large proportion of the production in some countries. The value of Christmas trees was based on wholesale value in Canada, income to the forest owner in Cyprus, net national income in Denmark, and retail prices in France, Netherlands, New Zealand, Norway, Slovakia, Slovenia, and Switzerland.

Cork is only harvested in a small number of countries in the TBFA area because of the climatic requirements. Italy, Portugal, and Spain are the main producers in the region, with Portugal being the most important producer.

Mushrooms and berries

Mushrooms and/or berries were mentioned by thirty-four countries. This category covers a wide variety of species, only a small portion of which are collected for personal or commercial use. A few of the most often named mushrooms included chanterelles, boletes, matsutake, and morels. The most frequently named fruit species included bilberries, blueberries, cranberries, cloudberry, cowberries, lingonberries, and raspberries.

A few countries noted a decline in traditional collection of these products, including Belarus, Sweden, and Ukraine. In Sweden, the decline was attributed to an increasingly urban population who does not have time for collection and would prefer purchasing the product. In Norway, the demand for berries was assumed to be stable or decreasing, while mushrooms appear to be gaining in popularity. Stable demand was reported for Croatia and Latvia. Belgium and Slovenia indicated demand was increasing, particularly close to urban areas. Demand for berries and/or mushrooms was reported as increasing in Australia, Italy, and the United States. Finland noted that the demand for exporting mushrooms to Central Europe will likely increase in the future. Italy noted that the increase in demand is particularly marked for truffles. Lithuania reported that demand for forest berries is limited by supply.

Harvest of mushrooms and berries appears to be dominated by personal use, whether for subsistence or recreational purposes. Germany reported that commercial use is rare, since access for personal collection is free. In the Czech Republic, about 80 per cent of households picked berries, while 72 per cent picked mushrooms, according to a 1994/95 survey. Household use of mushrooms and berries is common in Estonia, including use of many species that are not commercially used. Lithuania estimated that 70-80 per cent of the collection of mushrooms and berries was for personal use.

Although personal use may be dominant in most countries, commercial demand for mushrooms and berries appears to be increasing throughout the region. In the Canadian province of British Columbia, 35 mushroom species are commercially harvested. Export demand in Europe and Japan is the primary target of the mushroom harvest. About 7 types of berries are commercially harvested, including currants, blackberries, blueberries, and huckleberries. Estonia exports bilberry, lingonberry, and cranberry. In Lithuania, 20-30 per cent of the quantity collected is for sale, including exports of red bilberries, cranberries, blueberries, and ashberries. About 20-25 per cent of collected products are bought for processing. However, the quantity of mushrooms and berries exported from Lithuania has declined since the 1970s and 1980s. Almost all of the national production of mushrooms in Portugal has been exported over the last few years. In addition, juniper berries and strawberries are used in brandy production, estimated at 3100 tons per year. Licensed commercial collection in the United Kingdom is only done locally on a small scale. The United States reported increasing commercial demand for mushrooms. In the Pacific Northwest region, commercial harvest is done

largely for export markets, primarily to Asia and Europe. Matsutakes are the most valuable of the mushrooms harvested, with 70 per cent of the harvest exported to Japan. Although most countries indicated use of mushrooms and berries was for human consumption, France reported the collection of bilberries for use in cosmetics and pharmaceuticals.

Few countries were able to comment on the supply situation for mushrooms and berries. The Nordic countries appear to have supplies well in excess of current demand. Finland estimated that only 10 per cent of the natural yields of mushrooms and berries are being harvested. Norway also indicated that supply is much greater than demand. Potential supply in Latvia also appears to be greater than demand at this time, estimated at 38,000 m.t. per year for three species. The Russian Federation estimated the average annual biological stocks of mushrooms at 43 million tons, and wild berries at 9.5 million tons. Current estimated production is currently less than 1 per cent of the stock estimate. Lithuania noted that supply was considered a potential limiting factor and Poland noted an apparent decrease in supply of mushrooms. Lack of information on supply is a problem in the United States as attempts are made to manage a resource under increasing pressure.

Twenty-two countries provided quantitative estimates for mushrooms, truffles, and berries (Table 6.5). Quantities were uniformly reported in kilograms or tons. The quantities reported are not necessarily inclusive of total harvest. Some countries were able to include an estimate of personal use (e.g., Czech Republic, Finland, and Sweden), while others reported only commercial production (Slovakia and USA). In the case of the United States, data were available from only one region of the country. The responses that defined values included estimates of market price (Cyprus), income to the collectors (Finland, USA), and producer prices (Norway). In Finland, the value of domestic use was estimated using the market price for collectors. The value for Slovakia includes the value of forest fruits exported and processed domestically. Although the Russian Federation did not include a total value estimate, the average price for cranberries and bilberries was estimated between \$1.50-\$2.00 per kilo.

Medicinal and herbal plants

Twenty-three countries listed medicinal or herbal plants as a non-wood product of the forest collected for personal or commercial use. In several countries, such as Finland, interest in collecting medicinal plants had declined over the past few decades, but recently interest in these species has increased. Increasing demand for these products was noted in Australia, Canada, Estonia, France, Finland, and the USA. In the USA, demand grew more rapidly for herbal medicine than for over-the-counter drugs between 1986 and 1990. Lithuania noted that supply is not sufficient to meet demand for several medicinal plants. Demand was assumed to be stable in Croatia.

These "natural" remedies are seen as an alternative to conventional or synthetic medicine. Collecting medicinal plants for traditional uses by indigenous peoples remains an important use in some regions. Ten species of medicinal plants are collected in Armenia. About 70 species of medicinal herbs are used in Belarus, including birch bark for the production of medicinal tar. Most medicinal herbs in Estonia are home made, although some species are receiving scientific attention. The Russian Federation reported that more than 3000 species are used in folk and conventional medicine, although only 190 species are authorized for conventional medicine. Collection for personal use appears to be the dominant use of these plants, but commercial exploitation is growing in response to growing markets.

Pharmaceutical companies are involved in collecting medicinal plants in Canada, particularly in the western province of British Columbia. According to a survey of harvesters and foresters in the province, about 22 known medicinal species are commercially harvested. France noted that increasing quantities of plants are being collected for pharmaceutical use. Pharmaceutical companies in Lithuania process herbal materials from forest land, a large proportion of which is exported. However, export levels have declined considerably over the last three decades. In some cases, wild species have been the source of pharmaceuticals that are subsequently synthesized in the laboratory. One example is the Pacific yew, which was harvested for the extraction of taxol. Demand for Pacific yew in the USA has virtually disappeared since the semi-synthesis of taxol was achieved. Some herbal or medicinal plants are also raised under cultivation. However, wild plants often sell for a premium price. Wild ginseng in the USA can sell for up to 25 times the price of cultivated ginseng.

Twelve countries reported quantity and/or value data for medicinal plants (Table 6.6). The data for Albania are based on a medicinal plant inventory undertaken in 1988; the quantities represent potential productivity, not current production. The data for the Russian Federation is based on the quantity produced from enterprises of the Russian Federal Forestry Service. The data for Slovakia include the quantity and value of plants exported and processed in domestic industries. Swiss quantities include only the amount harvested for commercial use. Although Poland did not provide total quantities, several species were listed that were in the greatest demand, including up to 100 tons of bark of sessile oak.

Decorative foliage

Decorative foliage includes a wide range of species used primarily in the floral industry. Tree branches and boughs of evergreen species are often harvested for seasonal use, while other species are collected throughout the year. Mosses and lichen are also collected for decorative use in a number of countries. Live plants, such as ferns, are often taken from the forest. Several countries listed leaves, which may be used in decorative crafts or shredded to make landscape mulch. Some uses of leaves may be for non-decorative purposes. Other products include species collected for crafts, such as willows for basketry.

Few countries provided an assessment of supply and demand trends for these products. Increasing demand was reported by Belgium and the United States, while stable demand was reported for Latvia and Liechtenstein.

Australia has a significant industry based on the export of wildflowers, foliage, and live plants, although not all of these species are from forest and other wooded land. In fact, increased cultivation of the most popular species has decreased the harvest of wild species. The export of lichen and mosses was reported by Finland, New Zealand, Slovakia, and the USA. The collection of lichens in France is for use in perfume and cosmetic processing. In Iceland, use of wood for home crafts is one of the main end uses of the wood harvest. Ornamental branches are taken during thinning operations and during intermediate and final cutting in Lithuania. Supply from these sources is expected to increase in the future as more wood is produced on special plantations. New Zealand reported that about 100,000 logs from giant tree ferns are collected each year. Norway reported that the lichen harvest was decreasing, but has stabilized in the last few years. In the northwest region of the USA, about one-quarter of decorative foliage products were exported to Europe.

Data were provided by ten countries on decorative foliage (Table 6.5). The data include information on decorative branches and boughs, mosses, lichens, leaves, flowers, and pine cones. These products were reported in metric tons (except in Switzerland). The quantity for Albania represents potential productivity. Denmark's value is net national income. The quantity and value for Finland and New Zealand are for export quantity of lichens or mosses only. For Slovakia, a small portion of the total (6.2 tons; \$32,750) is based on the export of mosses and lichens, while the remainder of the quantity is based on the sale of leaves and branches from state forests both for export and domestic use. The value in Norway and the USA is wholesale value, while the value in Switzerland is based on retail prices. The value reported for the United States is limited to commercial collection in the Pacific Northwest region.

Fodder and forage

Twenty-five countries mentioned the use of forest and other wooded land for fodder and forage for domestic livestock, although this category was not considered an important product in most countries. Grazing is forbidden in the forest in Czech Republic, Lithuania, and Poland. In New Zealand, the native forests are not used for grazing. However, sheep and cattle sometimes graze farm forestry blocks before canopy closure. Other countries indicated that grazing in the forest is considered undesirable.

Customary grazing rights are important in rural areas of some countries but tend to be declining in importance. In Finland and Sweden, reindeer husbandry is an important local means of livelihood, and is the only important form of forest grazing. The value of reindeer meat of Finland was estimated at \$21.8 million in 1996. Croatia reported decreasing demand for forage from forests. Estonia indicated that use of the forest for grazing and making hay has decreased and occurs only on a small scale locally. Grazing in woodlands is tending to decline in France as a result of more intensive animal husbandry techniques. Iceland forest and woodland is used chiefly for summer sheep grazing. Winter grazing and harvesting of birch and willow shoots is no longer practiced. In fact, overgrazing is considered one of the greatest environmental problems facing Iceland. Natural meadows and pasture have decreased in Lithuania, mostly as a result of declines in horse populations. Grazing is allowed in meadows and grazing grounds in Slovakia. Grazing is allowed only in limited areas where no forest damage will occur in Slovenia. Use is declining and is of little economic importance.

Alpine meadows have been an important source of fodder for centuries in Austria. Recently, conflicts have arisen between grazing and forest protection in sensitive areas. In Belarus, controlled cattle grazing is allowed on meadowlands with the forest area, an area of 41,700 ha. But grazing within the forest is considered undesirable. Cyprus allows grazing on only 3.5 per cent of the state forests. Although demand is increasing for grazing, the official policy is to not expand grazing. Meadowlands and pastures within the forest are important sources of green and coarse fodder in the Russian Federation. About 1.5 million ha of meadowland and pasture occur in the European and Uralic part of the Federation, while over 18 million ha occur in the Asian part.

Other countries are using grazing as a management practice. In the Flanders region of Belgium, demand for forage is increasing as a result of the extension of grazed areas for nature conservation purposes. Fodder from forest land is also important in Israel, where grazing is used for forest management and for meat production. Fodder and grazing of cows is used as a nature conservation measure in areas of the Netherlands. Although not the source of substantial income at this time, increased use of grazing may increase the potential for income from selling meat. The

rare instances of grazing in woodlands in the United Kingdom occur in conjunction with special management regimes. In some areas in the south, pony grazing is a locally significant tradition.

Although most countries indicated a declining trend for forage, there were several exceptions. Armenia indicated that grazing is not allowed where damage to the forest could occur. However, the economic situation in rural areas and customary local rights are considered in these decisions. The result has been increasing grazing in rural areas, particularly for pigs. The potential for grazing in Norway is still below current use. Only part of that potential is on forest and other wooded land. Increasing populations of sheep and cattle could impact these lands in the future.

A few countries provided quantitative estimates of forage production. Armenia produced 3,170 tons of fodder in 1996, valued at \$40,000. Austria estimated the value of fodder at \$1 to 1.4 million. In Azerbaijan, 38,000 ha of meadow and pasture yield 900 to 1,000 tons of hay and 100-130 tons of clover per year. Annual hay production from forest and other wooded land in Croatia was estimated at 7500 tons, valued at \$2.5 million. Kazakhstan reported 32,238 tons of hay, valued at \$189,300. The Republic of Moldova reported 2,515 tons of hay, valued at \$27,000. Forage production from 150,000 ha of Swiss forest and other wooded land was estimated to be 42.5 million kilograms in 1996, valued at \$12.7 million. In addition, 115 tons of forage (valued at \$25.2 million) were estimated to be consumed by wild herbivore. Livestock grazing on the forests in the southern USA consume between 5 and 7 million tons of forage annually.

Hunting and game products

Hunting might have been included as a recreational activity, but is discussed separately for three reasons. First, hunting is more closely regulated than most recreation activities. As a result, countries have more data on hunting than on most recreation activities. Second, hunting produces tangible products that can be quantified. Third, in some countries, for example in Germany, hunting is considered as a form of utilization of natural resources on a sustained basis and as wildlife management supervised by the government. The products described by country responses include game harvest numbers, weight of game meat, and number of trophies. The harvest of pelts and furs is also included in this section.

Trends in hunting varied across countries. Austria, Croatia, Lithuania, and Portugal reported increasing demand. Part of the increased demand in Lithuania is from foreign hunters. Stable demand was reported in Finland, although the value of the game bag increased from \$43-49 million to \$57-63 million in the last 10 years.

Italy reported declining demand. The main reasons for declining demand in Italy were more restrictive rules and increased interest in other activities. The amount and value of hunting were reported as declining in the Netherlands as a result of anti-hunting sentiment. In the United States, the percent of the population participating has been declining over several decades. Only recently has the total number of hunters also declined, although demand for some types of hunting is expected to increase in the future. Some reasons for declining hunting participation include an increasingly urban population, and time constraints.

Hunting is a source of significant income to both private landowners and the public management agencies. Most countries have requirements for licenses and associated fees which accrue to the managing agencies. Hunting rights must be leased on public and private lands in some countries, while access is free in other countries. Often, requirements for leasing vary within a country. For example, although permission to enter private land is required in the United States, hunting access is often granted at no charge.

About \$13 million of income is generated from hunting leases in Belgium. Denmark estimated that net national income from hunting was \$25 million in 1996. Hunting rights are rented in Finland, but often at quite low rates, such as \$0.21-0.44/ha/yr. Incomes from leases are important in Germany, with an annual lease fee of between \$6 and \$35/ha, depending on the location and quality of the site. Hunters also spend much time and money improving the ecological conditions of their hunting districts. Hunting produced \$20 million of income in Hungary in fees from services associated with hunting. In addition to the value of game meat, Hungary reported the value of game trophies in 1996 at \$1.2 million for almost 25,000 trophies. The value of hunting trophies and horns in Lithuania totaled \$161,000. In the Netherlands, hunting rates were estimated at between \$12 and \$21/ha/yr. The 1996 annual report of forest owners reported that hunting rights provided \$1.1 million to forest owners; State forests were estimated to generate about \$1 million per year. Almost 61,000 trophies of various Cervidae species were harvested in Poland in 1996. Hunting licenses generated \$5.5 million of revenue for Portugal in 1995. In addition to meat value, trophies in Slovakia in 1995-96 generated \$1.5 million. The value of 13,000 trophies taken in Slovenia in 1996 was estimated to be \$7.4 million. Much of the venison harvested in the United Kingdom is exported.

Many hunters spend significant amounts of money on equipment, guide fees, and travel. Belarus estimated that the value of hunting and tourism in 1995-1996 was \$118,200. In Ireland, hunting and fishing are seen as having real potential to add economic value to the forest, since increasing tourist demand is partly based on demand for natural amenities. Italy is a major importer of game and meat. Italian hunters spend \$15-21 million per year abroad, mostly in Eastern Europe. Average expense per hunter was estimated at \$920 per year.

Game meat or harvest was reported by twenty-three countries (Table 6.7). Several countries provided an average value over several years. In some countries, the commercial sale of game meat is an important economic activity, including the export of game meat. The quantities in Table 6.7 vary in whether they are estimates of the weight of total harvest or the portion of harvest that is commercially sold. The value of game meat reported was described as market price in Cyprus, retail value in the Netherlands, and as the value of export, domestic consumption, and industrial processing in Slovakia. Game meat in New Zealand includes venison from feral populations only. The value is based on wholesale price at the meat plant. Game harvest for the United States includes only the most commonly hunted species associated with forest land.

Data provided for furs may include production from fur farms, and therefore may overstate the importance of forest and other wooded land for fur harvest. Demand for furs has been erratic over the last several decades, largely reflecting public attitudes towards furs and trapping. In Lithuania, 90 per cent of the fur harvest used to be exported. Today, no furs are being exported from lack of demand. A total of 25,300 furbearers were harvested in 1996, although only 8,040 were valued in Table 6.6. Fur production is important in rural areas of Sweden, but the demand is less than the potential supply. The future outlook for furs in the USA will be affected primarily by international demand, since domestic demand is expected to be stable or declining. In Norway, increasing number of elk hides are being processed for clothing. Australia also reported an increasing number of animal products being used commercially.

Eleven countries provided fur or pelt data (Table 6.7). The largest number of pelts is produced in Canada, the Russian Federation, and USA. The Canadian and USA quantity and value are of the total harvest, which includes species that are not associated with forest and other wooded land. Values are generally producers' price, i.e., the price received by the trapper or hunter. Slovakia's data include only furs that were exported.

Several countries provided information about fishing, although it is difficult to separate harvest that occurred in association with forest and other wooded land. Sport fishing often occurs in forest environments. The management of forest and other wooded land directly affects the quality of fish habitats, which in turn affects the populations available for commercial and recreational use. In most countries, fishing is a more popular activity than hunting. The Czech Republic reported an annual average of 3,000 tons of fish production. Italy reported annual fishing production at 300 tons. Total production in Sweden was 26,000 tons, valued at \$61.4 million. The reported harvest for the USA is restricted to salmon species, which spend part of their life in forest environments. Salmon harvest in 1995 was 517,000 tons, valued at \$521 million.

Other non-wood products

A variety of other non-wood products were reported, including ants' eggs, bamboo shoots, barks for tannin extraction, birch sap, bird sap, carob, honey, gums, lacquer, nuts, peat, propolis, resin, maple syrup, and tar. A number of edible plants were mentioned that were not included under mushrooms, berries, or medicinals, such as wild rice. A number of forest products are used to produce industrial extracts, essential oils, and cosmetics. Slovenia reported that about 120 species are used for industrial extracts, but the quantities gathered are small.

Resin is still being produced in some countries, although production has been stopped in Finland, Poland and Slovenia. Portugal has had a decline in resin production because of desertification in rural areas, higher labour costs, and external market competition. In 1995, Portugal produced 40,000 tons, valued at \$80.7 million. France reported 2,550 tons of resin, valued at \$1.6 million, but also noted that production has become marginal. Lithuania also reported a decline in resin production. In the Russian Federation, almost 1.7 million ha are possibly being tapped for resin to produce rosin and turpentine. Turkey reported 113 tons of resin valued at \$120,000 in 1996.

Honey production was mentioned by eighteen countries, of which fourteen were able to provide data (Table 6.8). In most cases, it was not possible to provide production data for forest and other wooded land separately. For instance, Slovakia reported that the production includes honey from agricultural lands as well as forest land. The data from Slovakia include the quantity and value of honey exported and processed domestically. The data from New Zealand are limited to honey produced from indigenous tree areas, and are valued using retail prices. Honey is widely harvested from forest and other wooded land in Australia, as well as from pasture and heathlands. Belarus reported that the full potential of honey from forest and other wooded land is not being exploited. An increase in beekeeping has occurred in Finland, partly on forest lands. France reported a high demand for honey from forest lands. Israel reported increasing total demand. Norway has stable demand, and noted that the harvest potential for honey is four times the current amount produced. The increasing demand and associated production in Portugal have resulted in investments in automation for processing. In the Russian Federation, linden stands can produce between 500 and 1,000 kg of honey per ha. Production is currently taking place on about 2.6 million ha. Slovakia reported that about 20 per cent of the potential supply of honey is currently being used, but that includes supply from both forestry and agricultural production.

Various species of nuts are harvested from forest and other wooded land. Data on production and value of nuts are shown for ten countries in Table 6.8. Chestnuts, acorns, hazelnuts, and pinions were listed by several countries. About one-third to one-half of Portugal's chestnut production is exported. Chestnuts are harvested in Slovenia to use in

the production of tannins. The value of chestnuts in Slovakia is income to collectors. Hazelnuts are a specialized crop that is concentrated in several regions of Italy. Acorns were once an important crop in Italy, but their use has declined. However, some increased activity in acorn collection has begun recently. Pinions are collected in Portugal. Pinions are the main direct economic value of *Pinus pinea*, but stands are not managed for pinion production, which currently produce about 700 tons per year. Pine nuts, acorns, and chestnuts are collected in Turkey, mostly by local villagers.

Production and value data were provided for several other products by a small number of countries. Belarus reported 5,000 tons of birch sap were harvested in 1995-1996, valued at \$500,000. Japan reported 1996 data on lacquer (3,190 kg, \$1.25 million), bamboo shoots (53,083 tons, \$106 million), and wax (85 tons, \$2.2 million). Five countries provided data on seeds: Albania (500 tons, \$1.9 million), Germany (919 tons, \$9.1 million), Italy (1,827 tons, \$3.9 million), Switzerland (42 tons, \$143,000) and Turkey (644 tons, \$528,000).

Both Azerbaijan and Kazakhstan reported a number of agricultural products. The forestry authorities have jurisdiction over some agricultural lands, on which they produce agricultural products as secondary products to forest products. The system was set up under the soviet system, and is still practised in some CIS countries. The goal of these enterprises is to mitigate any food shortages in country markets.

Leisure services

The importance of forests for leisure and recreational use is increasing across the TBFRA area. Increasing demand for recreation was noted by most countries that commented on demand trends. One exception to the trend was reported in Lithuania, where recreation use has declined significantly since the mid-1980s. However, visitation is expected to rebound in the future, partly as a result of foreign visitors.

Forests are often the preferred environment for leisure activities such as picnicking, hiking, camping, horseback riding, and mountain biking. In Armenia, 80 per cent of resorts are located either within a forest estate or adjacent to forest lands. Forests are rare in Iceland, yet they are the most popular sites for recreation. In Cyprus, hunting, outdoor recreation, and skiing were listed as the most important social values for State Forests. Both Poland and the Russian Federation reported that visiting the forest is the country's main leisure activity.

A variety of leisure activities take place on forest and other wooded land. A survey from Denmark indicated that 90 per cent of adult Danes visit the forest at least once a year. The most popular activity (63 per cent participation) was walking, followed closely by enjoying nature (55 per cent). Walking was also the most popular activity in France, Netherlands, and USA. In a 1996 survey of Swedes, only 5 per cent of respondents indicated that they never visit the forest, 47 per cent indicated they visited between 1 and 20 days per year, and 40 per cent visited more than 20 days per year.

One indicator of the increasing demand for recreation is the trend in recreation facilities or special designations for recreation use. Canada reported an increasing number of campsites and other recreation facilities. In Finland, increasing demand has resulted in additional sites and parks reserved and managed for recreation. An increased number of forested areas with trails for skiing, hiking, and snowmobiling are also needed. The Turkish Ministry of Forests is responsible for developing recreation sites and facilities within suitable forest areas to meet increasing demands. In Slovenia, it is possible to declare a forest area "forest with a special purpose" which can emphasize recreation in its management. If such a designation results in a loss of income for a landowner, the owner can claim compensation.

Enquiry Table 23 included a question about visitor use of forest and other wooded land. Since the responses focused on recreational use, the results are included in this section. The unit of measure for visitation varied, and visitation information was often available only for a sample of site. Most data were limited to visitation on public lands. The reliability of the data also varies greatly. In some cases, actual counts are made, or use can be estimated based on fees or permits. Estimates in other cases may be based on expert judgement or other less rigorous sampling methods. In many cases, visits cannot be separated by occurrence on forest and other wooded land versus other land cover types.

Australia provided visitor use estimates for a portion of National Parks, state forests, and other Crown land. About 40 per cent of the National Parks accounted for 36 million visits in 1995. Approximately 11 million of those visits were to forest and other wooded land on the National Parks. A small sample of Australian state forest units (4 per cent of all units) had a total of 8.2 million visits to forest and other wooded land, while another small sample (6 per cent of all units) of other Crown land recorded 30.5 million visits. Cyprus estimated that 1.8 million people visited state-owned forests in 1997. State forests in Iceland receive about 140,000 visitors per year. Lithuania had 17.8 million visitor days in 1990, but the number declined to 7 million in 1996. About 2 million visitor days were estimated on private forest land. In the Netherlands, it was estimated that between 180 and 230 million visits were made to the forest every year. Sweden estimated an average of 420,000 visitors per day to forest and other wooded land, based on a 1996 survey. Turkey estimated about 10 million people visit recreation sites annually. State-owned lands in the United Kingdom had about 55 million day visits, while other public lands had 185 million day visits. Total recreation visits to all federal lands in the United States were about 1.6 billion in 1996. Yugoslavia reported 500,000 visitors per year to state forests.

Data on recreation use of private lands were more limited than for public lands. Estonia reported one example of a 26,000 ha private forest that was visited by 15,000 visitors per day. The United Kingdom reported 75 million day visits to privately owned woodland, and another 35 million visits to areas owned by voluntary organisations.

The density of recreation use was reported by several countries. Belarus reported a density of 800 visitors/ thousand ha/year. Average visitation in the Czech Republic was estimated at between 24 and 37 people/ha. Kazakhstan estimated that about 2.1 persons/ha visited state-owned lands in 1997. Poland reported a range of 2-14 persons/ha/year on state forests. Slovakia reported visitation for several national parks that ranged from 287 to 365 visitors/ha/yr. Slovenia was able to estimate density by ownership: 1.2 visitors/ha/yr on state forest, 2 visitors/ha/yr on other public forests, and 0.8 visitors/ha/yr on nonindustrial private land.

Several countries emphasized the importance of forest and other wooded land in close proximity to population centres. Belgium noted the increasing importance of forest near urban centres, while the Czech Republic reported that recreation use is more important than commercial use near urban centers. In New Zealand, the need for readily accessible recreation facilities as a result of ongoing urbanization is receiving increased attention from urban authorities. Poland has 388,500 ha of forests around cities and towns. Most of that area is under intense visitation pressure. The United Kingdom mentioned the importance of having opportunities for recreation close to towns.

A few quantitative examples of visitation near urban areas reinforce the importance of forest and other wooded land near urban areas. In the Flanders region of Belgium, 350,000 people visit state forests each weekend. Denmark reported that 20 per cent of recreation visits occur on less than 2 per cent of the forest area. In Estonia, a public forest of 240,000 ha was identified as receiving high visitation, recorded at 293,000 visits per day. Iceland reported 250,000 visitors/year to 2 municipal forests, which exceeded estimated visits to all state forests. The Netherlands provided two examples of high intensity use: a reserve of 5,600 ha receiving 5 million visits/year and a state area of 2,000 ha receiving 2 million visits/year. Slovakia categorizes forest area by the intensity of recreation. About 2 million ha were identified as being in the two highest use categories, accounting for 790,000 visitors per year.

The data provided are not sufficient for estimating total recreation use in the TBFRA area. However, the data and other comments underscore the importance of forest environments for recreation. Recreation and tourism have also become increasingly important to both national and local economies. The growth in nature-based tourism can be beneficial to rural communities in forest areas, as well as to national economies in general. Forest and other natural environments are often an important attraction for tourists. For example, a survey of international visitors to New Zealand in 1995-6 indicated that 63 per cent of visitors visited a national forest or maritime park. International ecotourism was cited as one factor behind increasing demand for recreation in Finland and Ireland. Agritourism is increasingly important in Italy, which resulted in \$46 million for businesses in 1992. In Canada, the revenue to outfitter and guide services in 1993 was \$252.7 million, a substantial increase over previous years. The Netherlands reported an income for forest owners of \$1.3 million for camping and recreation.

Forest and other wooded land are also valued for social benefits that are not directly related to leisure activities. These values are most evident around urban areas, where the value of trees for climate regulation, noise protection, and aesthetics is important. Belgium specifically mentioned the importance of forests around urban centres for climate, biodiversity, and other social functions. In Iceland, urban residents are actively involved in afforestation for aesthetic and other purposes. Many people value forests regardless of any intent to visit those forests. These types of values are termed "passive use" or "non-use" values.

Aesthetic, cultural, historic, spiritual and scientific values

The values covered in this section are extremely diverse. Protected area designations are often used to conserve aesthetic, cultural, historic, spiritual, and scientific values. It is difficult to draw comparisons across countries, since the definitions for these designations vary greatly.

Most countries reported that the demand for these types of values is increasing, at least partly in response to increased public knowledge and appreciation of the role which forest and other wooded land plays in maintaining or enhancing such values. In a few cases, demand was reported as stable. A number of countries have special legislation or other types of programmes to protect these values. Finland has a national programme to protect important rural landscapes with special importance for cultural, historic, or aesthetic reasons. The Norwegian Forest and Forest Protection Act requires that biological diversity, recreational landscape, and cultural and historic values be considered in management action. Increasing efforts are being made to instruct forest owners in managing to protect these values.

A number of archaeological and cultural monuments are located in forest areas in Armenia. Cultural and spiritual sites for indigenous peoples are often located in forests. The dominance of forests in the Canadian landscape is reflected in their literature, painting, sculpture, and music composition. Long interaction with forests is also reflected in the culture, history, and spiritual values of the Portuguese. In the United Kingdom, woodlands that were designed in the 17th and 18th centuries have historic importance. Sweden has increased attention to saving remnants of old settlements associated with logging and other forest activities as part of the cultural heritage. In the United States, the

Heritage Program protects historic and cultural sites on National Forests. National Monuments and National Historic Areas are also designed to protect both natural and human sites of historic significance.

Forests are often important sites for scientific research. Scientific values associated with forest and other land includes biodiversity, endemism, and rare and endangered flora and fauna. A number of academic and industry institutions in Azerbaijan conduct ecological, biological, and historic research in the forest. A network of forest reserves was created 20 years ago in Slovenia for research into forest ecosystems. Educational values are also important. Slovenia has nature trails designed for educating school children about forest ecosystems. In the United States, Research Natural Areas and National Scenic Research Areas are used for research studies.

In the Czech Republic, almost 12,000 square km of forest are in some type of protected area designation, including National Parks, National Nature Reservations, National Nature Monuments, and Natural Monuments. The largest portion falls under the Protected Landscape Area designation. About 6 per cent of the forest area in Estonia is in some type of protected territory, including National Parks, Nature Reserves, Landscape Reserves, and Botanic Reserves. Approximately 5,000 ha of Ireland's forest and other wooded land are designated for aesthetic, cultural, and scientific purposes, mostly in parks or nature reserves. An additional 1,000 ha are in botanic gardens, arboretums, parks, and small areas of native woodland. Protected areas in Poland have increased dramatically since 1980, currently totalling about 9.6 million ha. The largest proportion of the total area are areas of protected landscapes (6.6 million ha), with the remained divided among National Parks, forest reservations, landscape parks, forest monuments, and forest promotion areas. Many of these areas protect ecological and other values. About 92 million ha are part of a national network of national parks, natural monuments, nature reservations and other protected areas in the Russian Federation. About 333,500 ha of protected area play a vital role in protecting biodiversity and natural and cultural value in Turkey. Turkey's National Parks emphasize scientific and aesthetic values; Nature Parks emphasize vegetation, wildlife, and recreation, while Nature reserves emphasize scientific and educational purpose. In the United States, the National Park System was created primarily to protect areas of outstanding scenic value. Special designations such as Scenic Byways and Wild and Scenic Rivers also protect areas with outstanding aesthetic values. The National Wilderness Preservation System protects biological diversity on relatively pristine areas, and serves as a useful living laboratory. National Monuments and National Historic Areas protect sites of both natural and human historic significance.

Summary and conclusions

The goods and services from forests provide a wide range of benefits. The TBFRA 2000 attempted to describe these goods and services more fully than previous assessments. The result is a sometimes bewildering array of products and services. The protective functions of forests are receiving increasing attention, at least partly in response to international attention to issues such as biodiversity, global climate change, and forest health. A number of countries are exploring approaches to alter or enhance forest inventory systems to better measure the protective functions of forests. Possibly future assessments will be better able to include comparable data on a wider array of protective functions.

Forests play an important role in many indigenous and tribal cultures. The information in this chapter was brief, and only begins to describe the importance of these lands to indigenous and tribal peoples. A more complete treatment would require consultation with the tribal peoples and other experts.

Data on the quantity of non-wood goods from forests are limited in most countries. At best, some countries collect data on the most important goods, or have data on commercial production or exports. The measures of quantity were fairly standard across countries, although it was often not clear whether all types of production were included (particularly for personal use). Personal use often accounts for the largest share of use. However, since that use is not seen as economically important in many countries, there is little incentive to collect data. Additional attention may be directed to this topic in cases where personal use has the potential to harm the resource, or where personal and commercial collection are in conflict.

Even where data were available for production, the estimates are seldom based on recurring, statistically designed inventories. As a result, no confidence intervals can be provided, and it is difficult to assess the reliability of the data. A similar issue existed for values associated with products, since products can be valued at many stages of production. Although some countries defined the basis of their value estimate, many did not. At a minimum, future assessments should provide clearer definitions for the products, and require better information about the source and coverage of the data.

Data on services, such as recreation, tend to be even more problematic. With the possible exception of hunting, statistically reliable data for leisure activities are fairly rare. Even where data exist, separating the component that occurs on forest and other wooded land is difficult. Consideration should be given to whether trying to separate forest and other wooded land use is a practical or desirable approach. A more logical approach may be to describe leisure activities in natural environments, and then assess the forest component where feasible.

Plans for future assessments will need to consider what goods and services are important to report at the international scale. Several criteria can be considered:

- 1) the importance of the forest in supplying the good or service;
- 2) the geographic scope of the good or service;
- 3) the economic importance of the good or service;
- 4) ability of countries to provide common measures of quantity and value; and
- 5) whether the good or service is part of national or international reporting requirements.

A number of the goods and services described in this chapter appear to have potential for future assessments. However, any significant progress beyond current information will likely require additional data collection, as well as coordination with organizations that may have data or expertise unavailable in the traditional agencies participating in forest assessments.

TABLE 6.1

Area and per cent of forest and other wooded land managed primarily for soil protection

Country	Year	FOWL area managed primarily for soil protection	Per cent of FOWL area managed primarily for soil protection
		(1000 ha)	(per cent)
Albania	1995	107.3	10
Armenia	1993	235	26
Austria	1996	839	21
Azerbaijan	1988	940.7	95
Belarus	1997	0	0
Belgium	1997	143.4	21
Bulgaria	1995	524.2	13
Croatia	1996	48	2
Czech Republic	1995	2	<1
Denmark	1990	58	11
Estonia	1994	97	4
Finland	1991	0	0
France	1997	192	1
Germany	1993	480	4
Greece	1992	6513	100
Hungary	1996	164	9
Iceland	1998	116	89
Ireland	1996	0	0
Israel	1997	3	2
Italy	1995	553	5
Japan	1996	2073	8
Kazakhstan	1993	16673	100
Latvia	1997	44	1
Lithuania	1996	45.7	2
Netherlands	1996	4	1
Norway	1996	1	<1
Poland	1996	255.67	3
Portugal	1995	95	3
Republic of Moldova	1997	52.5	15
Romania	1990	812.5	12
Russian Federation	1993	151352.7	17
Slovakia	1996	294	14
Slovenia	1996	68.3	6
Spain	1996	22134	85
Sweden	1996	33	<1
Switzerland	1996	493	40
Turkey	1996	3246	16
Ukraine	1996	2915	31
United Kingdom	1995	0	0
Yugoslavia	1995	433.29	12

TABLE 6.2
Exchange rates applied in Chapter VI

Country	Currency National	Currency per USD	Date
Armenia*	AMD	500	
Australia	AUD	1.28	1996
Austria	ATS	10.59	1996
Belgium	BEF	35.12	1986 to 1996 average
Canada	CAD	1.37	1995
Cyprus	CYP	0.47	1996
Denmark	DKK	5.8	1996
Estonia	EEK	12.03	1996
Finland	FIM	4.59	1996
France	FRF	5.57	1989 to 1995 average
Germany*	DEM	1.7	
Hungary	HUF	152.65	1996
Italy	ITL	1628.9	1995
Japan	JPY	108.78	1996
Kazakhstan	KZT	67.3	1996
Lithuania	LTL	4	1996
Netherlands	NLG	1.69	1996
New Zealand	NZD	1.45	1996
Norway	NOK	6.62	1994 to 1996 average
Poland	PLN	2.7	1996
Republic of Moldova	MDL	4.6	1995
Russian Federation*	RUR	4566	1995
Slovakia	SKK	30.84	1993 to 1995 average
Slovenia	SIT	135.36	1996
Switzerland	CHF	1.24	1996
Turkey*	TRL	81137	1996
United Kingdom	GBP	0.63	1995

* Rate provided by country.

All other rates from 1996 IMF International Financial Statistics Yearbook.

TABLE 6.3
Quantity and value of wood from forest and other wooded land

Country	Year	Total wood produced	Value of wood produced
		(1000 m ³)	(million USD)
Albania		740	4.4
Armenia	1996	85	0.8
Australia	1993 to 1994	18793	2681.0
Austria		20000	1180.0
Azerbaijan	1988	60	
Belarus	1995	9830	39.2
Belgium	1986 to 1995	4400	160.0
Canada	1995	188433	51800.0
Croatia	1996	3000	144.0
Cyprus	1996	41	1.0
Czech Republic	1993 to 1995	11568	363.1
Denmark	1996	1900	60.3
Finland	1996	46915	1769.1
France		40600	1974.9
Germany		39272	1990.0
Hungary	1996	5321	173.9
Iceland	1998	0.15	0.15
Ireland	1996	2350	80.0
Israel*	1997	115	2.0
Italy	1995	10101	550.3
Japan	1996	15255	3875.3
Kazakhstan	1996	1039	16.1
Lithuania	1996	5537	101.0
Netherlands		1080	53.7
New Zealand	1996	16930	642.1
Norway	1994 to 1996	9340	482.5
Poland	1996	22100	922.2
Portugal	1995	8978	241.6
Republic of Moldova	1991 to 1996	362	
Russian Federation	1993 to 1995	112400	3745.0
Slovakia		5459	187.0
Slovenia	1996	2400	129.3
Sweden		55400	2362.0
Switzerland	1996	5400	435.5
Turkey	1996	15311	759.3
United Kingdom	1995	7951	309.5
United States of America	1994	472900	91200.0
Yugoslavia	1995	3058	

* Quantity in metric tons.

TABLE 6.4
Quantity and value of Christmas trees and cork from forest and other wooded land

Country	Year	Christmas trees	Value of Christmas trees	Cork	Value of cork
		(number) (1000)	(1000 USD)	(tons)	(1000 USD)
Albania				18100	7200
Canada	1997	4535	48620		
Cyprus	1996	7	57		
Denmark	1996	7000	24138		
Estonia	1996	350	1455		
Finland	1996	250	2179		
France	1985 to 1995	5600	75404	4000	1300
Germany		20000	235294		
Iceland	1998	8	45		
Ireland	1996	120	700		
Italy	1995			10374	7200
Lithuania	1996	280	525		
Netherlands	1996	1800	21302		
New Zealand	1996	450	1517		
Norway	1994 to 1996	1000	21150		
Poland	1996	339			
Portugal	1995			135000	145300
Slovakia	1993 to 1995		19455		
Slovenia	1996	300	3693		
Sweden		2000	10000		
Switzerland	1996	400	4274		
United Kingdom	1995	3000	66667		

TABLE 6.5
Quantity and value of mushrooms, truffles and berries from forest and other wooded land

Country	Year	Mushrooms and truffles	Value of mushrooms and truffles	Fruits and berries	Value of fruits and berries
		(tons)	(million USD)	(tons)	(million USD)
Albania		100	0.4	60000	114
Armenia	1996			409	0.02
Belarus	1995 to 1996	10100	15.15	8100	8.1
Cyprus	1996	80	0.26		
Czech Republic		23900	39.13	22700	39.2
Estonia	1996	4130	6.9	8043	8.7
Finland	1996	6000	14.1	40000	67.1
France		8200	107.7	1000	2.7
Italy	1995	2413	44.7	496	2.8
Japan	1996	321676	2435.8		
Kazakhstan				295.3	0.2
Lithuania	1996	3026	9.9	4328	2.5
Norway	1994 to 1996	1200	5.4	25000	45.3
Poland	1996	940		5683	
Republic of Moldova				351.4	0.02
Russian Federation	1993 to 1995	133		808	
Slovakia	1993 to 1996			6301	9.6
Slovenia	1996	800	3.7	600	1.5
Sweden		8500	31.8	20700	30.1
Switzerland	1996	735	6.5		
United States of America			41.1		
Yugoslavia		1395		100	

TABLE 6.6

Quantity and value of medicinal plants and decorative foliage from forest and other wooded land

Country	Year	Medicinal plants	Value of medicinal plants	Decorative foliage	Value of decorative foliage
		(tons)	(1000 USD)	(tons)	(million USD)
Albania		7200	5000	198500	143
Azerbaijan	1996	1.25			
Belarus	1995 to 1996	297	30		
Denmark				25000	49.8
Estonia					
Finland	1996		4357	254	1.6
Kazakhstan		5.75	2		
Lithuania	1996	44	95		
New Zealand	1996			1200	8.3
Norway	1994 to 1996			375	1.2
Republic of Moldova		15.4	14.6		
Russian Federation	1993 to 1995	563			
Slovakia	1993 to 1996	178	230	8303	2.2
Switzerland	1996	25	2.5	11750*	
Turkey	1996	9482	24900		
Ukraine				300	
USA					128.5
Yugoslavia		10.2			

* Quantity in cubic metres.

TABLE 6.7

Quantity and value of game meat, harvest, and pelts from forest and other wooded land

Country	Year	Game meat	Game harvest	Value of game	Pelts	Value of pelts
		(tons)	(number) (1000)	(million USD)	(number) (1000)	(1000 USD)
Belarus	1995	2830		4.79		15
Belgium	1986 to 1996			15.8		18800
Canada	1995 to 1996				1344	
Cyprus			25	0.47		
Czech Republic	1990 to 1994	6790	695			
Estonia	1996	600		2	5.8	80
Finland	1996	7894		64		
Germany	1996 to 1997			176		
Hungary	1996	4021		11.5		
Lithuania	1996	781		1.2	8	200
Netherlands	1996		1148	19.2		
New Zealand	1996	1000		4	250	860
Norway	1994 to 1996	6600		66.5	50	630
Poland	1996	8153				
Portugal	1995		1812	20		
Russian Federation	1993 to 1995		6827		20684	
Slovakia	1993 to 1995	834		1.8		30
Slovenia	1996	840		3.7		
Sweden		17119		76.13	163	1340
Switzerland	1996	1597		11.2	30	240
United Kingdom		850		5.6		
United States of America	1995		30611		5740	40600
Yugoslavia			137			

TABLE 6.8
Quantity and value of honey and nuts from forest and other wooded land

Country	Year	Quantity of honey	Value of honey	Quantity of nuts	Value of nuts
		(tons)	(1000 USD)	(tons)	(1000 USD)
Armenia	1996	2	12		
Belarus	1995 to 1996	30	110	20	30
France	1989 to 1995	600	4500		
Hungary	1996	6000	13800		
Italy	1995			94944	95200
Japan	1996			20360	81600
Kazakhstan		20	60	7748	264
New Zealand	1996	2550	6100		
Norway	1994 to 1996	1500			
Portugal	1995	3500	2800	20700	22500
Republic of Moldova		11	20	47.5	20
Russian Federation	1993 to 1995	142	430	218	
Slovakia		2748	4900		
Slovenia	1996	1500	5900	1500	2200
Switzerland	1996	513	6310	12	50
Turkey	1996			131	1600
Yugoslavia		14000			

TABLE 79

Areas where forest and other wooded land is managed primarily for soil protection

Country	Reference period 1	Reference period 2	Forest and other wooded land		Forest managed primarily for soil protection		Other wooded land managed primarily for soil protection	
			Reference period 1	Reference period 2	Reference period 1	Reference period 2	Reference period 1	Reference period 2
			(1000 ha)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Albania ©	1950	1995	0	107	0	107	0	0
Austria ©	1986 - 90	1992 - 96	825	839	741	755	84	84
Belgium ©	1982	1997	7	143	2	138	5	5
Bosnia and Herzegovina								
Bulgaria	1985	1995	220	524	220	524	0	0
Croatia	1986	1996	37	48	35	39	2	9
Cyprus ©	1990	1997		21				
Czech Republic ©	1986	1995	2	2	2	2	0	0
Denmark ©	1980	1990	50	58	30	34	20	24
Estonia	1983	1994	89	97	89	97		
Finland ©	1991	1996	0	0	0	0	0	0
France ©	1990	1997	192	192	144	144	48	48
Germany ©	1993	1997	480		480		0	
Greece ©	1964	1992	6,472	6,513	2,512	3,359	3,960	3,154
Hungary	1990	1996	142	164	142	164	0	0
Iceland ©	1990	1998	115	116	15	16	100	100
Ireland	1987	1996	0	0	0	0	0	0
Israel	1990	1997	3	3	0	0	3	3
Italy ©	1985	1995	429	553	232	299	197	254
Latvia ©	1988	1997	44	44	39	40	5	4
Liechtenstein		1995		3				
Lithuania	1987	1996	39	46	37	44	2	2
Luxembourg								
Malta ©	1986-96	1997						
Netherlands ©	1990	1996	4	4	4	4	0	0
Norway ©		1994-96		1		1		0
Poland	1987-91	1992-96	196	256	196	256	0	0
Portugal ©	1985	1995	95	95	53	53	42	42
Romania	1980	1990	729	813	729	813	0	0
Slovakia ©	1988	1996	261	294	261	294	0	0
Slovenia ©	1986	1996	69	68	61	59	8	9
Spain ©		1994		22,134		10,055		12,079
Sweden ©	1985-89	1992-96	33	33	33	33		
Switzerland ©		1996				493		
The FYR of Macedonia								
Turkey	1963-72	1973-96	167	3,246	67	1,133	100	2,113
United Kingdom	1980	1995	0	0	0	0	0	0
Yugoslavia ©	1980	1995	295	433	178	281	117	152
Armenia	1983	1993	215	235	185	206	30	29
Azerbaijan ©	1983	1988	876	941	827	889	49	52
Belarus	1994	1997	0	0	0	0	0	0
Georgia								
Kazakhstan	1988	1993	15,097	16,673	9,309	10,504	5,788	6,169
Kyrgyzstan								
Republic of Moldova ©	1988	1997	31	53	0	22	31	31
Russian Federation ©	1988	1993	145,546	151,353	90,832	92,368	54,714	58,984
Tajikistan	1988	1995						
Turkmenistan								
Ukraine	1988	1996	2,200	2,915	2,191	2,904	9	11
Uzbekistan	1988	1995						
Canada ©								
United States of America ©								
Australia ©								
Japan ©	1987	1996	1,848	2,073	1,848	2,073		
New Zealand ©								

TABLE 80

Changes over time in areas where forest and other wooded land is managed primarily for soil protection

Country	Reference period 1	Reference period 2	Forest and other wooded land		Forest		Other wooded land	
			Change between periods	Annual average change	Change between periods	Annual average change	Change between periods	Annual average change
(1000 ha)								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Albania ©	1950	1995	107.30	2.38	107.30	2.38	0.00	0.00
Austria ©	1986-90	1992-96	14.00	2.33	14.00	2.33	0.00	0.00
Belgium ©	1982	1997	9.10	0.61	9.10	0.61	0.00	0.00
Bosnia and Herzegovina								
Bulgaria	1985	1995	304.20	30.42	304.20	30.42	0.00	0.00
Croatia	1986	1996	1.10	0.11	0.40	0.04	0.70	0.07
Cyprus ©								
Czech Republic ©	1986	1995	0.00	0.00	0.00	0.00	0.00	0.00
Denmark ©	1980	1990	8.00	0.80	4.00	0.40	4.00	0.40
Estonia	1983	1994	8.00	0.73	8.00	0.73		
Finland ©	1991	1996	0.00	0.00	0.00	0.00	0.00	0.00
France ©	1990	1997	0.00	0.00	0.00	0.00	0.00	0.00
Germany ©								
Greece ©	1964	1992	1.46	0.05	47.10	1.68	-44.78	-1.60
Hungary	1990	1996	22.00	3.67	22.00	3.67	0.00	0.00
Iceland ©	1990	1998	1.00	0.13	1.00	0.13	0.00	0.00
Ireland	1987	1996	0.00	0.00	0.00	0.00	0.00	0.00
Israel	1990	1997	0.00	0.00	0.00	0.00	0.00	0.00
Italy ©	1985	1995	124.00	12.40	67.00	6.70	57.00	5.70
Latvia ©	1988	1997	0.00	0.00	1.00	0.11	-1.00	-0.11
Liechtenstein								
Lithuania	1987	1996	6.90	0.77	6.50	0.72	0.40	0.04
Luxembourg								
Malta ©								
Netherlands ©	1990	1996	0.00	0.00	0.00	0.00	0.00	0.00
Norway ©		1994-96						
Poland	1987-91	1992-96	59.56	11.91	59.56	11.91	0.00	0.00
Portugal ©	1985	1995	0.00	0.00	0.00	0.00	0.00	0.00
Romania	1980	1990	7.60	0.76	7.60	0.76	0.00	0.00
Slovakia ©	1988	1996	33.00	4.13	33.00	4.13	0.00	0.00
Slovenia ©	1986	1996	-0.30		-1.30		1.00	0.10
Spain ©								
Sweden ©	1985-89	1992-96	0.00	0.00	0.00	0.00	0.00	0.00
Switzerland ©								
The FYR of Macedonia								
Turkey	1963-72	1973-96	3,079.00	128.29	1,066.00	44.42	2,013.00	83.88
United Kingdom	1980	1995	0.00	0.00	0.00	0.00	0.00	0.00
Yugoslavia ©	1980	1995	138.65	9.24	103.60	6.91	35.05	2.34
Armenia	1983	1993	20.00	2.00	21.00	2.10	-1.00	-0.10
Azerbaijan ©	1983	1988	64.80	12.96	62.20	12.44	2.60	0.52
Belarus	1994	1997	0.00	0.00	0.00	0.00	0.00	0.00
Georgia								
Kazakhstan	1988	1993	1,576.00	315.20	1,195.00	239.00	381.00	76.20
Kyrgyzstan								
Republic of Moldova ©	1988	1997	22.10	2.46	21.90	2.43	0.00	0.00
Russian Federation ©	1988	1993	5,806.30	1161.26	1,535.90	307.18	4,270.40	854.08
Tajikistan								
Turkmenistan								
Ukraine	1988	1996	715.00	89.38	713.00	89.13	2.00	0.25
Uzbekistan								
Canada ©								
United States of America ©								
Australia ©								
Japan ©	1987	1996	225.00	25.00	225.00	25.00		
New Zealand ©								

TABLE 81

Area of forest and other wooded land where access to public is legally allowed and not allowed

Country	Reference period	Forest and other wooded land in public ownership			Forest and other wooded land in private ownership		
		Area with public access excluded	Area with public access	Area with public access as per cent of total	Area with public access excluded	Area with public access	Area with public access as % of total
		(1000 ha)	(1000 ha)	(Per cent)	(1000 ha)	(1000 ha)	(per cent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Albania	1997	56.26	974	94.5	0.00	0	
Austria	1992-96	30.00	682	95.8	162.00	3,050	95.0
Belgium	1997	10.70	278	96.3	97.25	286	74.6
Bosnia and Herzegovina	1995	0.00	2,125	100.0	0.00	584	100.0
Bulgaria	1995	73.19	3,830	98.1	0.00	0	
Croatia ©	1996	0.00	1,651	100.0	0.00	454	100.0
Cyprus	1997	0.00	162	100.0	0.00	118	100.0
Czech Republic	1995	121.50	2,091	94.5	0.00	418	100.0
Denmark ©	1990-97	5.00	148	96.7	2.00	384	99.5
Estonia	1994	7.00	1,971	99.6			
Finland	1997	306.00	6,466	95.5	47.00	15,949	99.7
France	1997	45.00	4,183	98.9	12,761.00	0	0.0
Germany		0.00	5,762	100.0	0.00	4,978	100.0
Greece	1992	108.00	5,223	98.0	23.00	1,159	98.1
Hungary	1996	3.70	1,165	99.7			
Iceland	1998	0.00	39	100.0	5.00	86	94.5
Ireland	1996	0.00	391	100.0	0.20	200	99.9
Israel	1997	0.00	168	100.0	1.00	1	50.0
Italy	1995	6.00	3,681	99.8	0.00	7,155	100.0
Latvia	1997	4.00	1,674	99.8			
Liechtenstein	1995	0.00	7	100.0	0.00	1	100.0
Lithuania	1996	29.20	1,654	98.3	8.00	359	97.8
Luxembourg	1994-97	0.00	41	100.0	0.00	47	100.0
Malta	1996	0.35	0	0.0	0.00	0	
Netherlands ©	1990	20.50	153	88.2	34.86	131	79.0
Norway	1994-96	0.00	2,936	100.0	0.00	9,064	100.0
Poland	1996	666.29	6,783	91.1	1,493.00	0	0.0
Portugal	1995	3.00	264	98.9	0.00	3,200	100.0
Romania		0.00	6,320	100.0	0.00	360	100.0
Slovakia ©	1996	54.00	1,079	95.2	34.00	864	96.2
Slovenia	1996	5.00	342	98.6	0.00	819	100.0
Spain							
Sweden ©	1992-96	77.00	6,070	98.7	0.00	24,112	100.0
Switzerland	1993-95	0.00	850	100.0	0.00	384	100.0
The FYR of Macedonia	1995	0.00			0.00		
Turkey ©							
United Kingdom	1995	20.00	1,052	98.1			
Yugoslavia	1995						
Armenia	1996	0.00	392	100.0	0.00	0	
Azerbaijan	1988	0.00	990	100.0	0.00	0	
Belarus	1997	147.80	8,788	98.3	0.00	0	
Georgia	1995						
Kazakhstan	1997	0.00	16,673	100.0	0.00	0	
Kyrgyzstan	1995	0.00	797	100.0	0.00	0	
Republic of Moldova	1988-97	44.10	311	87.6	0.00	0	
Russian Federation	1997	0.00	886,538	100.0	0.00	0	
Tajikistan	1995	0.00	730	100.0	0.00	0	
Turkmenistan	1995	0.00	3,754	100.0	0.00	0	
Ukraine	1996	500.00	8,994	94.7	0.00	0	
Uzbekistan	1995	0.00	2,170	100.0	0.00	0	
Canada	1997	0.16	388,927	100.0	27.21	27,179	99.9
United States of America ©	1992						
Australia	1997	2,941.00	407,401	99.3	28,683.00	85,926	75.0
Japan	1997	0.37	10,573	100.0	0.00	14,573	100.0
New Zealand ©	1996	0.00					

© See notes and comments in Chapter VI.

NOTES AND COMMENTS RELATING TO CHAPTER VI

Main Tables

Comments

Albania

79, 80

Enquiry Table 21: The area of forest and other wooded land protected primarily for soil protection is increasing because of the risk of erosion.

81

Area of FOWL to which public is legally not allowed access

Expert's estimation—the figures were taken from “The plan on conservation and management of the National Park of Dajti (Albania)”, (The last report PHARE, February 1997) and has been reduced by 30 per cent to take account of other areas.

Reasons for not allowing public access

Reason for not allowing public access is because forests are scientific reserve/strict nature reserve, national parks.

Regimes of access to forest for non-wood goods

There are some special articles in law No.7623 date 13.10.1992 on “Forests & service police” on their management for example: article no. 11, 18, 19, 20, 21, 22, 23, 33, 34, 35, 36, 37; also in Law No. 7875, date 23.11.1994 on “Protection of wildlife and hunting” on their management, for example, article No. 1,34.

There are some special regulations on management, for example:

Regulation No. 577 dated 8.2.1993 on “Protected forest nature resources with national and international values”.

Regulation No. 2 dated 3.3.1993 on “Fees and payments for forest uses with recreation, health, climate and tourism aims”.

Regulation No. 3 dated 3.3.1993 on “For entrance and payments in national park territories and forest fund areas, declared with social functions”.

Goods (wood and non-wood) and services

Enquiry Table 24: The demand for wood would increase after improving of the laws according to rules of the market economy, but would always be under the annual allowable cutting values.

Enquiry Table 25: The estimated figures are received by the inventory of medicinal plants, carried out along the year 1988, by the Station of Forest and Oil-bearing Culture.

The wood value belongs to wood standing in the forests, (based on the stampage price) while the value for the other non-wood products belongs to all harvested and prepared products to deliver at the port, when they would be exported or at the store-places, and when they would be used inside the country, but, always manufactured. The official data (OD) only, for wood was received by the Annual Report on Situation of Forest in Albania, prepared by the Institute of Forest and Pasture Researches while, the estimated figures (EST) are received by the inventory of medicinal Plants, carried out along the year 1988, by the Station of Forest and Oil-bearing Cultures (At present, the Institute of Forest and Pasture Researches).

The figures in the table on non-wood products represent their production potential. If we would manufacture them and would sell at the present prices of the international market, incomes would be approximately three times higher.

Indigenous and Tribal Peoples

Enquiry Table 22: In Albania, there is no any indigenous or tribal peoples within the definition used in this enquiry.

Armenia

81

Reasons for not allowing public access

Not applicable.

Regimes of access to forest for non-wood goods

According to the legislation of Armenia (Environmental Law, Forest Code, Law on Especially Protected Areas) the collection of the plant species included in the Red Data Book is prohibited. Hunting licences are issued by the Ministry of Nature Protection.

Goods (wood and non-wood) and services

Enquiry Table 25: Prices are set by the Forest Service (minimum prices plus VAT). Exchange rate 1 US\$ = 500 Dram (December 1997).

Indigenous and Tribal Peoples

Enquiry Table 22: 99 per cent of the population of Armenia consists of native Armenians. All forest areas are free for use by the population, which is authorized by the Forest Code (1994), regardless of whether this is forest or other wooded land. The utilization of the forest resources and lands is regulated by a number of special permits and licenses, issued by Armenian State Forest Service in consultation with local governments.

Australia

79, 80

Enquiry Table 21: See the table and notes below:

	<i>Change (1000 ha)</i>
Area where forests are managed primarily for soil protection * reported on 1997 reference period only)	3562*
– Forests (State forests—some States only)	3562**
** Data are not currently available nationally. Every State and Territory has Forest Codes of Practice, specifically relating to soil protection; however, digital (GIS) data are only currently available for 6.7 million ha of Australia's commercial forests. It will be very difficult to report on this indicator in the future due to overlaps with other protection functions, e.g., fauna corridors on riparian strips).	
– Other wooded land	No data

Data source: Australia's First Approximation Report for the Montreal Process, 1997.

81

Area of FOWL to which public is legally not allowed access

With regard to the data given above, the following are the comments:

Area of "Publicly owned forest and other wooded land" to which public is legally not allowed access: Access to scientific sites, defence areas, or catchment areas identified by water boards legally requires the general public to obtain the prior permission of the managing agency. National Forest Inventory, 1997.

Area of "Forest and other wooded land owned by indigenous peoples" to which public is legally not allowed access: This figure is for Aboriginal freehold land only as the terms and conditions of leasehold land are not available.

Area of "Privately owned forest and other wooded land" to which public is legally not allowed access: This figure is for freehold land only as the terms and conditions of leasehold land are not available.

Data Source: Australia's First Approximation Report for the Montreal Process, 1997.

Other comments

In principle, all public forested lands except some scientific reserves, cultural areas or where operations preclude it, are available and actively managed for general recreation and tourism. Data on leasehold or private land actively managed for recreation are not currently available. The data that are available are shown in the following table.

Area and percentage of forests managed for general recreation and tourism, in relation to the total area of forests:

<i>Tenure category</i>	<i>Total area of forest in Australia excluding plantations (ha)</i>	<i>Area of forested land reported by States as managed for recreation</i>	<i>Percentage of forested land managed for recreation (per cent)</i>
State forests	13,350,989	13,282,000	99.48
Nature conservation reserves	17,580,191	10,825,947	61.58
Other Crown land	15,596,781	11,966,731	76.73
Private land	42,017,712	10,384	0.02
Total	155,834,648	33,387,576	21.43

Data Source: State of the Forest Report (1998).

Reasons for not allowing public access

Restricted access by the general public to publically owned land ensures public safety and ensures the integrity of management objectives for these specialized land uses. Restricted access by the public to privately owned land is at the discretion of the land owner as control of access is a right and responsibility of the owner.

Regimes of access to forest for non-wood goods

No data.

Goods (wood and non-wood) and services

Enquiry Table 24: Consumer demand for forest products and services drives industries based on a wide range of products. The most dominant of these is timber, although water production and tourism are seen increasingly as valuable contributors to the national economy and the well being of the community.

Overall, the State and Territory legislation and the policies and procedures adopted by managing agencies are designed to ensure maintenance of the productive capacity of public forest available for timber production. A large body of scientific research and operational experience has resulted in the development of codes of practice that have maintenance of the forests' productive capacity as their focus. Forest planning is very well developed and the tight control over public land use by State and Territory agencies means that plans are implemented. The wide public interest in forest management helps to secure this result. Management of private lands is not subject to the same level of planning and control.

Data Source: Australia's First Approximation Report for the Montreal Process, 1997.

State of the Forest Report (1998).

Enquiry Table 25: Wood products: Data Source: Australia's First Approximation Report for Montreal, 1997. Data are not available at a national level for non-wood products.

Indigenous and Tribal Peoples

Enquiry Table 22: Australia has a number of processes for recognising cultural, social and spiritual needs and values. For most of these it is not yet possible to measure the area of land identified with them. We can measure the area of land that is formally recognized as being under Aboriginal tenure as one component of this indicator. All of society gains from the spiritual and cultural values of forests and woodlands, either directly or indirectly.

The area of forest and woodlands under Aboriginal tenure is 12.6 per cent of the total forest and woodlands. In Australia, Indigenous peoples' cultural heritage and customary law is deeply embedded in the natural environment. Nature and culture are so intricately interwoven they cannot be separated. Indigenous peoples have an inherent responsibility to their Law, culture and land and have a right to ensure the continuation of their religious beliefs. Consequently, Indigenous peoples have been identified as key stakeholders in land-management and planning processes in forest and woodland areas.

The comprehensive regional assessments, and the regional forest agreement process in general, involve consultation with the Indigenous community, to identify and protect Indigenous heritage values in forests and woodlands.

Sources for the table: Data Sources for Population of indigenous or tribal peoples: Australian Bureau of Statistics Web Site (1998).

The figure of 19,647,797 ha for the area of forest and other wooded land used by indigenous or tribal peoples for the collection and harvesting of wood, and non-wood goods and services: this equates to 12.6 per cent of total forest area in Australia. Other land tenure including, pastoral lease is used by Indigenous people, however data are not available on the amount of pastoral lease under forest or proportion used by Indigenous people.

(3) Date source for "Area of forest and other wooded land used by indigenous or tribal peoples" is National Forest Inventory, 1997.

(4) Australia's First Approximation Report for the Montreal Process, 1997.

Austria

79, 80

Enquiry Table 21: Previous reference period is adapted to the TBFRA-2000 definition of "forest" and "other wooded land".

"Other wooded land" is part of the protection forest (see also comments on *Enquiry Tables 1 and 7*).

81

Reasons for not allowing public access

Regulations by the Austrian Forest Act 1975 and provincial acts to protect sensitive areas, e.g. nature conservation, afforestation, etc.

Regimes of access to forest for non-wood goods

According to provincial laws mushroom gathering is limited to a maximum amount of 2 kg/person/day. According to provincial laws, regulations on special "recreation areas" for game could affect public access to forests.

Goods (wood and non-wood) and services

Enquiry Table 24: Source: Woergoetter A.: Evaluation überbetrieblicher Leistungen der oesterreichischen Land- und Forstwirtschaft; Institut fuer Hoehere Studien; Wien 1992.

Enquiry Table 25: Source: Providing reliable figures is more or less impossible, therefore Austria chooses a likely range as follows:

Wood: 10—15 billion ATS.
 Game meats, mushrooms, berries, honey: 0.1—0.15 billion ATS.
 Fodder and forage: 0.01—0.015 billion ATS.
 Hunting trophies, Christmas trees, decorative foliage: 10—15 billion ATS.
 Water function: 11200—29400 billion ATS.
 Protection: 10—4500 billion ATS.
 Social function: 1740 billion ATS.

Azerbaijan

79, 80

Enquiry Table 21: Most of Azerbaijan's forests (95 per cent of the total area) are on mountain sides, and serve principally to retain soil and water. Forest in the foothills and valleys (5 per cent) serves soil-protection, climate-regulation and other environmental purposes.

81

Long term change in the area to which the public has legally had access

There is a trend for the area of forest to change towards more forests for recreational and incidental uses.

Reasons for not allowing public access

No such trend.

Regimes of access to forest for non-wood goods

Visitors generally come to the forests in summer and winter, and respect the normal visiting rules.

Goods (wood and non-wood) and services

Enquiry Table 25: The data for wood belong to the reference period 1988.

There exists supportive information on this table for the years 1995 and 1997 (forecast) in the reply to the enquiry, which is available at the secretariat.

Total profit for the year 1996 for all the items excepting wood mentioned in this table: 390611.0 million manats.

Indigenous and Tribal Peoples

Enquiry Table 22: In the entire 7.5 million strong population of Azerbaijan, there are no tribal or indigenous peoples. All the forest and other wooded land (989,500 ha) is used by the population for recreational purposes.

All forests and wooded land are State property. The population of the country can use them for recreation and to pick fruits, of which there is a substantial volume. Specific qualitative and value indicators are given in *Enquiry Table 25*.

Belarus

81

Reasons for not allowing public access

Nature reserves and radiation contamination.

Belgium

79, 80

Enquiry Table 21: In the Flanders Region, there is no particular soil protection. Figures in the table are those of the Walloon region for soils with a slope gradient over 15°, peat and hydromorphic soils for which protection measures are specified in the management circular of 14.2.1995 that applies obligatorily only to public forests.

81

Area of FOWL to which public is legally not allowed access

The figure of 10,700 ha for Publicly-owned forest and other wooded land includes 9,000 ha of military domain from Flanders region and 1,700 ha from Brussels region of Belgium.

The figure of 97,247 ha for privately owned forest and other wooded land belongs to the Flanders region of Belgium.

Reasons for not allowing public access

Belgium (Brussels): Soil protection in some valleys with a view to protecting against erosion and trampling.

Belgium (Flanders): To privately-owned forests and other wooded land, the general public is legally not allowed access, due to protection of the privacy of the private owners. Private owners can decide themselves to open their forests for the public.

Belgium (Walloon): In private forests, public access is forbidden on the basis of private property rights. It is up to the owner to decide on the right of access. The Code of Forestry forbids access away from the roads since 1995. The decree on forest traffic (16.2.1995) allows differentiated access according to the type of user: the access is limited to roads for motor vehicles, to tracks for other vehicles and to paths for pedestrians.

In practice, a dense network allows those types of access to the majority of forest areas.

Regimes of access to forest for non-wood goods

Belgium (Brussels): Leisure activities, biking, horse-riding, walking, orienteering.

Belgium (Flanders): For access to forests for gathering mushrooms, mosses and ferns,..., special authorization of the Forest Inspection is required. Authorization is given on a case by case basis for non-commercial use only.

Belgium (Walloon): Hunting rights belong to the forest owner; in public forests, it is most of the time rented by public adjudication. Harvesting of fruits, mushrooms, etc. is tolerated if for non-commercial use.

Goods (wood and non-wood) and services

Enquiry Table 24: The Brussels--Capital region owns a suburban forest called "Soignes" forest. There exists production of woody material which attracts certain industries. Some sensitive zones are protected against excessive trampling and erosion. The recreational function of the "Soignes" Forest and other wooded land is very important for the local urban population and in the neighbourhood. The forest is attractive for different leisure activities, such as: jogging, walking, horseback-riding, bicycling. It also attracts youth associations and naturalists.

Enquiry Table 25: Other incomes (royalties for the rights of way of gaz or water pipelines,...) amount to about BF 40 million per year in public forests.

Indigenous and Tribal Peoples

Enquiry Table 22: This table does not apply to Belgium.

Bulgaria

81

Reasons for not allowing public access

Nature reserve.

Canada

79, 80

Enquiry Table 21: Information on the "area where forests and other wooded land are managed primarily for soil protection" is not available for Canada. In fact, this type of information lacks relevance in the context of forest management in Canada because soil and water protection are over-riding considerations in the development of forest policy and in forest management practices. Soil and water protection are two of many elements that are considered in developing management regimes that maintain ecosystem function. There is a broad range of other elements that are simultaneously considered, including (but not limited to) site regeneration, water quality, habitat, aesthetic impacts, landscape diversity, endangered species, cultural/spiritual impacts, and others. Therefore, it is difficult to isolate areas in terms of being managed primarily for soil protection.

Measures to protect water and soil values have been in place for a time; however, these measures are constantly being reviewed, updated, revised, and improved (e.g., BC Forest Practices Code).

Management factors that can affect water and soil quality include harvesting close to streams and rivers, road construction techniques, harvesting on steep slopes, skidding methods, mechanized harvesting on soils sensitive to soil compaction, winter harvesting vs. summer harvesting operations, and post harvest site treatments (such as scarification, treatment of debris, etc.). Potential soil disturbance (or degradation) factors include compaction, erosion, loss of organic matter, and loss of productivity. Some areas are more susceptible to damage from these factors than others. For example, sensitive sites include riparian zones, steep slopes, wet and poor soils, shallow soils over bedrock, and soils susceptible to compaction.

In general, the creation of riparian buffer zones is now standard practice throughout most of the country. These zones range from 30—50 metres on either side of streams. Most provinces also have stringent guidelines for road construction to minimize reductions in soil and water quality and aquatic habitats. Mechanized harvesting has accounted for an increasing proportion of the total Canadian harvest over the last 20 years. The use of heavy equipment in the forest environment has the potential to cause problems relative to soil compaction. However, two factors mitigate or reduce potential problems related to reductions in soil quality. First, a significant proportion of annual harvest occurs in winter months when the ground is frozen. Second, through various new decision support tools such as forest ecosystem classification frameworks, management agencies are improving their understanding of a) which types of sites are sensitive to soil disturbance, b) where these sites are situated, and c) the kinds of modifications in management practices and equipment required to minimize the impacts of harvest operations.

81

Area of FOWL to which public is legally not allowed access

The following table shows the distribution of forest land in Canada according to ownership and general legal accessibility by the Canadian public.

Public access to forest land by ownership class:

<i>Ownership</i>	<i>Area of forested lands where the public has the right for general legal access for non-consumptive uses</i>	
	<i>(1,000 hectares)</i>	<i>(1,000 hectares)</i>
Provincial forest land	295,010	
Territorial forest land	73,765	
Private industrial forest land		4,060
Private non-industrial forest land		21,173
Municipal		155
Unspecified private land		1,973
Aboriginal forest land		1,133
Other federal land	19,995	
Total	388,770	28,494
	93 per cent	7 per cent

Source: Canada's Forest Inventory 1991, 1994 version.

Other federal land: This includes National Parks, Department of National Defense lands, and lands held by other departments. Generally, access fees apply to National Parks. Access by the public to Department of National Defense lands is restricted.

The total area of forest land in Canada is 417,585,000 hectares. The sum of column one and two is 417,264,000 hectares. The difference is the result of the fact that there are 317,000 hectares of forest land with unspecified ownership status in the national inventory. It is not possible to determine the extent to which the public has legal access to these lands.

Long term change in the area to which the public has legally had access

About 94 per cent of the forest land base is currently held by provincial and federal governments. Canada retains the second highest percent of its total forest land base under public ownership of all OECD countries. This feature of Canada's forest is the result of a combination of historical opportunity and societal choice. The need for conservation and preservation policies of Canadian forests and a more scientific approach to resource management began to be recognized in Canada at the turn of the century. With the exception of southern Ontario and Quebec and the Maritime provinces, much of the Canadian forest landscape was unpopulated and undeveloped and by default remained under government control. The forest has largely been retained in public ownership since that time.

However, the fact that the majority of forest lands have been retained in public ownership does not mean that the public has unrestricted legal access to these forests. Generally, all provinces have a statutory requirement to manage public forest lands for multiple use purposes. Implementation of multiple use is achieved by integrated land use planning, and development and approval of long, medium, and short term management plans that reflect management objectives in a particular area. Public consultation processes are employed to guide resource managers in establishing management priorities and broad policy objectives.

In general, the public is not permitted to settle, make a claim of ownership, construct permanent structures or facilities on public lands, or convert public forest lands to alternative uses (such as crops or grazing land).

The list of goods and services obtained from the forest resource by the Canadian public is broad and diverse. It includes commercial timber resources, firewood and fuel wood, various types of botanical products (including mushrooms, berries, nuts, wild rice, fiddleheads, and other botanical products), hunting, fishing, trapping, subsistence uses, and various types of outdoor recreation activities. The degree of legal access to public forests by the general public varies widely. In some cases (such as for timber harvesting), public access is closely regulated and controlled by public agencies through the use of tenure systems. These tenure systems allocate property rights to public timber to individuals using various legal mechanisms. In return for the rights to public timber, the holder of these property rights accepts certain obligations and responsibilities.

In the case of non-timber goods and services, the degree of legal public access varies widely depending on the particular resources in question and the particular province in which they occur. Also, the instruments used to control and regulate access vary widely. In some cases public access is controlled by the payment of access fees (for example, access to National and Provincial parks may require the payment of a fee). Public access for the right to hunt, trap and/or fish on public lands is regulated through licences systems, quotas, and penalties for illegal use. Public access for non-consumptive uses (such as hiking, camping, skiing, snowmobiling) is unregulated in some areas and regulated in other areas.

Therefore, in conclusion, it is difficult to generalize and develop a single number which estimates the area of forest land to which the public does or does not have access, or the extent to which there has been any significant historical change in accessibility over time.

Reasons for not allowing public access

The main reasons for restricting and controlling access to public forest lands include:

- The need to ensure that resources are utilized and managed sustainably and that resources will be available for future generations.
- The need to ensure that the forest resource is managed for multiple use and that one use does not dominate or extinguish other uses.
- The need to ensure public safety (e.g., access or use may be restricted during severe forest fire activity or during periods when the risk of fire is high).

The main reason for laws that restrict access of the public to private forest lands (i.e., trespass laws) is to preserve and protect the property rights of the land owner.

Regimes of access to forest for non-wood goods

There is no such thing as a general access regime in Canada. Land use and land use priorities vary from area to area and from owner to owner depending on land use, management planning, and operational planning priorities. These planning processes involve varying degrees of public participation.

Future events that may affect how forests are used and the degree of public access for particular uses will be: a) the future creation of parks and protected areas, b) negotiation, resolution and settlement of land claims, c) new forest practices codes, public participation processes, and planning priorities, and d) road development into remote areas.

Goods (wood and non-wood) and services

Enquiry Table 25: Please see detailed information in *Enquiry Table 24*. *Enquiry Tables 24 and 25* have been combined into a single response that provides (a) descriptions of wood and non-wood goods and services obtained from Canada's forest land base, (b) an assessment of the socio-economic importance of these goods and services, (c) qualitative and quantitative (where possible) assessments of current use, and (d) broad estimates of the outlook for these various goods and services.

Indigenous and Tribal Peoples

Enquiry Table 22: Population of aboriginal peoples:

The following table shows the total 1996 population of Canada's Aboriginal peoples by cultural group:

<i>Aboriginal group</i>	<i>Population</i>
North American Indian	554,290
Métis	210,190
Inuit	41,080
Total	799,010

Source: 1996 Census of Population.

Croatia

81

Regimes of access to forest for non-wood goods

Special regime of access (register of visitors) applies for strict reserves and national parks only.

Other comments

Enquiry Table 23: All the publicly and privately owned forests and forest land are open to public.

No quantitative data for this table are available at the moment.

Cyprus

79, 80

Enquiry Table 21: It is estimated that 5—10 per cent of the total forest and other wooded land is managed primarily for soil protection (Estimate made by the secretariat: 7.5 per cent of forest and other wooded land).

81

Regimes of access to forest for non-wood goods

Forest products can be collected from state forests only after a licence issued by the Director Department of Forests.

Hunting in any state forest is controlled by the Game Law of 1974. Services are offered in Picnic and Camping sites in state owned forests.

Goods (wood and non-wood) and services

Enquiry Table 25: Exchange rate: 1 Cyprus pou (CY£) = 1,8640 US\$. Date: 15.01.98

Czech Republic

79, 80

Enquiry Table 21: The forest sub-category 2d—soil protection forests could overlap with the sub-category of pollution damaged forests. In 1994, a special research was done to assess the correct size. The category changes in area very slowly, in tens of ha annually.

81

Reasons for not allowing public access

Military forests 83 thousands of ha, game preserves 38,496 ha.

Regimes of access to forest for non-wood goods

Recreation areas are located in mountainous regions and the use of them is characterized by “short-time visits” (2-7 days). The visitor intensity in the 1990s has remained about the same as previously. 8 per cent of the area is designated as of “high” recreation value and 14 per cent of “medium” value.

Goods (wood and non-wood) and services

Enquiry Table 24: For more details please see “Country report of the Czech Republic on Non-Wood Goods and Service of Forests”, prepared for ad hoc “Team of Specialists on Non-Wood Goods and Services of Forests” (1995).

Enquiry Table 25: Prices: Wood—domestic prices at roadside; estimates for other products—domestic prices estimated.

Denmark

79, 80

Enquiry Table 21: The values are very rough estimates. The forest protection area is calculated as follows:

Protection against dunes and sand-drift primary in Western Jutland:

	<i>(ha)</i>
Half of the afforested area of the state-owned 'dune-forest-districts':	15,000
Protection against ground-water-pollution—estimate of the counties regional-plans concerning this item:	15,000
Total:	30,000
Other wooded land: the entire amount of shelterbelts and windbreaks:	20,000

81

Long term change in the area to which the public has legally had access

Under the recent law on nature protection almost all private forest land has been opened to the public. This has caused an immense increase in the average person's possibility to visit forests.

Reasons for not allowing public access

Either wildlife reserves or military use.

In private areas there is only access for the public from 7.00 a.m. until sunset, only on paths and roads, not closer than 150 m to dwellings and not on days when the forest is closed for hunting. Bicycles are only allowed on consolidated paths and roads.

Other comments

Enquiry Table 23: Sources: Frank Søndergaard Jensen and Niels Elers Koch: *Friluftsliv i skovene 1976/77—1993/94*.

Forskningsserien nr. 20, 1997. Den Kgl. Veterinær- og Landbohøjskole and Forskningscenteret for Skov og landskab. 215 pages.

Goods (wood and non-wood) and services

Enquiry Table 25: 1 US\$ = 6.9 DKR.

Indigenous and Tribal Peoples

Enquiry Table 22: A majority of the Danish population are indigenous and a major part of the Danish forest area is owned by Danes. It is not known at what amount, probably more than 95 per cent of the forest area.

Estonia

81

Reasons for not allowing public access

Public access is not allowed in the Nature Reserves and strictly protected areas as nature preserves. In the privately owned forests public access is restricted from sunset to sunrise.

Regimes of access to forest for non-wood goods

Use of non-wood goods is regulated by Forest Act (1993), hunting by Hunting Management Act (1994).

Finland

79, 80

Enquiry Table 21: Soil protection not necessary due to climatic and geographic conditions.

81

Reasons for not allowing public access

In Finland, access is limited only on Nature Reserves and on a 0.5—3 km wide border zone near the Russian border and in some small areas reserved for other use. With a specific permit, anyone can enter the border zone, also.

Regimes of access to forest for non-wood goods

Gathering of mushrooms and berries and hiking is possible in all forests in Finland, except some limited areas listed against the area of forest and other wooded land to which the general public is legally not allowed access.

Hunting requires a permit from the land owner.

Goods (wood and non-wood) and services

Enquiry Table 25: For berries and mushrooms, the value is the sum of collecting incomes for market supply and domestic use.

The value of domestic use is calculated with the market price for collectors. The amount of wood is the commercial roundwood production.

The price of wood is the gross stumpage earnings of all forest ownership categories.

For recreation, it is impossible to estimate the value.

Indigenous and Tribal Peoples

Enquiry Table 22: No indigenous or tribal people exist.

France

79, 80

Enquiry Table 21: Source: National Forests Office, “Mountain forests and natural hazards” survey, 1990.

Pursuant to the Mountain Land (Restoration and Conservation) Act, 1882, the State acquired 382,000 hectares of land, 260,000 hectares of which are now forest. According to the survey cited above, 192,000 hectares of State-owned land perform a clear soil-protection function. These figures go to show that the area of forest and other wooded land managed primarily for soil protection has diminished over a long period. The National Correspondent considers that this area did not change significantly between 1990 and 1997.

The National Forests Office also intervenes to stabilize 400 km of coastal dunes subject to the constant action of the tides and winds.

81

Long term change in the area to which the public has legally had access

In France, entering someone else's property is an infringement of property rights. Strictly speaking, private forests are therefore off-limits to the general public. None the less, many forest owners do allow the public access to their woodland. If they do not, the main reasons are that:

- (a) The forest is dedicated to hunting;.
- (b) The property is in a much-frequented area, either near a large conurbation or in a popular tourist district;
- (c) The owner wishes to reserve his right to harvest fruit or fungi.

The area of private forest subject to strong tourist pressure is put at 1,368,000 hectares (source: SCEES/ESSES 1976—1983, Statistical survey of economic structures in forestry). France also has a very dense network of public roads and rural paths open to the public. It is thus possible to go to the woods without going on to private property.

Over the past decade, public communities and users' associations have put a good deal of effort into making public access to woodland easier by marking and maintaining paths and creating and maintaining facilities.

Reasons for not allowing public access

For private forests and other wooded land, the main reasons are given above. Public forests and other wooded land comprise, in the main, military training grounds and strictly controlled biological reservations. The area off-limits to the public has remained stable over the past ten years.

Regimes of access to forest for non-wood goods

According to the “Living conditions and aspirations in France” survey (CREDOC, 1996—DERF-IFEN), the main activities engaged in on forest land are as follows:

Hunting or fishing	4.20 per cent
Long hikes	10.40 per cent
Walking	61.30 per cent
Sport (riding, jogging, training circuits...)	4.20 per cent
Mushroom- or berry-picking	9.20 per cent
Picnics, relaxation	2.60 per cent
Biking, mountain biking	3.10 per cent
Plant- and animal-watching	1.80 per cent
Motorbike scrambling	0.20 per cent
Car drives	0.50 per cent
Wood-cutting and gathering	2.40 per cent
Don't know	0.10 per cent

Goods (wood and non-wood) and services

Enquiry Table 24: Source: The document "Les indicateurs de gestion durable des forêts françaises", 1995, Ministry of Agriculture and Fisheries, Countryside and Forests Directorate.

Enquiry Table 25: Data for Holly roots: The actual data for the quantity are 150 to 200 tonnes and the value is 2 to 3 million FRF.

Data for Pine honey: The actual data for the value are 20 to 30 million FRF.

Data for Wood: Volume harvested, see table 16; value from the yearly survey of wood value at the roadside in 1995, Ministry of Agriculture and Fisheries, Countryside and Forests Directorate. The value of commercial extractions only is shown here, estimated at the market price for offloaded timber.

Data for all products (excepting wood and christmas trees): From "Les indicateurs de gestion durable des forêts françaises", 1995, Ministry of Agriculture and Fisheries, Countryside and Forests Directorate. Product value estimated at market prices.

Data for Christmas Trees: Purchases of Christmas trees by individuals in France in 1997, source SOFRES ONIFLHOR. Tree value estimated from retail prices. Many of these trees come from French forests; a small proportion re imported. There is no statistical survey of Christmas tree production in France.

Indigenous and Tribal Peoples

Enquiry Table 22: There are no indigenous or tribal peoples in Metropolitan France.

Georgia

Goods (wood and non-wood) and services

Enquiry Table 24: Special attention is being given in Georgian forestry to harvestable resources. Georgians have traditionally harvested such forest products as wild hazelnuts, different fruits and mushrooms. Besides timber and other tree products, rhododendron, fresh water fish and wild game are also on the list of intensively harvested resources. Hot water, peat and other potential energy-related resources in addition to timber, are presently being studied as an important and suitable use of natural resources:

(source: <http://www.grida.no/prog/cee/enrin/...georg/...biodiv/impacts/...htm>)

Germany

79, 80

Enquiry Table 21: Latest reference period: Special assessment, being reviewed (reference period 1997). Data will be supplied later.

81

Reasons for not allowing public access

Only in a few areas, access of the roads is prohibited for reasons of nature conservation. Data in particular broken down to public and private forest ownership are not available.

Gathering for own requirements is allowed. Hunting is strictly regulated, shooting-ground regime.

Goods (wood and non-wood) and services

Enquiry Table 25: 1 US\$ = 1.70 DM.

Greece

79, 80

Enquiry Table 21: We consider the data for the 1997 survey to be more accurate and may not be totally comparable with those of 1964, which were assessed using a different methodology.

81

Reasons for not allowing public access

Forests are generally accessible to the public, except for virgin areas, protected wildlife habitats and some suspect areas, where ruins have been left from past war.

Goods (wood and non-wood) and services

Enquiry Table 25: Source: a) Prof. Papanastasis V., Sector of Range-Wildlife and Freshwater Fisheries, Department of Forestry and Natural Environment, Aristotle University of Thessaloniki; Greece. For Prices: b) GSF&NE; c) National Statistical Service of Greece; d) Directorate of Agricultural Policy and Documentation, Ministry of Agriculture; e) Directorate of Forest and Forest Environment Management, SGF&NE, Ministry of Agriculture; f) Pastures and grazing forests, Interim Announcement, Strategy study for the development of the Greek Forestry and Wood Industry, 1986, Ministry of Agriculture.

Data for "Prices" refer to prices received by the producer.

Hungary

81

Reasons for not allowing public access

The general public is not allowed access to the new forest reserve areas. The new Forest Law authorises the forest owner to restrict the access to his forest in case of danger to human safety, or during forestry activities and hunting. If the duration of the restriction exceeds 3 months the owner must ask for approval of the forest authority.

Regimes of access to forest for non-wood goods

Hunting can be practised in accordance with the Law on Hunting. Resin can be collected after an approval from the forest authority. Decoration materials can be collected by the forest owner or on his authorisation. Mushrooms, fruits and herbs for personal use can be collected free in public forests. In private forests and for commercial purposes in public forests collecting is legal only on written permission from the forest owner. Visit to forests for recreation is free, with the exception of forest reserves and periods of temporary restrictions.

Area of forest released from public domain for restitutional purposes, where the restitution process has yet to be finished is displayed as private. In fact, there are no real owners of these forests, but they are included in the forest management plans. Emergency measures to protect forest health and vitality should be initiated and financed by the forest authorities.

Goods (wood and non-wood) and services

Enquiry Table 25: Hunting produces and additional income of approximately 3 billion HUF as fee for associated services.

Iceland

79, 80

Enquiry Table 21: All forest and other wooded land in Iceland that is not specifically managed for other purposes serves a soil erosion protection purpose.

81

Reasons for not allowing public access

Increased partitioning of privately owned FOWL and sale to individuals as lots for summer cottages over the last 30 years. The public has legal access to privately owned FOWL, even if it is fenced, but not to small lots with summer houses.

Regimes of access to forest for non-wood goods

Only hunting is specifically regulated and only in some forests, the hunter often paying a daily fee to the forest owner.

Goods (wood and non-wood) and services

Enquiry Table 25: Quantitative information on other goods not available.

Indigenous and Tribal Peoples

Enquiry Table 22: There are no indigenous or tribal peoples in Iceland.

Ireland

81

Reasons for not allowing public access

The general public here has no legal right to enter property which is in private ownership.

Regimes of access to forest for non-wood goods

The total area of forest land which the public have access to is about 390,000 ha. Recreational activities include walking, picnicking, orienteering, mountain-biking and pony trekking.

Goods (wood and non-wood) and services

Enquiry Table 25: The values shown above reflect the market value and are based on Coillte Teoranta's annual report for 1996.

Indigenous and Tribal Peoples

Enquiry Table 22: No indigenous or tribal peoples.

Israel

81

Reasons for not allowing public access

Closed areas in Natural reserves.

Regimes of access to forest for non-wood goods

Mainly for recreation.

Italy

79, 80

Enquiry Table 21: Source: National Forest Inventory 1985 and successive estimates.

81

Reasons for not allowing public access

Protection of particular delicate ecosystems.

Regimes of access to forest for non-wood goods

Specific regional rules for hunting, mushrooms and truffles collection, public areas use, and so on.

Goods (wood and non-wood) and services

Enquiry Table 24: Non-wood products represent an important part of the forest production in the Mediterranean area. In Italy they contribute to improve the economy of the mountain and hill regions and permit both activities which are available in all the forest area such as hunting, fishing, mushroom harvest, recreation, agritourism and activities restricted to some areas with particular ecological features such as cork, chestnuts and truffles harvest.

The assessment of non-wood products value states that their contribution to the forest economy is not marginal. Nevertheless a notable variability for some products (mushrooms, truffles, hazelnuts etc...) is related to seasonal factors.

A greater firmness is noticed as far as other products are concerned such as pine seeds, chestnuts and cork. The enhancement of the value of non wood products depends on the improvement of silvicultural techniques which should take into consideration also the additional productions.

Japan

79, 80

Enquiry Table 21: Forests for soil protection in *Enquiry Table 21* include two types of forests which are managed to protect against soil erosion and landslides. Though some forests have both functions, the figure in the table simply sums up these two types of forests. Thus, the figure of soil protection area is over-estimated. Area for soil erosion protection is 2,026,000 ha. Area for landslide protection is 47,000 ha.

81

Reasons for not allowing public access

To protect nature.

Goods (wood and non-wood) and services

Enquiry Table 25: All items show market prices.

Latvia

79, 80

Enquiry Table 21: Total area of anti-erosion forests has not been changed in recent years. Part of other wooded land is converted to forest.

81

Reasons for not allowing public access

Public access is not allowed in strictly protected zones of state nature reserves and National parks. The purpose is to keep these forests undisturbed by man.

Regimes of access to forest for non-wood goods

There is no special regime of access to forests, which differs from general access regime.

Goods (wood and non-wood) and services

Enquiry Table 25: The quantities mentioned are potential supplies.

Liechtenstein

81

Reasons for not allowing public access

Public access in every area is guaranteed.

Regimes of access to forest for non-wood goods

Mushroom gathering: According to the provisions of the Nature Conservation Act.

Hunting: According to the provisions of the Game Management Act.

A strong trend is that forests are becoming more and more the physical basis for a number of outdoors sports such as mountain-biking but at the same time are being recognized as the only more or less quiet area where real recreation and solitude can be found. The recreational function of the forest is becoming important.

Lithuania

81

Reasons for not allowing public access

The process of restitution and privatization started in 1992.

In 1996, privately owned forest comprised 18 per cent, in the future it will increase up to 40-50 per cent.

Public access is not allowed in state nature reserves and strictly protected zones of National parks. In privately owned forest public access is restricted for 100 metres around owner's house. According to Forest Act (1994) and Environment Protection Act (1993).

Regimes of access to forest for non-wood goods

Non-wood goods use are regulated by Public Visitors in Forest Act (1996), Mushroom Gathering Act (1996), Small Non-wood Products Use Act (1996), Game Act (1994).

Goods (wood and non-wood) and services

Enquiry Table 25: Wood price-average roundwood: price at roadside. Other goods: market price.

1 LTL = 0.25 USD.

Malta

79, 80

Enquiry Table 21: Our afforestation schemes are managed also for watershed management and for amenity purposes.

81

Regimes of access to forest for non-wood goods

All woodland is public and accessible to all, but during the bird hunting and trapping season the general public is advised to visit the woodlands on Sundays and public holidays from noon onwards when hunting and trapping is prohibited.

Goods (wood and non-wood) and services

Enquiry Table 24: The primary aims of afforestation are:-

- a) Watershed management and prevention of soil erosion;
- b) Amenity purposes including bird hunting and trapping;
- c) Enhancing the rural landscape of a heavily populated country, bearing in mind the tourism industry.

Enquiry Table 25: No revenue is generated from the woodlands in Malta.

Indigenous and Tribal Peoples

Enquiry Table 22: This table is not applicable to Malta.

Netherlands

79, 80

Enquiry Table 21: Coastal plantations in the dunes and some hill-sides in the country "Limburg".

A very few areas have a protection function. In the 19th century, large areas were planted to protect soil against wind erosion (Veluwe, dunes in the coastal areas). Since the danger of wind erosion no longer exists just a small area can be considered as protection forest. It is a crude estimate of about 3,000 ha since the term protection forest is not used in the management plans.

In the southern part of the Netherlands (Zuid Limburg) some steep hillsides are under forest for protection against water erosion, although cutting trees in these areas is allowed. Here also it is a crude estimate of about 1,000 ha since the term protection forest is not used in the management plans.

81

Reasons for not allowing public access

The reason for not allowing public access is in general for nature conservation purposes, wildlife reservations and nesting/foraging areas as well as fear for damage to extremely vulnerable nature areas.

Regimes of access to forest for non-wood goods

Most forest areas are accessible on roads and paths. People are guided by marked routes throughout the forest. Special routes are marked for horses. Intensive recreational use concentrated around parking places, restaurants with picnic places and other facilities. In general going beyond the paths and roads is forbidden, although picking mushrooms/berries is not stopped. Picking protected species of flowers/mushrooms is forbidden.

Other comments

Enquiry Table 23:

Sources: B. Derksen, 1995. Bos en natuur: 'Open of gesloten?'. Inventarisatie openstelling en toegankelijkheid bos- en natuurterreinen in Nederland. Grontmij.

M. H. A. Ham, E. Hoogendam, C. L. M. Spinnewijn and R. H. M. Peltzer. 1997.

Bos zonder slagbomen. Een kwalitatief onderzoek naar de openstelling en toegankelijkheid van bos. IBN-DLO Rapport 308, Wageningen.

E. Hoogendam. Stichting Rekreatie, Postbus 80547, 2508 GM 's Gravenhage. Pers. Med.

Goods (wood and non-wood) and services

Enquiry Table 25: Source: Staatsbosbeheer Annual Report, 1994.

When excluding the income of rent of not forest land and buildings, the income if divided, is 48 per cent from wood and 52 per cent of other goods and services.

Source for Game meat: KNJV. A rough estimate by counting just the forest occurring species which are shot in 1996 gives the following figures. The prices are consumer prices at the game-shop and include also the turnover from game dealers.

As can be seen in the comments on *Enquiry Table 24* "Goods (wood and non-wood) and selected services provided by forest and other wooded land", an overview of the revenues from forests divided into the different goods and services cannot be given.

The annual reports of some forest owners however gives an idea about the magnitude of the income from non-wood goods and services:

Private forest owners: The yearly enquiry on forest economics for forest owners which is carried out by LEI-DLO gives the following figures published in the Annual Report of Bosschap, 1995:

	<i>Income</i>	<i>(Hfl/ha/year)</i>
Wood	161	44 per cent
Other	50	13 per cent
Subsidy	158	43 per cent

Vereniging voor natuurmonumenten: This nature conservation union with about 26,000 ha show in their Annual Report 1996 the following figures:

	<i>Income</i>	<i>(million Hfl)</i>	<i>(million US \$)</i>
Wood	1.26		0.63
Rent	2.06	1.03 most of it not forest land	
Hunting and fishing	0.24		0.12
Other	2.40		1.20
Total	5.96		2.98

While disregarding the income from rent, about 32 per cent of the income is from wood and about 68 per cent from others, the so-called non-wood goods and services.

General comments:

Data on “socio-economic functions” (*Enquiry Tables 21 to 25*) are spread over a great number of institutions. Some of the data are assessed regularly (e.g. wood-production, hunting) while others are investigated in ad-hoc projects. Most data on this subject are not focused just on forest land or do not cover the whole country, which means that additional assumptions had to be made while filling in the enquiry.

As can be seen in *the Enquiry Tables 24 and 25*, estimates on several subjects (e.g. hunting) vary dramatically. Differences in definitions on the population, costs and prices can cause considerable differences in estimates. There is also from national point of view a lack of an infrastructure on data collection and presentation of the available information and a need for feasible definitions of desired information.

New Zealand

79, 80

Enquiry Table 21: The area of forest and other wooded land managed primarily for soil protection is not separately available for New Zealand.

81

Reasons for not allowing public access

In general the public are allowed access to all forest land unless the owner specifically prohibits it for health and safety reasons. However, in the case of privately owned forest it is customary to ask permission from the forest owner. This is generally to ensure that the persons wishing to visit the forest are informed of those parts of the forest which they should not access because of hazardous forestry operations being undertaken. For forests on defence land open right of access is generally not available because of military hazards. For forests in drinking water supply catchments access is usually controlled for public health reasons.

Regimes of access to forest for non-wood goods

There is limited information readily available on visitor use of forests. The New Zealand Tourism Board carries out a regular survey of activities undertaken by international visitors whilst visiting New Zealand and from these some limited details can be extracted. Information from the 1995/96 International Visitors' Survey shows that the total number of international visitors who visited a national forest or maritime park in the year ended March 1996 was 712,000 or 63 percent of all international visitors. Most visitors went to more than one park and 15 per cent spent at least one night in a national or forest park such as Mount Cook, Fiordland and Tongariro. Most of the parks visited by international visitors are in the category of State-owned (i.e. national parks and forest parks) and it can be assumed that these visits were to see unique features of the New Zealand landscape and its forest cover. New Zealanders make extensive use of the forests for recreational purposes (i.e. tramping or trekking, mountain bike riding, bush walks, feral deer and pig hunting, etc.) but there are no national data compiled on these activities.

For hunting purposes in State-owned forest it is usual practice to obtain a permit. In the case of access to privately-owned forest for hunting purposes it is usual to seek permission from the forest owner.

Mushroom and berryfruit gathering are not activities undertaken in New Zealand forests as these products do not grow in the dense, dark and damp indigenous forest cover. Likewise the plantation forests do not provide suitable growing conditions for these other products.

Unlike the situation in other countries—especially those in Central Europe—there is not a legal backing for open access to both public and privately owned forests. Custom has tended to mean that persons seeking access gain permission from the forest owner, but whether the owner can legally prohibit access in general would depend on the particular circumstances.

Other comments

Enquiry Table 23: Data on public and private ownership on other wooded land are not available in *Enquiry Table 5* on “Ownership”.

Goods (wood and non-wood) and services

Enquiry Table 25: The information in this table has been estimated by the Ministry of Forestry using various sources such as industry associations, export statistics and knowledgeable persons. The values are indicative only but help to place an order of magnitude on the importance of these forest products.

Punga logs are used for a variety of ornamental garden purposes such as for building fences or retaining walls, etc. where a rustic image is sought.

Indigenous and Tribal Peoples

Enquiry Table 22: The data for the population of indigenous or tribal peoples is from the 1996 Census of Population and is the number of persons who identified themselves with the Maori ethnic group.

Area of Forest and OWL used by indigenous or tribal peoples for the collection and harvesting of wood and non-wood goods and provision of services: There are no specific estimates given for the sole use of forest land by persons of the Maori ethnic group. Persons of Maori ethnic identification are, in the main, fully incorporated with the general population in their use of forest and OWL. Prior to the arrival of the first Europeans the indigenous Maori people were dependent on the forests and forest resources for

their well-being and survival, however a much greater agricultural emphasis has developed with the arrival of the Europeans to New Zealand.

The whole question of indigenous peoples' rights is currently the focus of considerable attention in New Zealand.

Norway

79, 80

Enquiry Table 21: Area managed primarily for soil protection comprises forests in outer coastal districts of Southwest-Norway, expected to be at risk of sand drift and erosion by wind.

A total area of 4,280,000 ha of forest and other wooded land is officially declared as protection forest. The protective functions are multiple, including the protection of soil, reducing the risk of avalanches and mud slides, in addition to protection of the forest itself due to harsh climate and difficult regeneration conditions. Different functions are not separated from each other and assigned to any specific area. Erosion and soil degradation are not considered as significant problems in Norway. Therefore only small areas are managed primarily for soil protection.

Goods (wood and non-wood) and services

Enquiry Table 25: Wood: The quoted value is producer's price at roadside. Wood cut for own consumption or ceded on usufruct is included, the average price assumed to be the same as on roundwood for sale. Prices obtained from Statistics Norway.

Christmas trees: The value is an estimated retail price, while the producer's price is expected to be approximately one third of this. Trees cut for own consumption are included in the quantity. Price obtained from Ministry of Agriculture.

Decorative foliage: Estimated wholesale price (Ministry of Agriculture).

Decorative lichens: Listed in this table is an estimated wholesale price. Estimated compensation to landowner is NOK 345,000. Information was provided by a wholesale firm.

Berries: The estimated value is an average producer's price, provided by a wholesale firm. The quantity is given as a rough estimate, based on information published by Ministry of Environment.

Mushrooms: Estimated quantity and value provided by a wholesale firm (producer's price).

Game meats: Estimated quantity is based on information from Statistics Norway, value as a rough estimate (producer's price).

Hides and skins: Information on quantity and value provided by the Norwegian Association of Hunters and Anglers and wholesale firms (producer's price is quoted).

Poland

81

Area of FOWL to which public is legally not allowed access

Publicly owned FOWL: Public access to the forest could also be not allowed temporarily during periods of fire threat or of application of chemical agents.

Privately owned FOWL: Total area of private forests where public access could be forbidden legally.

Long term change in the area to which the public has legally had access

According to the new Polish Forest Act private forest owners are allowed to forbid access for the public. Up to now this regulation is not commonly applied, but an increase of private forest area which is closed to the society is probable.

Reasons for not allowing public access

According to the Forest Act of 28th September, in the following forest categories public access is permanently forbidden:

- forest plantations (regeneration areas) up to 4 metres height: about 300,000 ha
- experimental plots: 23,973 ha
- stands selected for seed supply: 240,421 ha
- refuge of protected animals: 55,689 ha
- areas of riverheads: ..
- areas endangered by erosion: ..
- private forests, where public access can be forbidden: 1,493,000 ha

Beside this, public access is not allowed to the total of protected forests: 46,202 ha

Regimes of access to forest for non-wood goods

Non wood forest products harvesting for commercial purpose is limited (an agreement with local forest district should be made).

Goods (wood and non-wood) and services

Enquiry Table 25: Non-wood goods data mean yield purchased for commercial purposes only.

PLN = 0.28 USD, 29th January 1998—official rate.

Portugal

79, 80

Enquiry Table 21: Cork oak and green oak areas (more than 1 million ha) are not included in these values; that is very important in the combat against desertification, as referred in *Enquiry Table 24* "Goods (wood and non-wood) and selected services provided by forest and other wooded land".

81

Reasons for not allowing public access

The reason for not allowing public access is the protection of protected species.

Goods (wood and non-wood) and services

Enquiry Table 25: Considering US\$ 1 = 185\$767 (Escudos).

Wood, resin, cork, honey and chestnut: income to forest owners.

Republic of Moldova

79, 80

Enquiry Table 21: Change due to transfer of forest (21,900 ha) into this (protection) category.

81

Reasons for not allowing public access

Forest Reserves regime. Conservation arrangements.

Regimes of access to forest for non-wood goods

Hunting is regulated (licensed).

Goods (wood and non-wood) and services

Enquiry Table 25: Total of all products: Without the account of the tax by the population: 15511.6 thousands lei.

Russian Federation

79, 80

Enquiry Table 21: According to article 55 of the Russian Forest Code (1997), "Forest resources shall be divided into forest groups, and group I forests into different categories of protection, in accordance with their economic, environmental and social importance... and the purpose they serve." Article 56 divides forests into different basic categories of protection, but all categories of protected forest perform a role in soil conservation. We show below the distribution (in percentages) of group I forests among the basic categories of protection according to material relating to the two most recent base periods:

<i>Percentage of forest chiefly serving for:</i>	<i>1988</i>	<i>1993</i>
Water retention	43.7	43.6
Protection	14.5	9.7
Pollution abatement	10.8	10.8
Special purposes	31	35.9

81

Regimes of access to forest for non-wood goods

Under article 19 of the Forest Code, "Forest resources and forests on defence land are Federal property. Article 21 states that "Citizens are entitled to free access to [the country's] forest resources and woodlands not forming part of those resources except where otherwise provided by law." Hence all forests are open to the public.

Goods (wood and non-wood) and services

Enquiry Table 25: Rows relating to timber, pulp and paper (9 items):

1. The figures for physical output volumes of trade timber and principal wood products in 1995 come from official State Committee on Statistics data (Promyshlennost' Rossii, handbook, (Moscow, 1996)).

2. The figures for output value in 1995 were obtained by multiplying the physical output by average wholesale prices for the year (in thousands of roubles per unit of volume: logwood, 89 per m³; sawnwood, 284 per m³; plywood, 1260 per m³; compressed wood, 446 per m³; fibreboard, 2.5 per m²; cellulose, 3253 per tonne; paper, 2847 per tonne; cardboard, 2353 per tonne—NIPIEIlles-prom data). The average exchange rate of the US dollar over the course of 1995 was 4566 roubles.

Rows relating to fruits and berries, nuts, mushrooms, medicinal materials, honey: present data on quantities harvested by Russian Federal Forestry Service enterprises over the course of 1995 (disregarding harvesting by other agencies and produce gathered by the local population for its own use).

Rows relating to Ungulates, fur-bearing animals, wildfowl and waterfowl and fur: present figures on procurement of fur and game meat in 1993 by all hunting and trapping agencies.

Indigenous and Tribal Peoples

Enquiry Table 22: There exists supportive information on the “Distribution of indigenous and tribal peoples whose lifestyle is associated with the utilization of forest resources (figures from 1989 census)” in tabular form in the reply to the enquiry, which is available at the secretariat.

The following are the additional comments on the area of forest and other wooded land used by indigenous or tribal peoples for the collection and harvesting of wood and non-wood goods and the provision of services:

In 1995, under the Northern Minorities (Nomadic Community) Act, the indigenous population of Republic of Sakha (Yakutia) was given, initially, 13,205,800 ha of forest for its long-term (49 years) use, and subsequently another 2,136,000 ha in total.

In accordance with the Law on “Nomadic minority people communities of the North of the Russian Federation”, more than 13,206 thousand hectares of Forest Fund lands were turned over to indigenous people of the Republic of Sakha (Yakutia), and then additionally 2,136 thousand hectares (total area of forest lands). Article 124 of the “Forest Code of the Russian Federation” regulates the order of utilization of the Forest Fund lands on the territories of traditional living (residing) of indigenous minority peoples and ethnic communities. According to this article, the forest utilization should maintain the traditional tenor (structure) of life of these people and ethnic groups. At the same time, the lands are not supposed to be taken away from the Forest Fund.

Slovakia

79, 80

Enquiry Table 21: The areas of forest protection are the categories based on data of Lesoprojekt, from the Total Forest Management Plan (SLHP) 1988, (tab. C1, page 6) and from the Permanent Forest Inventory (PIL) 1996, (tab. C0, page 3). The area of protection forests was presented in the stand area. This was calculated for forest land by using a coefficient calculated from the proportion of forest and stand area of forests in Slovakia.

81

Reasons for not allowing public access

The reasons are the 5th and the 4th degree of protection according to the Act 287/1994 on the protection of nature and landscape which implies the ban on economic activities, ban or restriction of sporting activities and recreation with the exclusion of the least necessary movement on marked routes.

Regimes of access to forest for non-wood goods

Without the permission of forest owners and of the organs of state administration of nature and landscape protection, access for motor cars is forbidden, excluding the access to recreational facilities, hunting grounds, etc.

Access to forest stands by motor cars is forbidden excluding cases of the management of forests and implementation of hunting rights. Excluding the 5th and the 4th degree of protection, hiking, biking and skiing in forests is not restricted.

Other comments

Enquiry Table 23: The source of information for this table is the Forest Act (14/1994), the Act on Nature and Landscape Protection No. 287/1994 Coll. and the Final Reports of the research.

The legal limitation, or prevention of access to, the forest was amended in Act No. 287/1994 Coll. on Nature and Landscape Protection, as well as the Forest Act No. 14/1994 Coll. partly.

According to the above mentioned Act, these are the forests where small-scale protected areas with the 5th and 4th degrees of nature protection have been established (protected areas, nature and national reserves, natural monuments) with the area of basic and protection zones of 87,450 ha.

Movement and collection of fruits are partly limited in the national parks (NP) with the area of forest stands of 283,600 ha.

The area of national parks, national and natural reserves, nature monuments increases each year which consequently causes a decrease of forest area where the public have legal free access with a possibility to use utility forest products. It is possible to enter freely the forest on foot, by bicycle, on skis all year long, except the areas of small-scale protected regions (natural monuments) (5th and 4th degrees of nature protection), newly-afforested plots, etc.

The Act on forests banishes access to forest stands by motor cars, except cars ensuring the forest production and game management performance. It is not possible to use forest roads without a permission as well.

We created a classification of forests according to number of visitors, they are as follows: principal, above-average, average, below-average, negligible. The regions of the High Tatras, Low Tatras and Slovak Paradise are considered the principal ones. The forests with above-average number of visitors include Malá Fatra, Velká Fatra, Slovenské Rudohorie, Kysucké Beskydy, Oravské Beskydy and Kremnické vrchy. These two degrees of classification are the basis for data quantification for an estimate of forest areas with a great number of visitors in forest per year. Intensive visits of forests (790,000 visitors per year) do not relate to 2,016,100 ha of forest, i.e. approximately 41 visitors per 100 ha.

On the basis of forest area according to various ownership rights (841,000 ha in state ownership, 283,000 ha in the ownership of other public bodies and 892,000 ha in private ownership), a partial estimate of the number of visitors has been made. It shows that state-owned forests are visited by 297,000 visitors annually, forests owned by other public bodies are visited by 287,000 visitors annually and privately-owned forests are visited by 365,000 visitors (about 300 persons/ha/year).

From the forestry point of view, it is possible to increase the number of visitors in the region of Slovak Paradise, where information on possibilities of utilization of recreational forest function is not sufficient, especially for foreign visitors. It is necessary to develop small and medium enterprises mainly in border regions which are less visited than other parts of Slovakia. In the region of Martinské hole, Stráne and Jasenská valley, it is recommended to signpost the information routes and to build tracks for tourists.

Goods (wood and non-wood) and services

Enquiry Table 24: Production of other wood products:

Production of other wood products represents, according to the Statistical Office of SR, 132 million SKK. Of those the sale of products of basket-making represents 9.4 million SKK. Interest in wood products is increasing.

Enquiry Table 25: The prices were obtained from buyers of single products. They are purchase prices.

The value of 5.2 million SKK from game management is 10 per cent from the value for shooting of charges.

Production of other wood products represents according to the Statistical Office of Slovakia, 132 million SKK, out of which the sale of products of basket-making represents 9.4 million SKK. An interest in wood products increases.

Data source for sale of live game: Hunting Statistics of SR 1996.

For all other data sources: Please see table 24 "Goods (wood and non-wood) and selected services provided by forest and other wooded land.

Note: V = export; PS = industrially processed in SR; D = domestic consumption.

Exchange rate:

31 December 1996: 1 US\$ = 31.71 SKK.

1 January 1998: 1 US\$ = 35.27 SKK.

Slovenia

79, 80

Enquiry Table 21: Land covered with *Pinus mugo* is classified as other wooded land.

81

Reasons for not allowing public access

There are three reasons:

- 1) Military reasons: the area where access is not allowed has been reduced from 18,800 to 2,300 ha.
- 2) Water pumping areas: 700 ha EST—no change.
- 3) Game fence: 2000 ha—no change.

Regimes of access to forest for non-wood goods

Mushroom gathering is limited to 2 kg per person daily. In protected areas, mushroom gathering is not allowed.

Hunting is strictly regulated (based on plans) and carried out by hunting clubs.

Where private forests are grown predominantly for non-wood goods, local authorities may restrict gathering in those forests.

Goods (wood and non-wood) and service

Enquiry Table 25: These are data of the Ministry of Agriculture, Forest and Food Production.

Spain

79, 80

Enquiry Table 21: The data given are estimates

Sweden

79, 80

Enquiry Table 21: Source: National Board of Forestry.

The total area of officially declared protection forest is only 33,000 ha, thus amounting to 1 per cent. Only soil protection is considered here.

81

Area of FOWL to which public is legally not allowed access

The figure here is 77,000 ha of which 42,000 ha are not allowed access to during parts of the year for wildlife sanctuary or military reasons. The rest of the area 35,000 ha is not legal to access any time of the year.

Reasons for not allowing public access

- Military reasons.
- Wildlife sanctuary reasons (mainly during parts of the year)

Other comments

Enquiry Table 23: Source: National Board of Forestry.

Goods (wood and non-woods) and services

Enquiry Table 25: Field hare (*Lepus europeus*), Mountain hare (*Lepus timidus*).

Berries and mushrooms picked for local consumption.

Mushrooms: Include berries for sale.

Indigenous and Tribal Peoples

Enquiry Table 22: Source: National Board of Forestry.

(Item: 22.1) Population of indigenous or tribal peoples: According to Erik Persson at the County Board of Forestry in Västerbotten (Erik is the National Board of Forestry's Saami expert) the population is about 17,000 Saami's. According to representatives for the Saami people there are 15,000 to 20,000 Saami's.

(Item: 22.2) Area of forest and other wooded land used by indigenous peoples: about 115,00,000 ha.

Switzerland

79, 80

Enquiry Table 21: 42 per cent of forest area of Switzerland.

81

Regimes of access to forest for non-wood goods

No reliable information exists related to visitor patterns for the forests in Switzerland. No comments can be given to this question.

Goods (wood and non-wood) and services

Enquiry Table 24: Data provided in this table originate from the publication: Criteria and indicators for sustainable management in Switzerland. All available data on non wood goods and services as well as background information are given in this paper, other data do not exist.

Information originating from the Swiss NFI on the topic Importance of recreation near dwellings (surrounding within 2 km) can be given. Only 3 per cent of the Swiss forests are very important recreation zones, 6 per cent have been judged as fairly important and 90 per cent are of little importance for recreation.

Turkey

81

Enquiry Table 23: Access to forest is free except for "Nature reserves" (strict nature protection areas, 21,119.7 hectares). For access to privately owned forest land, the permission of land owner needed.

Also during the fire season and in fire sensitive areas, temporary access restrictions may be declared.

Goods (wood and non-wood) and services

Enquiry Table 25: Wood Products in Turkey: The quantities harvested for wood products are for 1996. All the prices are marketing prices and dont include taxes. As for some important non-wood products the quantities harvested isare for 1996.

1 USA Dolar = 81137 Turkish Liras average in 1996.

1 DM = 53830 Turkish Liras average in 1996.

Ukraine

81

Reasons for not allowing public access

The main reasons are: the creation of reserves; contamination (radioactive and other); and the demarcation of areas of special economic importance.

Regimes of access to forest for non-wood goods

Citizens are permitted free access to forest land for general use; they may gather wild herbaceous plants, flowers, berries, nuts and other fruit, and fungi free of charge for their personal consumption except where otherwise provided by legislation. The

harvesting of non-wood items for manufacturing and commercial purposes is categorized as a special use and may be engaged in against payment on the basis of a special permit—the “forest ticket”.

Goods (wood and non-wood) and services

Enquiry Table 24: Under its forest legislation, Ukraine's forests are part of its national wealth and serve, by design and by virtue of their situation, chiefly environmental (water-retention, protective, pollution-control, reclamation, recreational), aesthetic, educational and other purposes. They are of limited exploitative value.

Enquiry Table 25: Providing information for Ukraine as a whole under *Enquiry Table 25* is not for the moment possible.

United Kingdom

81

Area of FOWL to which public is legally not allowed access

Access to private woodland.

The public normally only has right of access to a small proportion of private woodland, where this is a condition under grant or other government scheme, or where there is a public right of way. But public access may (or may not) be permitted to other private woodlands, at the discretion of the owner. The Government provides financial incentives to woodland owners to encourage access.

Long term change in the area to which the public has legally had access

Increase due to increasing area of private woodland and access being promoted through grant schemes. Where traditional rights of way cross woodland, the woodland will be legally accessible. Public woodlands generally provide a welcome to people on foot wherever and whenever this can be done in harmony with management objectives: visitors are in effect present with permission and not breaking any law.

Reasons for not allowing public access

In England, woods are often small, and owned by individuals who value the woods for their own recreation, for conservation values or for privacy; a recent study showed that such owners wish to retain a degree of control over who visits and what activities take place. Access legislation is currently under review, and there is an increasing view that public support should be matched by public benefits. For public woodland, main reason is military use of woodland owned by Ministry of Defence.

Regimes of access to forest for non-wood goods

In state owned forests, permits are made available for a whole range of activities, e.g. motor rallies, gathering fuel, etc. This position is analogous to agreements and arrangements made between users and private owners. In two state forests (New Forest & Forest of Dean) commoners have special rights in respect of forest products, including rights to minerals.

Goods (wood and non-wood) and services

Enquiry Table 25: The data in this table are for Great Britain only—exclude Northern Ireland.

Christmas trees include trees grown on land not classified as forest in some earlier assessments.

Wood valued at mix of standing and roadside values, venison at wholesale value, Christmas trees at retail value.

United States of America

79, 80

Enquiry Table 21: Given the very similar situation for the United States and Canada on this issue, the following comments are an excerpt from the Canadian response adapted for the United States.

Information on the “area where forests and other wooded land are managed primarily for soil protection” is not available for the United States. In fact, this type of information lacks relevance in the context of forest management in the United States because soil and water protection are over-riding considerations in the development of forest policy and in forest management practices. Soil and water protection are two of many elements that are considered in developing management regimes that maintain the ecosystem function. There is a broad range of other elements that are simultaneously considered, including (but not limited to) site regeneration, water quality, habitat, aesthetic impacts, landscape diversity, endangered species, cultural/spiritual impacts, and others. Therefore, it is difficult to isolate areas in terms of being managed primarily for soil protection.

Measures to protect water and soil values have been in place for a time; however, these measures are constantly being reviewed, updated, revised, and improved (e.g., Federal Clean Water Act, Best Management Practices Legislation in the various States, etc.).

Management factors that can affect water and soil quality include harvesting close to streams and rivers, road construction techniques, harvesting on steep slopes, skidding methods, mechanized harvesting on soils sensitive to soil compaction, winter harvesting vs. summer harvesting operations, and post harvest site treatments (such as scarification, treatment of debris, etc.). Potential soil disturbance (or degradation) factors include compaction, erosion, loss of organic matter, and loss of productivity. Some areas are more susceptible to damage from these factors than others. For example, sensitive sites include riparian zones, steep slopes, wet and poor soils, shallow soils over bedrock, and soils susceptible to compaction.

In general, the creation of riparian buffer zones is now standard practice throughout most of the country. These zones range from 30—50 metres on either side of streams. Most States also have guidelines for road construction to minimize reductions in soil

and water quality and aquatic habitats. Mechanized harvesting has accounted for an increasing proportion of the total harvest in recent years. The use of heavy equipment in the forest environment has the potential to cause problems relative to soil compaction. However, two factors mitigate or reduce potential problems related to reductions in soil quality. First, timing harvest activities to minimize site degradation such as winter harvesting in areas where it is feasible or avoiding harvest during seasonal wet periods. Second, through various new decision support tools such as forest ecosystem classification frameworks, management agencies are improving their understanding of *a*) which types of sites are sensitive to soil disturbance, *b*) where these sites are situated, and *c*) the kinds of modifications in management practices and equipment required to minimize the impacts of harvest operations.

Specifically, the Conservation Reserve Program in the 1980s and 1990s planted over one million acres (405,000 ha) of non-forest land to forest for the purpose of soil protection. The Great Shelterbelt Program of the 1930's was also designed to protect soil and planted upwards of 4 million hectares in the central prairie region of the United States.

81

Long term change in the area to which the public has legally had access

Changes in access over time (Data source: National Private Landowners Survey (NPLOS) conducted in 1995-1996).

Public lands: DECREASING access because of adjacent development closing off traditional routes of access.

Private lands: access by permission only. Laws on posting, trespass vary widely by state. Traditions vary regionally for providing access.

NPLOS comparison showed DECREASING access to private lands by general public:

About 40 per cent of landowners posted their land against trespass.

One-third of owners closed access to all but family.

About 50 per cent allowed access outside the family.

Only 15 per cent allowed access to strangers (25 per cent in previous survey).

Three percent of landowners reported leasing land for recreation.

71 per cent of owners participate in recreation on their own lands

Use estimates: the NPLOS provided some estimates of use, but they cannot be aggregated nationally.

Reasons for not allowing public access

Public lands: urban and suburban development adjacent to public lands has reduced routes of access, particularly for leisure activities.

Private lands: all access is by permission of the owner, whether for a fee or free.

Comparison of two surveys of private landowners indicates the area available for general public access has declined between 1992 and 1996.

The main reasons for restricting and controlling access to public forest lands include:

- The need to ensure that resources are utilized and managed sustainably and that resources will be available for future generations.

- The need to ensure that the forest resource is managed for multiple use and that one use does not dominate or extinguish other uses.

- The need to ensure public safety (e.g., access or use may be restricted during severe forest fire activity or during periods when the risk of fire is high).

The main reason for laws that restrict access of the public to private forest lands (i.e., trespass laws) is to preserve and protect the property rights of the land owner.

Regimes of access to forest for non-wood goods

There are no general access regimes in the United States. Land use and land use priorities vary from area to area and from owner to owner depending on land use, management planning, and operational planning priorities. These planning processes involve various degrees of public participation.

Future events that may affect how forests are used and the degree of public access for particular uses will be: *a*) the future creation of parks and protected areas, *b*) negotiation, resolution and settlement of land claims, *c*) new forest practices codes, public participation processes, and planning priorities, and *d*) road development into remote areas.

Other comments

Enquiry Table 23: Sources: National Survey on Recreation and Environment (NSRE) (1994-5).

Recreation: statistically-based population sample of United States for all wildlife-related recreation, Draft 1995 RPA recreation assessment.

General comments:

The situation for the United States is very similar to that for Canada. In general, the public is not permitted to settle, make a claim of ownership, construct permanent structures or facilities on public lands, or convert public forest lands to alternative uses (such as crops or grazing land).

The list of goods and services obtained from the forest resource by the United States public is broad and diverse. It includes commercial timber resources, fuelwood, various types of botanical products (including mushrooms, berries, nuts, wild rice, fiddleheads, and other botanical products), hunting, fishing, trapping, subsistence uses, and various types of outdoor recreation activities. The degree of legal access to public forests by the general public varies widely. In some cases (such as for timber harvesting), public access is closely regulated and controlled by public agencies through management plans and contracts which allocate public timber to individuals using various legal mechanisms. In return for the rights to public timber, the holder of these rights accepts certain obligations and responsibilities.

In the case of non-timber goods and services, the degree of legal public access varies widely depending on the particular resources in question and the particular public ownership in which they occur. Also, the instruments used to control and regulate access vary widely. In some cases public access is controlled by the payment of access fees (for example, access to State and National parks may require the payment of a fee). Public access for the right to hunt, trap and/or fish on public lands is regulated through licenses systems, quotas, and penalties for illegal use. Public access for non-consumptive uses (such as hiking, camping, skiing, snowmobiling) is unregulated in some areas and regulated in other areas.

Therefore, it is difficult to generalize and develop a single number which estimates the area of forest land to which the public does or does not have access, or the extent to which there has been any significant historical change in accessibility over time. The following comments may be useful in developing a broad sense of the situation.

Other comments:

Item 23-4 of *Enquiry Table 23* on the pattern of visitor use of different ownership categories of forest:

General patterns:

National Parks—The primary mandates of the National Park system are to preserve ecological integrity, and promote public understanding, appreciation, and enjoyment of National Parks. Although some National Parks are highly developed (i.e. residential and commercial establishments, alpine ski operations, golf courses, resort hotels) these developments were based on previous policies. The adoption of policies focusing on preserving the ecosystem has resulted in a review of policies relative to the development of commercial facilities within park boundaries. In terms of development of accommodation services, park policies favour the development of basic accommodation facilities such as campgrounds, hostels, and shelters.

National Forests—National Forests contain both reserved (Wilderness, etc.) and unreserved areas. Non-reserved forest lands are managed for multiple use. Hierarchical planning processes are established to develop management objectives at broad and local scales. These planning processes (which rely heavily on public participation processes) ensure that development and use of public lands best serves the interests of society.

State Parks and Forests—In addition to the National Park system, there are systems of parks within each State established and maintained by State and local governments. Generally, extractive activities such as harvesting are not permitted in State Parks or Wilderness areas, and the primary mandates of such areas are to protect ecosystems and habitat and provide the opportunity to experience nature for individuals. Harvesting may be allowed in unreserved State Forest areas in compliance with State laws and guidelines on appropriate management practices. In most cases some form of environmental impact statement must be prepared for management activities.

Private industrial forest land—The primary use of forest on private industrial forest lands is timber production. Management plans for these lands provide compliance with federal, State, and local laws on appropriate management practices. Major forest industry landowners also provide many opportunities for the public to enjoy their lands for recreation, hunting, fishing, and gathering as a integral part of their land management programs.

Private non-industrial forest land—The management objectives of private forest land owners are diverse and vary from owner to owner. In some cases, owners actively manage their woodlots and periodically harvest and sell roundwood to a mill. Some woodlot owners produce maple syrup products from sugar bushes (common in the northeastern United States).

Some individuals manage their land for the production of Christmas trees. In other cases, woodlot owners manage their forest to provide habitat for wildlife. Still in other cases, owners do not manage their forest land and simply maintain a natural forest. Periodic national studies are conducted to determine the attitudes and objectives of this group relative to forest ownership. Land access patterns are not currently surveyed.

Specific patterns:

National Survey on Recreation and Environment (NSRE) (1994-5) provides national participation rates and mean number of trips and days for all outdoor recreation activities. These are not linked to visits to any particular ownership and not restricted to forest areas. Examples of activities associated with forest environments:

6 per cent of population (16 years and over) participate in camping
24 per cent of population participate in hiking

Data on hunting fishing, and non-consumptive wildlife recreation (1996 data):

Big game hunting:	11,268,000 participants
Wildlife viewing:	23,652,000 participants

Source: Statistically-based population sample of United States for all wildlife-related recreation.

Number of visits to federal sites by agency (to nearest hundred thousand) in 1996:

Forest Service:	859,200,000
National Park Service:	265,800,000
Bureau of Reclamation:	38,300,000
Corps of Engineers:	375,700,000
Bureau of Land Management	58,900,000
Fish and Wildlife Service:	29,500,000
Tennessee Valley Authority:	600,000
Total visits in 1996:	1,628,000,000

(Official agency estimates, but not necessarily from statistically based data) Source: Draft RPA recreation assessment.

These visits are totals for federal lands, which includes non-forested areas. One possible approach would be to look at the proportion of forest within the ownerships, and assume visitation is proportional to land area. This most likely is an extremely conservative approach, since there are some large tracts of non-forested federal lands that receive little visitation, and because forested areas are probably more attractive for recreation. However, using this approach, a total "forest" visitation would be 791 million visits:

Forest Service land is 64 per cent forested, which would provide 550 million visits.

Bureau of Land Management lands are 12 per cent forested, which would provide 7 million visits.

Other federal holdings: 30 per cent is forested, which would provide 234 million visits.

Goods (wood and non-wood) and services

Enquiry Table 24: There exists detailed information on all the items under the item heads of this table.

Enquiry Table 25: Source of value is detailed below:

- a) mushrooms: value is wholesale value (price to purchaser of raw mushrooms from forest)
- b) floral greens and ornamentals: wholesale value
- c) furbearer: based on raw pelt values (wholesale)
- d) salmon: dockside value of raw fish (wholesale)

Indigenous and Tribal Peoples

Enquiry Table 22: Federally recognized tribes in the US total 550. The population of Native Americans enrolled in federally recognized tribes is 1,426,270. Population is from 1990 US Census, self-determined.

Many tribes provide recreation opportunities to generate income- no estimate available.

Recreation fish potential on tribal lands: over 100 reservations in 23 states; 10,000 miles (16,000 km) of rivers and streams, and 750,000 acres (304,000 ha) of lakes and impoundments

Federal lands available to Indian tribes under treaty:

- 1) Columbia River Intertribal Fish Commission: 40.9 million acres (16.6 million ha), 4 tribes
 - 2) Northwest Indian Fish Commission: 42 million acres (17 million ha), 20 tribes
 - 3) Chippewa-Ottawa Treaty Fish Commission: 12.8 million acres (5.2 million ha), 3 tribes
 - 4) Great Lakes Indian Fish and Wildlife Commission and MN-WI-MI Tribes: 58.4 million acres (23.6 million ha), 23 tribes
- Total lands available to tribes: 154.1 million acres (62.4 million ha)

There exists supportive information on "Estimate forest and other wooded land in Indian ownership" (in tabular form) in the reply to the enquiry, which is available at the secretariat.

Yugoslavia

79, 80

Enquiry Table 21: The Assessment is based on the adopted ecological criteria and map of the soil erosion of Serbia (1983).