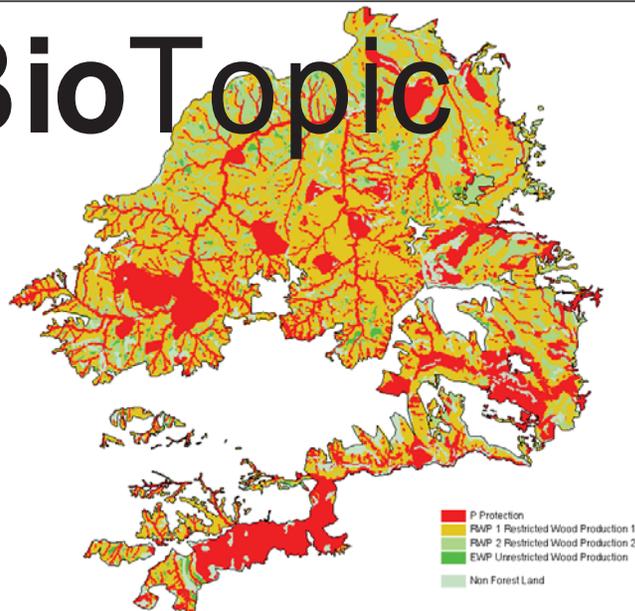




Forest near Acharkut, Tavush region  
(photo by Tsovinar Hovhannisyan)

# BioTopic



## Multifunctional Zoning: Methodological Guideline

### Background

Multifunctional zoning is an essential prerequisite and tool for sustainable multiple-use forest management planning. It aims to analyze and delimitate ecological, environmental, social and other functions for all the forest areas managed by a Forest Management Unit (FMU) with a view of balancing the existing different objectives of wood production, societal needs and nature conservation.

The decision whether an area is suitable for wood production forms the core part of forest management planning and depends on many different factors such as economic considerations, societal needs, ecological aspects, etc. Once the wood production areas have been identified, the net wood production area can be calculated, which is pivotal to sustainable yield regulation.

Forest function mapping can serve to identify the various forest functions in relation particularly to wood production. Some functions are easily identifiable such as the topographic features, while others require extensive surveying (e.g. wildlife habitats, rare ecosystems). Some functions can be protected

if the areas are large enough (e.g. water catchment), while others can be protected by small patches (e.g. cultural sites). Functions can depend on variable factors, such as societal needs and on invariable factors such as topography. Some functions cannot be mapped (medicinal plants or other).

*Forest function mapping* is a process to classify forest areas according to defined functions based on spatial, topographical, floral and faunal information. However, only those functions need to be mapped, which restrict forest management activities. Specific management restrictions are defined for each function, and the silvicultural system to be applied depends on the level of these restrictions.

*Forest zoning* is the classification of an area into productive, restrictive and protective zones based on previously determined forest functions.

The whole process of forest function mapping and forest zoning is also called **multifunctional zoning**.

### Methods for Identification of Forest Functions

There are three main groups of functions: economic functions, eco-

logical/environmental functions and socio-economic services (Table 1). Each one includes a number of sub-functions, which are distinguished by the purpose of the function and/or its degree of management restrictions. For the sub-function the term protection is used if logging is prohibited, the term conservation - or a more specific phrase - is used, if the function imposes management restrictions only.

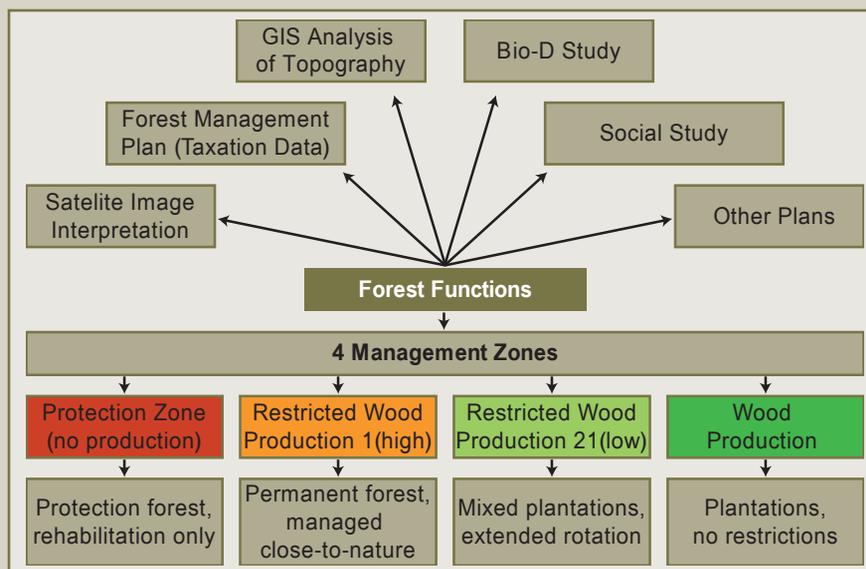
For the identification and mapping of forest functions the following working steps and relevant information for each step are required: *analysis of Forest Management Plan* (forest functions can be derived from taxation data of the FMP), *satellite image interpretation* (tree species composition and forest condition; stand boundaries), *GIS-Analysis of topography* (slope classification, cultural sites, riparian buffers and catchment areas, road and infrastructure, settlements, boundary and military zones), *Bio-D surveys* (wildlife, flora and fauna), social survey (social functions, cultural sites, sources for local water supply), *review of plans and contacts with relevant institutions*, *identification of representative ecosystem* (one representative forest area of each major forest type).

## Management Zoning

The impacts of forest functions on forest management differ from management exclusion zones to restrictions on commercial wood production or minor management restrictions. When the forest functions are identified, they are grouped into four different management zones based on the level of restrictions they impose on commercial wood production. All those areas, which do not fall under a specific function, belong to management zone WP "Wood Production." Individual functions may overlap but management zones do not (Figure 1, Table 2).

The forest function map and the management zones should be agreed among all the stakeholders concerned including the communities within the FMU, the FMU management body, Hayantar, the

**Figure 1: The process of multifunctional zoning**



Ministry of Agriculture. It should receive official approval in order to become legally binding for the planning period. The preparation of the

Multifunctional Zoning Report provides the justification for the identification of the various functions, i.e. the process of identification, the methods applied, the stakeholders involved, the sources of information used. Two maps should be produced by the GIS expert: a Forest Function Map and a Management Zone Map.

**Table 1: Distribution of Forest Functions**

Forest Function		Code
Type	Name	
Economic Functions	Production of NWFP only	ENWFP
	Non Productive areas	ENP
	Wood Production (unrestricted)	EWP
Soil Conservation	Soil Protection	SP
	Soil Conservation I	SCI
	Soil Conservation II	SCII
Water Conservation	Riparian Buffer Protection	WRP
	Water Catchment Conservation	WCC
	Water Supply Protection	WSP
Nature Conservation	Wildlife Protection	NWP
	Wildlife Habitat Conservation	NWC
	Rare Ecosystem Protection	NEP
	Reference Ecosystem Protection	NREP
	Biodiversity Conservation	NBC
Socio-economic	Cultural Sites Conservation	SocCC
	Recreation Forest Conservation	SocRC
	Arable Land Conservation	SocAC
	Special Site Protection	SocSP
	Local Use only	SocL
Others	Local cum Commercial use	SocLC
	Road and Infrastructure Conservation	ORC
	National Defense Protection	ONDP

**Table 2: Management zones based on forest functions**

Management Zone		Function Code
Name	Code	
Protection (no production)	P	ENWP*, ENP*, SP, WRP, WSP, NWP, NEP, NREP, SocSP, ONDP
Restricted Wood Production 1 (high)	RWP 1	SCI, WCC, NWC, SocCC, ORC
Restricted Wood Production 2 (low)	RWP 2	SCII, NBC, SocRC, SocAC, SocL**, SocLC
Wood Production	WP	All other areas
<b>Total forest area</b>		

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