

See also: **Afforestation:** Stand Establishment, Treatment and Promotion - European Experience. **Environment:** Environmental Impacts; Impacts of Air Pollution on Forest Ecosystems. **Genetics and Genetic Resources:** Genetic Aspects of Air Pollution and Climate Change. **Silviculture:** Forest Rehabilitation.

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# SOCIAL AND COLLABORATIVE FORESTRY

Contents

**Forest Functions**

**Social Values of Forests**

**Common Property Forest Management**

**Social and Community Forestry**

**Joint and Collaborative Forest Management**

**Forest and Tree Tenure and Ownership**

**Canadian Model Forest Experience**

**Public Participation in Forest Decision Making**

## Forest Functions

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## Introduction

The term ‘forest functions’ is often used to describe a set of functional relations between forest and humans. Despite its descriptive and pragmatic advantages, the term offers some analytical shortcomings: these can be overcome, if the functional relations are separated into two classes: the effects of forests and the specific performance of forestry. This can offer a sound analytical base for forest policy and forest management.

## Functions

### A Descriptive and Pragmatic Concept

Trees and forests have always provided goods and services for individual or societal use. The term ‘function’ refers to the relation between forest and humans that is constituted by the process of offering and obtaining goods and services. Similar to the way in which the term is used in mathematics, forestry tries to encapsulate human–forest relationships by means of the term ‘forest function.’ It is not known when the term ‘function’ was used first in forestry but in 1953 Viktor Dieterich stated in his forest policy textbook a system of functional relations and described a so-called theory of forest functions (*Funktionentheorie*). Since the second half of the

twentieth century forestry has been, and still is, influenced by this theory of forest functions, but the triad of Dieterich's forest functions, namely 'use,' 'protection,' and 'recreation' (in German: *Nutz-, Schutz-, Erholungsfunktion*) has been extended and modified over several decades. One example for a list of forest functions is shown in Table 1.

Whether developed by practitioners or scientists, most of the tables enumerating functions have been pragmatically constructed after seeking the existing or potential use of forests. Intuitive answers or empirical findings were then transformed into abstract classification systems, which in general can be seen as groupings according to the main types of forest use. Main functional categories refer to 'commodity functions' for timber and nontimber forest products, 'protective functions' against natural hazards, 'social functions,' which are mainly related to recreational use of forest areas, and 'conservation and cultural functions.' Nowadays the various classification schemes for forest functions, which are described in literature or used in forestry practice, are innumerable.

### Multifunctional Forestry

There is constant debate about whether a separation or an integration principle for the management of the various forest functions should be used as a guiding principle. A central European perspective, developed on the basis of the natural potentials of temperate zone forests, favors the multifunctional integration of different forest uses in the same forest area. The Anglo-Saxon and American management approach seems to favor a separation of uses, thus defining areas mainly to be used for wood production, while dedicating other forest areas for nature conservation purposes or recreational use. For both of the approaches some good arguments from the natural sciences do exist. However, in essence, the main reason for accepting or rejecting separation or integration can be traced back to some ideological and normative aspects, rooted in the realm of social sciences.

The separation or integration of forest uses is directly related to the political and economic question of what type of ownership should be responsible for guaranteeing appropriate levels of function provision. The separation approach allows private forest owners to concentrate on the production function, while community- or state-owned forest land is to be used to provide recreational or conservation functions.

In contrast, the integration approach served for a long time as the standard for good central European forest stewardship and led, irrespective of

ownership, to a concept of multifunctional forestry. This option for a harmonious coexistence of different uses on the same forest land is based on the assumption that sustainable timber production and all other nonproductive functions could be supplied at suitable levels. Statements that all other functions of forest follow in the wake of the production function have been used in forest policy debates especially since the 1970s in order to avoid restrictions on forest management, potentially imposed by societal concerns for the recreational and natural protection functions.

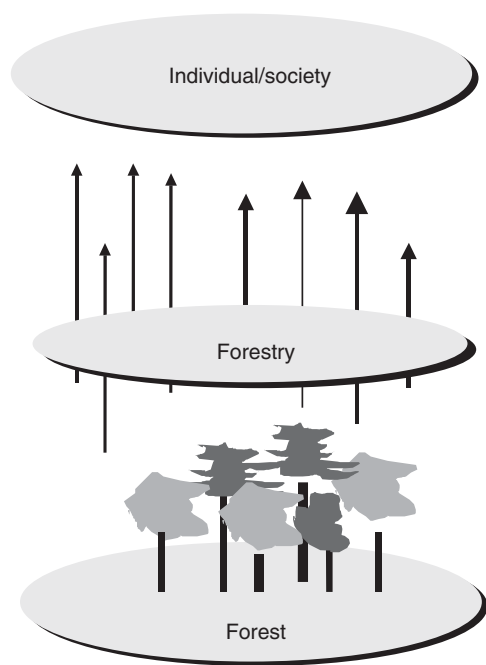
Currently, new approaches to nature conservation, in particular to the protection of evolutionary and self-regulated processes, increasingly pose questions about the multifunctional concept. The separation concept also increasingly comes under pressure as acceptance of pure production from at least parts of the forest area is vanishing. Regardless of whether the ongoing developments will lead to forest management concepts beyond separation or integration, the central European idea of being able to perform simultaneously various, if not all, forest functions at the same place and time generated the term multifunctional forestry, which has a striking appeal and has become accepted worldwide.

### Political Merits of the Term Functions

The forest functions offer exceptional potential as container terms in political debates. On the agendas of these debates forestry communities seek to legitimize their claims in a changing society and to be approved for using existing forest resources according to their own needs as free as possible from unwanted outside influences. A 'functions' perspective always ranks the forest first and somewhat overshadows the user: forests offer functions that can be obtained provided forest management is appropriate. The ideology of forest-centrism (*Silva-zentrismus*) therefore can restrict societal attempts to misuse forests and to restrain forest community infighting, which undoubtedly exist, if only subliminally, as the respective forest managers represent different types of forest ownership.

Be it a standard functional or a more sophisticated multifunctional perspective the term 'function' can be used to emphasize the societal importance of the interconnected unit of both forests and foresters. According to traditional self-perception and external communications there is a cooperative supply chain, as forestry transmits and administers forest functions to society. Forestry is located in the center of the exchange system between forest functions and contributes to societal welfare (Figure 1).

**Table 1** Example of a classification scheme for forest function: reference model for variety, importance and interactions of forest functions of the European Parliament (1997)

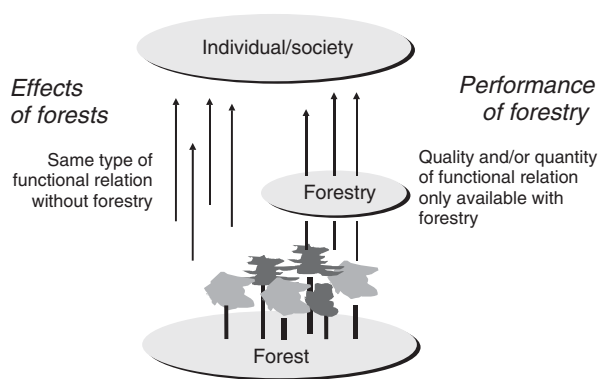


**Figure 1** A classical perspective on the various functions of forests and multifunctional forestry as a transmitter of forest functions to society.

### Analytical Shortcomings

Regardless of the merits of the functions term in political discussions, there are some basic analytical shortcomings that need to be mentioned. From a scientific point of view, the quality of all descriptive approaches to collecting and enumerating existing or potential forest functions is restricted by the completeness of the enumeration of individual functions and the logical consistency of the ordering system employed. A collection, enumeration, or classificatory system can itself never serve as a sound explanatory system, which provides deeper insights or better understanding of the object of interest. For example, the German discussion on the intrinsic content of the term use-function (*Nutzfunktion*) can be mentioned; is there reason to distinguish the mainly timber-related use-function from the nature protection-function, as both are inevitable of societal use? A pure classification system, offering definitions only, was mistaken for an explanatory system to be employed for directing processes and influencing actual political developments.

Nowadays, forest policy research therefore rejects the uncritical use of the concept of forest functions, which never met the demands of a theory. Instead the interest approach of the social sciences is employed in order to describe, analyze, and explain processes in forestry and activities of forest-related stakeholders.



**Figure 2** Distinction between effects of forests and the performance of forestry.

## Beyond Functions

### Effects of Forests vs. Performance of Forestry

Traditional forest economics has some problems with the concept of forest functions; this can be linked to the fact that the concept fails to describe forestry adequately, as the main object of interest of forest economics, in its role as a transmitter of benefits between forest and humans (Figure 2).

Analyzing the list of forest functions shown in Table 1 it must be acknowledged that only parts of the beneficial stream of goods and services from forest to humans can be improved or even influenced by forestry. At least for some of the functions of forests, there is no need for forestry (by means of any kind of human influence on natural processes) to safeguard given levels of individual or societal well-being. One can make a thought-experiment to envisage the future development of existing forests or even bare land in the absence of any kind of forestry and to analyze the hypothetical outcome, for all ecotypes and geographic zones that are naturally covered with forests. There is evidence that for all regional conditions a distinction can be made between functions or forest-human relations, which will remain unchanged or continue to exist only slightly changed without forestry, while other functions immediately or in the mid-term will cease to exist, if forestry activities should be stopped.

### Managing for Performance

According to a standard definition, sustainable forest management aims to ensure that the goods and services derived from the forest meet present-day needs while at the same time securing their continued availability and contribution to long-term development. The clear distinction between effects and performances will help forestry to focus its activities efficiently. Some of the functional relations deserve

and require intensive forest management, while other functional relations between forest and humans do exist, even without any kind of forestry intervention. Forestry activities therefore may be ordered according to a tripartite classification system (see Figure 3):

I. Functional relations are described as the effects of forests that exist without human interaction through forest management. There is no way to manage forests efficiently to improve the benefit. All forestry resources dedicated to influence these pure effects of forests may result, at best, in an alteration, but not in an improvement of the respective functional relation.

II. The performance of forestry can be understood as the ability to alter quality and quantity of existing functional relations between forest and humans through forest management. Pristine forests may provide a base level of goods and services that will meet present-day individual or societal needs, but there is an option to increase the quantitative or qualitative level of these 'functional flows' by active management (IIa). Some other functional flows may not be provided by nature herself and so do inevitably require forestry to be practiced (IIb).

III. A basic precondition for the clear distinction between effects and performance is the assumption of an enduring existence of forests. All over the world situations may be found where forests naturally could exist and even could recover easily from disturbances, but are currently threatened by destructive human influences. All forestry activities that result in a reduction of harmful human influence and increase the preservation of natural forests and their effects must be acknowledged as important measures of the

performance of forestry in safeguarding the functional relations between forest and humans. This is true even if the intrinsic relation must be classified as a pure effect of forests.

### Social Conditionality of Forest Effects and Forestry Performance

At first glance, the distinction between the effects of forests and the performance of forestry seems to be a straightforward result of a thorough analysis employing data and information mainly of natural sciences.

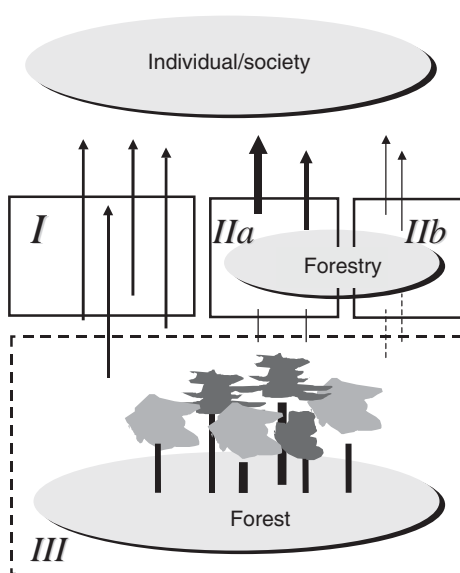
The amount of, e.g., carbon sequestered in trees may completely be described on the basis of information delivered by the natural sciences. However, the question of whether or not carbon sequestration is an effect of forests or a specific performance of forestry has to be seen in direct relation to its social conditionality.

The property rights of forest management are a direct result of the social conditions and legal framework in which forest management takes place. If, for example, the property right of forest management includes the explicit right to permanently eradicate forest cover, all functional relations between forest and humans inevitably must be classified as in the forestry performance category. The permission to decide freely whether a forest is kept or cleared offers the broadest set of options for forest management, while, in contrast, strict standards of forest stewardship, including obligations to safeguard specific functional relations, will reduce the options available for forest management.

### Implications and Outlook

As the functions of forests often justify financial and other public support of forestry, there is good reason for the intensity of debates on the meaning of functions, effects, and performances. The term forest functions offers a nebulous concept, which might be of specific value in political debates. In contrast, the terms effects and performance require a clear statement of whether something is delivered by nature without additional need to spend forestry resources, or whether something has to be delivered by forestry under given legal conditions, or, lastly, something can be offered as beneficial good or service by forestry. Under given societal and market conditions, for most countries the distinction will result accordingly in no financial streams, in compensatory payments, which at best will cover the related expenses, or in the option to actively market and sell functional relations and to gain profits, if expected income exceeds related expenses.

The term forest functions (as well as its predecessors and its successors) served and will serve an



**Figure 3** Distinction between effects of forests and the performance of forestry.

important function itself, as it enables foresters and society to discuss forestry in a broader perspective than primary production alone. The constant change of relative dominance of particular functional relations (production, recreation, conservation) has characterized the history of forestry and probably will characterize its future development; time will show, for which functional relations societies will appreciate forests in future.

*See also:* **Landscape and Planning:** Perceptions of Forest Landscapes; Perceptions of Nature by Indigenous Communities. **Social and Collaborative Forestry:** Canadian Model Forest Experience; Common Property Forest Management; Forest and Tree Tenure and Ownership; Joint and Collaborative Forest Management; Social and Community Forestry; Social Values of Forests.

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## Social Values of Forests

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## Introduction

Amongst all the environmental sciences, forestry is perhaps the one that has to recognize and work with the values of the widest range of social groups.

Forests affect the interests of everyone, but are often the property or responsibility of a few. Even the definition of a forest is a value-laden exercise, in what has been termed the 'social construction of forests.' There is however a difference between the postmodernist view that forests are the projections of each observer, and the more pragmatic philosophy that forests are real systems with definite contents and boundaries – but that the importance of the contents, boundaries, and whole varies according to the observer. The last consideration has been much discussed during the last 20 years, following the famous statement by Jack Westoby in 1968 that 'Forestry is not about trees, it is about people'.

This article explores the many ways in which social values have been defined and applied, and looks at how such values are formed, recognized by forest managers, and incorporated into forest management – and what happens when they are not. Issues of consensus and conflict are considered, and the article concludes with a discussion of the evolving demands on the modern forester who needs to be able to balance social sensitivity with technical and management skills.

## Definitions

The value of a forest refers to its 'worth, desirability or utility,' while the values held by people regarding the forest refer to their principles, or judgments about what is important in life. Values are implicitly subjective, and forestry, which has always held itself to be a science, sits uneasily with subjectivity. Economics has evolved its own ways of dealing with the economic value of a forest in the face of environmental concerns. However, forestry is not only about environmental values, but also about social values, a phrase which has come to be used frequently in relation to forests, but often only in passing and without explanation.

The term 'social values of forests' can best be understood as referring to the basic worth and utility of forests as are experienced by people. A distinction can be made between material utilitarian values, nonmaterial utilitarian values (such as soil conservation, climate regulation), cultural and spiritual values, and aesthetic values. These terms all relate to values of forest with respect to human use and perception. In addition, the term 'intrinsic value' is used, to denote that value related not specifically to human use and benefit, but an unchanging value outside the human sphere of influence and perception.

Another approach towards defining social values of forests is derived from environmental economics. Here a distinction is made between direct use values,