



**Forestry Department**

**Food and Agriculture Organization of the United Nations**

**GLOBAL FOREST RESOURCES  
ASSESSMENT 2010**

**COUNTRY REPORT**

**BOTSWANA**

FRA2010/027

Rome, 2010



## The Forest Resources Assessment Programme

Sustainably managed forests have multiple environmental and socio-economic functions important at the global, national and local scales, and play a vital part in sustainable development. Reliable and up-to-date information on the state of forest resources - not only on area and area change, but also on such variables as growing stock, wood and non-wood products, carbon, protected areas, use of forests for recreation and other services, biological diversity and forests' contribution to national economies - is crucial to support decision-making for policies and programmes in forestry and sustainable development at all levels.

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Programme. This country report forms part of the Global Forest Resources Assessment 2010 (FRA 2010).

The reporting framework for FRA 2010 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes variables related to the extent, condition, uses and values of forest resources, as well as the policy, legal and institutional framework related to forests. More information on the FRA 2010 process and the results - including all the country reports - is available on the FRA Web site ([www.fao.org/forestry/fra](http://www.fao.org/forestry/fra)).

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The Global Forest Resources Assessment Country Report Series is designed to document and make available the information forming the basis for the FRA reports. The Country Reports have been compiled by officially nominated country correspondents in collaboration with FAO staff. Prior to finalisation, these reports were subject to validation by forestry authorities in the respective countries.

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## Introduction

Botswana is endowed with the diversity of both the herbaceous and woody vegetation that provides a wide range of goods and services that satisfies the needs of the nation at large. The forests and woodlands cover about sixty percent (60%) of the land area of Botswana.

While some of the benefits derived from forest resources are obvious, the wider contribution of trees, forests and woodlands to the national economy in Botswana is extremely difficult to quantify. This is because forest and woodland resources often do not provide direct benefits, but are an essential foundation for other important sectors such as wildlife, tourism and livestock rearing. The complexity of these linkages makes quantification difficult. As a result these, benefits are often grossly underestimated in both the sectoral and national Gross Domestic Products context. This has resulted in limited allocation of financial and other resources by various stakeholders into this sector. Nevertheless, direct and indirect benefits are derived from forest resources. Fuel wood for instance, consistently supplies over fifty percent of domestic energy needs in Botswana, with over sixty percent of the population being dependent on this resource. Forests and woodlands provide numerous essential socio-economic, cultural, medicinal, ecological and environmental benefits, many of which are fundamental to the well being of the nation, both now and in the future.

It is broadly appreciated that forests contribute to:

- a) Improvement of food security and nutrition at household level by providing wild foods such as honey, fruits, and game meat;
- b) Meeting rural subsistence needs by providing construction and fencing materials, fuel wood and herbs for medicine;
- c) Generation of income by providing materials for handicraft production, fruits and veldt products;
- d) Agricultural productivity by providing habitat and nutrition for flora and fauna;
- e) Eco-tourism by providing habitat for wildlife; and
- f) Protection of the environment by reducing soil erosion and land degradation, conserving watersheds, sequestering carbon and allowing for the rehabilitation of the environment.

Whilst the benefits of forestry resources accrue to all members of society, those most dependent on such benefits and most likely to be affected by their destruction are the poor. This is true in both rural and urban areas. In the latter, poorer groups depend on fuel wood as an energy source because alternatives are too expensive for them. If this trend persists the situation is likely to continue into the foreseeable future. Botswana has never had a nationwide forest and range resources inventory study particularly outside protected areas such as Forest Reserves found in Chobe District, where most of the studies done in the 1930s and between 1990 and 1992 concentrated on assessing merchantable timber with very little regard for other important uses/values. This paper represents the country report for Botswana as part of an input to Global Forest Resources Assessment (FRA) process of FAO especially FRA 2010 which is an update to FRA 2005 (FAO 2005).

# 1 Table T1 – Extent of Forest and Other wooded land

## 1.1 FRA 2010 Categories and definitions

Category	Definition
Forest	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds <i>in situ</i> . It does not include land that is predominantly under agricultural or urban land use.
Other wooded land	Land not classified as “Forest”, spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds <i>in situ</i> ; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.
Other land	All land that is not classified as “Forest” or “Other wooded land”.
Other land with tree cover (Subordinated to “Other land”)	Land classified as “Other land”, spanning more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.

## 1.2 National data

### 1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Land Utilization Division, Ministry of Agriculture, Republic of Botswana. 1990. Land Systems Map of the Republic of Botswana.	M	Land Systems Map	1990	Primary Data source
FRA 2000. Botswana country report	H	Rate of deforestation	2005	Secondary data source
FAOSTAT	H	Land area	2005	Secondary data source
The Little Green Data Book, 2007. The World Bank	M	World Development Indicators	2007	Secondary data source

### 1.2.2 Classification and definitions

National class	Definition
Dense Woodland	Characterized by well-developed tree canopy and a thicket-like shrubby under-storey. Floristically diverse and has been divided into a number of vegetation types by previous workers, it's classified as “Dry Deciduous Forest”
Open woodland	Floristically similar to dense woodland but with major differences in structure, particularly in more open canopy woodland.
Riparian woodland	Fringing forest along the edges of Okavango Delta, major rivers and Chobe valley. Floristically similar to dense woodland type. Typical tree species

	found <i>Ficus sycomorus</i> , <i>Hyphaene spp</i> (Palms), <i>Combretum imberbe</i> (Lead wood).
<b>Fringing Palm Grassland &amp; Woodland</b>	Characterized by palm woodland, bushland and open grassland with the latter being interspersed with in places with tree belts. Shrub layer is poorly developed and overall structure of the community can be summarized as grassland supporting tree cover which increases in localized areas.
<b>Bushland with scrubby woodland and bushy scrubland</b>	Composed of small-to-medium height trees with well developed shrub layer. Its ecological structure is often influenced by clearance around settlements. Trees are usually less than 12m high with average heights ranging between 7 and 9m.
<b>Shrubland and bushy shrubland</b>	It has floristic affinities with the surrounding vegetation types (bushland & scrubland). Trees are always less than 7m tall (often much shorter), and widely spaced. Vegetation consists of relatively few species which appear in various combinations to form mosaics which are usually related to topographic features (e.g. ridges, pans, dune crests and troughs)

### 1.2.3 Original data

#### Reference year: 1990

National Classification	Area ('000) ha
FL Forbland	170
GR Grassland	2 796
GR/SA Grassland/ Savanna	662
GR/ST Grassland/ Tree savanna	224
SS/GR Shrub savanna / grassland	93
GR/SA/W Grassland/ Savanna / woodland	1 304
SA Savanna	20 965
SS Shrub savanna	2 277
SA/SS Savanna / Shrub savanna	3 608
SS/SA Shrub savanna / Savanna	20 106
ST Tree Savanna	1 736
SS/ST Shrub savanna / Tree Savanna	76
ST/SA Tree Savanna / Savanna	76
SA/ST Savanna / Tree Savanna	693
SS/W Shrub savanna / woodland	272
W/SA Woodland / Savanna	520
SA/W Savanna / Woodland	1 296
S/SS/SA Swamp / Shrub savanna / Savanna	216
S/SA/W Swamp / Savanna / Woodland	625
<b>Total</b>	<b>57 715</b>

#### Reference year: 2000

FRA 2000 estimated the annual net change rate in Botswana to be – 118 345 ha, primarily based on rates from neighbouring countries.

### 1.3 Analysis and processing of national data

#### 1.3.1 Calibration

From FAOSTAT	
Total Country Area ('000)ha	58 173
Inland water ('000)ha	1 500
Land area ('000)ha	56 673

#### Reference year: 1990

Total country area according to source ('000) ha	57 715
Calibration factor	1.007944277

On calibration, the original data becomes:

National Classification	Area ('000) ha
FL Forbland	171
GR Grassland	2 818
GR/SA Grassland/ Savanna	667
GR/ST Grassland/ Tree savanna	226
SS/GR Shrub savanna / grassland	94
GR/SA/W Grassland/ Savanna / woodland	1 314
SA Savanna	21 132
SS Shrub savanna	2 295
SA/SS Savanna / Shrub savanna	3 637
SS/SA Shrub savanna / Savanna	20 265
ST Tree Savanna	1 750
SS/ST Shrub savanna / Tree Savanna	77
ST/SA Tree Savanna / Savanna	77
SA/ST Savanna / Tree Savanna	699
SS/W Shrub savanna / woodland	274
W/SA Woodland / Savanna	524
SA/W Savanna / Woodland	1 306
S/SS/SA Swamp / Shrub savanna / Savanna	218
S/SA/W Swamp / Savanna / Woodland	630
<b>Total</b>	<b>58 173</b>

#### 1.3.2 Estimation and forecasting

Due to lack of further information, estimation and forecasting has been done using the calibrated areas from 1990 and the estimated net change rate from FRA 2000. This was done after reclassification.



### 1.3.3 Reclassification into FRA 2010 categories

#### Reference year: 1990

National Classification	Forest	Other wooded land	Other land
FL Forbland			100 %
GR Grassland			100 %
GR/SA Grassland/ Savanna	10 %	20 %	70 %
GR/ST Grassland/ Tree savanna	30 %		70 %
SS/GR Shrub savanna / grassland		60 %	40 %
GR/SA/W Grassland/ Savanna / woodland	40 %		60 %
SA Savanna	15 %	65 %	20 %
SS Shrub savanna	15 %	85 %	
SA/SS Savanna / Shrub savanna	25 %	75 %	
SS/SA Shrub savanna / Savanna	25 %	75 %	
ST Tree Savanna	100 %		
SS/ST Shrub savanna / Tree Savanna	50 %	50 %	
ST/SA Tree Savanna / Savanna	50 %	50 %	
SA/ST Savanna / Tree Savanna	50 %	30 %	20 %
SS/W Shrub savanna / woodland	40 %	30 %	30 %
W/SA Woodland / Savanna	80 %	20 %	
SA/W Savanna / Woodland	50 %	20 %	30 %
S/SS/SA Swamp / Shrub savanna / Savanna	10 %	30 %	60 %
S/SA/W Swamp / Savanna / Woodland	30 %	30 %	40 %

After reclassification, we get:

National Classification	Forest ('000 ha)	Other wooded land ('000 ha)	Other land ('000ha)
FL Forbland			171
GR Grassland			2 818
GR/SA Grassland/ Savanna	67	133	467
GR/ST Grassland/ Tree savanna	68		158
SS/GR Shrub savanna / grassland		56	37
GR/SA/W Grassland/ Savanna / woodland	526		789
SA Savanna	3 170	13 736	4 226
SS Shrub savanna	344	1 951	
SA/SS Savanna / Shrub savanna	909	2 727	
SS/SA Shrub savanna / Savanna	5 066	15 199	
ST Tree Savanna	1 750		
SS/ST Shrub savanna / Tree Savanna	38	38	
ST/SA Tree Savanna / Savanna	38	38	
SA/ST Savanna / Tree Savanna	349	210	140
SS/W Shrub savanna / woodland	110	82	82
W/SA Woodland / Savanna	419	105	
SA/W Savanna / Woodland	653	261	392
S/SS/SA Swamp / Shrub savanna / Savanna	22	65	131
S/SA/W Swamp / Savanna / Woodland	189	189	252

On re-arranging:

FRA Categories	Area (1000 hectares) 1990
Forest	13 718
Other wooded land	34 791

Then,

- For 2000, 2005 and 2010

Forest area in a reporting year X= Forest area in 1990 - (118 345 (rate of deforestation)\* (X-1990)).

For Other Wooded Land, it is assumed that the area remain stable.

#### 1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	13 718	12 535	11 943	11 351
Other wooded land	34 791	34 791	34 791	34 791
Other land	8 164	9 347	9 939	10 531
...of which with tree cover				
Inland water bodies	1 500	1 500	1 500	1 500
<b>Total for country</b>	<b>58 173</b>	<b>58 173</b>	<b>58 173</b>	<b>58 173</b>

#### 1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	<p>The classification is based on the Land Systems Map of the Republic of Botswana for the year 1990 which was used for FRA 2000. There are two biomass studies undertaken by Millington <i>et al</i> ( for reference years 1984 and 1986); however, the exact forest area is not easily quantified from these studies. Use of the Land Systems Map has been preferred since the information for 2000 was validated by the country before publication.</p> <p>Reference for 1986: <b>Millington, A. , R. Critcheley, T. Douglas &amp; P Ryan</b> 1994. Estimating woody biomass in sub-saharan Africa. Washington, IBRD / World Bank</p> <p>Reference for 1984: <b>Millington, A., and Townsend, J. (eds.)</b> 1989. Biomass assessment: Woody biomass in the SADC region. Earth scans Publication</p>	<p>It is considered that the pressure on the forest between 2005 and 2010 is same as in 1990-2000.</p>

	Ltd. London. UK	
Other wooded land	This classification includes all areas not classified as “Forest” and it includes all the areas classified under the different savannah vegetation types.	Situation for the last five years remain similar as before.
Other land	This classification relates to other land that can be categorized as fallow areas, swampy areas, salt pans etc	
Other land with tree cover	This classification relates to other land that can be categorized as scrubland and bushy scrubland.	
Inland water bodies	This classification relates to other land that is under artificial water bodies such as dams, pans, inland deltas etc.	There has not been any change in the sizes of inland water bodies as new dams have only been proposed recently and their total capacities have not yet been determined.

**Other general comments to the table**

It has not been easy to categorize the total area under “Other land with tree cover” as the agricultural statistics were not readily available to effectively give figures of the total areas that has been converted to arable land over time.

**Expected year for completion of ongoing/planned national forest inventory and/or RS survey / mapping**

Field inventory	2014
Remote sensing survey / mapping	2014

## 2 Table T2 – Forest ownership and management rights

### 2.1 FRA 2010 Categories and definitions

Category	Definition
Public ownership	Forest owned by the State; or administrative units of the public administration; or by institutions or corporations owned by the public administration.
Private ownership	Forest owned by individuals, families, private co-operatives, communities, corporations and other business entities, religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
Individuals (sub-category of Private ownership)	Forest owned by individuals and families.
Private business entities and institutions (sub-category of Private ownership)	Forest owned by private corporations, co-operatives, companies and other business entities, as well as private non-profit organizations such as NGOs, nature conservation associations, and religious and educational institutions etc.
Local communities (sub-category of Private ownership)	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area. The community members are co-owners that share exclusive rights and duties, and benefits contribute to the community development.
Indigenous / tribal communities (sub-category of Private ownership)	Forest owned by communities of indigenous or tribal people.
Other types of ownership	Other kind of ownership arrangements not covered by the categories above. Also includes areas where ownership is unclear or disputed.
<b>Categories related to the holder of management rights of public forest resources</b>	
Public Administration	The Public Administration (or institutions or corporations owned by the Public Administration) retains management rights and responsibilities within the limits specified by the legislation.
Individuals/households	Forest management rights and responsibilities are transferred from the Public Administration to individuals or households through long-term leases or management agreements.
Private institutions	Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities, private co-operatives, private non-profit institutions and associations, etc., through long-term leases or management agreements.
Communities	Forest management rights and responsibilities are transferred from the Public Administration to local communities (including indigenous and tribal communities) through long-term leases or management agreements.
Other form of management rights	Forests for which the transfer of management rights does not belong to any of the categories mentioned above.

## 2.2 National data

### 2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
EU/FAO 1998. Data Collection and Analysis for Sustainable Forest Management in ACP Countries. Linking National and International Efforts: Proceedings of sub-regional workshop on forestry statistics-SADC region. FAO, Rome	H	Land ownership	1998	Primary data source since it contains a country report
Environmental Statistics – Central Statistics Office, 2000	M	Environmental Statistics	2000	
Forest Act, Chapter 38:04, 1968	H	- Declaration of protected trees - Declaration of forest reserves	1968	
Department of Crop Production & Forestry, Chobe Forestry Inventory and Management Plan. 1992	H	Area coverage for each State Land	1992	

### 2.2.2 Classification and definitions

National class	Definition
<b>Forest Reserves</b>	Any area or piece of land declared as a forest reserve by the President in pursuance of the terms of the National Forest Act of 1968
<b>Wildlife Management Areas</b>	Forest management rights and responsibilities are transferred from the Public Administration to local communities (including indigenous and tribal communities) through long-term leases or management agreements.
<b>Communal Land</b>	Other forests/woodlands outside the Forest Reserves are mostly in Tribal land and are governed by the Tribal Land Act. Their ownership is not clear as the tribes have no exclusive rights to them, because the land they sit on is controlled by the State.
<b>Tribal/Communal Land</b>	That portion of tribal land allocated by the Land boards under the Tribal Land Grazing Policy (TGLP) of 1975 for communal use by people of that locality e.g. for grazing, small scale arable agriculture and residential sites. No person owns any part of this land. They are only given user rights through 99 years leases.
<b>Freehold Land/Farms</b>	Land that contains forest/woodlands owned by individuals, families or companies, mostly for the purpose of cattle ranching. Forest management rights and responsibilities are transferred from the Public Administration to these individuals, families or companies, through long-term leases or management agreements

### 2.2.3 Original data

Based on the FRA 2005 report (which had used the EU/FAO 1998, as source), there are basically three types of land tenure in Botswana:

- State: This type constitutes 24% of Botswana.
- Freehold: This makes up 5% of the total land area of Botswana.
- Tribal: This land covers 71% of the country.

## 2.3 Analysis and processing of national data

### 2.3.1 Reclassification into FRA 2010 categories

Due to lack of other information, the above percentages have been applied to the forest area of table T1. This assumption is correct, according to knowledgeable people of Department of Forestry & Range Resources/Botswana.

National Classification	FRA Classification
State	100% public
Freehold	100% private
Tribal	100% other

### 2.3.2 Estimation and forecasting

FRA 2005 Categories	Area (1000 hectares)		
	Forest		
	1990	2000	2005
Public ownership	3292	3008	2866
Private ownership	686	627	597
Other ownership	9740	8900	8480
<b>TOTAL</b>	<b>13718</b>	<b>12535</b>	<b>11 943</b>

## 2.4 Data for Table T2

Table 2a - Forest ownership

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	3 292	3 008	2 866
Private ownership	686	627	597
...of which owned by individuals	n/a	n/a	n/a
...of which owned by private business entities and institutions	n/a	n/a	n/a
...of which owned by local communities	n/a	n/a	n/a
...of which owned by indigenous / tribal communities	n/a	n/a	n/a
Other types of ownership	9 740	8 900	8 480
<b>TOTAL</b>	<b>13 718</b>	<b>12 535</b>	<b>11 943</b>

Note: If other types of ownership are reported, please specify details in comment to the table.

Does ownership of trees coincide with ownership of the land on which they are situated?		Yes
	X	No
If <b>No</b> above, please describe below how the two differ:		
The different users of land under Private ownership do not enjoy full ownership rights as they are given what is called “User Rights” to the land allocated as the land they own is governed by the Tribal Land Act. This means the land they occupy is controlled by the State.		

**Table 2b - Holder of management rights of public forests**

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public Administration	3 292	3 008	2 866
Individuals			
Private corporations and institutions			
Communities			
Other			
<b>TOTAL</b>	<b>3 292</b>	<b>3 008</b>	<b>2 866</b>

## 2.5 Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership		A decline in the total area is reported as some of the area under conservation was delimited for infrastructural development such as residential areas, roads, clinics, primary schools etc. (a total of 10 260 ha has been removed for this purpose).
Private ownership	.	
Other types of ownership	This category has been described as land under Tribal Administration which is governed by the Tribal Land Act.	
Management rights		

Other general comments to the table
All forests under public ownership are managed by the public administration.

### 3 Table T3 – Forest designation and management

#### 3.1 FRA 2010 Categories and definitions

Term	Definition
Primary designated function	The primary function or management objective assigned to a management unit either by legal prescription, documented decision of the landowner/manager, or evidence provided by documented studies of forest management practices and customary use.
Protected areas	Areas especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.
<b>Categories of primary designated functions</b>	
Production	Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.
Protection of soil and water	Forest area designated primarily for protection of soil and water.
Conservation of biodiversity	Forest area designated primarily for conservation of biological diversity. Includes but is not limited to areas designated for biodiversity conservation within the protected areas.
Social services	Forest area designated primarily for social services.
Multiple use	Forest area designated primarily for more than one purpose and where none of these alone is considered as the predominant designated function.
Other	Forest areas designated primarily for a function other than production, protection, conservation, social services or multiple use.
No / unknown	No or unknown designation.
<b>Special designation and management categories</b>	
Area of permanent forest estate (PFE)	Forest area that is designated to be retained as forest and may not be converted to other land use.
Forest area within protected areas	Forest area within formally established protected areas independently of the purpose for which the protected areas were established.
Forest area under sustainable forest management	To be defined and documented by the country.
Forest area with management plan	Forest area that has a long-term (ten years or more) documented management plan, aiming at defined management goals, which is periodically revised.

#### 3.2 National data

##### 3.2.1 Original data

Forests are now under multiple use in the form of consumptive use such as hunting, photographic safari, game drives to see wild animals, biological conservation and so on.



### 3.3 Data for Table T3

**Table 3a – Primary designated function**

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	420	0	0	0
Protection of soil and water	0	0	0	0
Conservation of biodiversity	0	0	0	0
Social services	0	0	0	0
Multiple use	13 298	12 535	11 943	11 351
Other (please specify in comments below the table)	0	0	0	0
No / unknown	0	0	0	0
<b>TOTAL</b>	<b>13 718</b>	<b>12 535</b>	<b>11 943</b>	<b>11 351</b>

**Table 3b – Special designation and management categories**

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	420	420	420	420
Forest area within protected areas	n/a	n/a	n/a	n/a
Forest area under sustainable forest management	n/a	n/a	n/a	n/a
Forest area with management plan	n/a	n/a	n/a	n/a

### 3.4 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production	The area under this category was restricted to Forest Reserves only (419 800 ha).	The area under this category fell to zero due to the suspension of all commercial timber harvesting activities in the northern part of the country.
Protection of soil and water		
Conservation of biodiversity		
Social services		
Multiple use	There is no production purpose since 1992 due to moratorium suspending roundwood trade in Botswana. Forests are now under multiple use in the form of consumptive use such as hunting, photographic safari, game drives to see wild animals, biological conservation and so on.	This area under this category is reported as not changing as data on the conversion of other land use to this category is not readily available at the moment.

Other		
No / unknown designation		
Area of permanent forest estate	This data includes areas under Forest Reserves.	
Forest area within protected areas	This includes areas under National Parks, Game Reserves, Sanctuaries etc.	No detailed data available
Forest area under sustainable forest management	This category has been classified to contain all areas under forest reserves and other protected areas such as National Parks, Game Reserves etc	No comprehensive data is available
Forest area with management plan	This category includes areas for Forest Reserves as most CBNRM projects have only started preparing management plans for areas under their jurisdiction	No comprehensive data is available. Information is limited to Chobe Forest, Management Plan of 1992

<b>Other general comments to the table</b>

## 4 Table T4 – Forest characteristics

### 4.1 FRA 2010 Categories and definitions

Term / category	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Introduced species	A species, subspecies or lower taxon, occurring <u>outside</u> its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans).
<b>Characteristics categories</b>	
Primary forest	Naturally regenerated forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Other naturally regenerated forest	Naturally regenerated forest where there are clearly visible indications of human activities.
Other naturally regenerated forest of introduced species ( <i>sub-category</i> )	Other naturally regenerated forest where the trees are predominantly of introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
Planted forest of introduced species ( <i>sub-category</i> )	Planted forest, where the planted/seeded trees are predominantly of introduced species.
<b>Special categories</b>	
Rubber plantations	Forest area with rubber tree plantations.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
Bamboo	Area of forest and other wooded land with predominant bamboo vegetation.

### 4.2 National data

#### 4.2.1 Original data

No comprehensive information about the primary forest. All forest area (including possible patches of primary forest) has been classified under “Other naturally regenerated forest” category.

### 4.3 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	0	0	0	0
Other naturally regenerated forest	13 718	12 535	11 943	11 351
...of which of introduced species				
Planted forest	0	0	0	0
...of which of introduced species	0	0	0	0
<b>TOTAL</b>	<b>13 718</b>	<b>12 535</b>	<b>11 943</b>	<b>11 351</b>

**Table 4b**

FRA 2010 Categories	Area (1000 hectares)			
	1990	2000	2005	2010
Rubber plantations (Forest)	0	0	0	0
Mangroves (Forest and OWL)	0	0	0	0
Bamboo (Forest and OWL)	0	0	0	0

**4.4 Comments to Table T4**

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest	No comprehensive information about the primary forest. All forest area (including possible patches of primary forest) has been classified under “Other naturally regenerated forest” category.	
Other naturally regenerating forest	See above	
Planted forest		
Rubber plantations	The country does not have this category of forests.	
Mangroves	The country does not have this category of forests.	
Bamboo	The country does not have this category of forests.	

Other general comments to the table

## 5 Table T5 – Forest establishment and reforestation

### 5.1 FRA 2010 Categories and definitions

Term	Definition
Afforestation	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not classified as forest.
Reforestation	Re-establishment of forest through planting and/or deliberate seeding on land classified as forest.
Natural expansion of forest	Expansion of forests through natural succession on land that, until then, was under another land use (e.g. forest succession on land previously used for agriculture).

### 5.2 National data

#### 5.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Department of Forestry & Range Resources, <b>Assessment of Community Woodlots in Botswana.</b>	M	- Costs and Revenue accrued from establishment of woodlots - Area planted	2003	This assessment was conducted to establish the viability of these community projects
Department of Forestry & Range Resources, <b>Mature Eucalyptus Government Plantations.</b>	M	- Assessment of production levels - Management options	2001	This assessment was conducted as a prerequisite to transforming these projects in viable entities.

#### 5.2.2 Original data

Estimation based on data from expert assessment of all Government plantation and community plantation. Area under introduced species is equal to annual forest establishment.

### 5.3 Data for Table T5

FRA 2010 Categories	Annual forest establishment (hectares/year)			...of which of introduced species <sup>1)</sup> (hectares/year)		
	1990	2000	2005	1990	2000	2005
Afforestation	270	50	n/a	270	50	n/a
Reforestation	n/a	n/a	n/a	n/a	n/a	n/a
...of which on areas previously planted	n/a	n/a	n/a	n/a	n/a	n/a
Natural expansion of forest	n/a	n/a	n/a	n/a	n/a	n/a

#### 5.4 Comments to Table T5

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Afforestation	Data for the proportion of land under afforestation is not available for the years 2005. The country has adopted the same definitions used by FAO. Government accounts for 62% of the afforestation initiatives while communities account for the remaining 38%.	Planting has been declining significantly to almost zero (November 2008) as most people have switch to indigenous tree planting which are mostly used for landscaping purposes as opposed to large scale planting.
Reforestation	Data for the proportion of land under Reforestation is not available for the years between 1990 and 2005. Currently there are no reforestation program(s) in the country.	
Natural expansion of forest	Data for the proportion of land under natural expansion of forest is not available for the years between 1990 and 2005.	

Other general comments to the table

## 6 Table T6 – Growing stock

### 6.1 FRA 2010 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees more than X cm in diameter at breast height (or above buttress if these are higher). Includes the stem from ground level or stump height up to a top diameter of Y cm, and may also include branches to a minimum diameter of W cm.
Growing stock of commercial species	Growing stock (see def. above) of commercial species.

### 6.2 National data

#### 6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
<b>Millington, A. , R. Critcheley, T. Douglas &amp; P Ryan</b> 1994. Estimating woody biomass in sub-saharan Africa. Washington, IBRD / World Bank	M	Woody biomass	1986	Primary Data source
<b>Millington A., J. Townsend</b> 1989, Biomass Assessment, Woody Biomass in the SADC Region.	M	Woody Biomass	1989	Primary Data Source

#### 6.2.2 Original data

Total woody biomass = 463.603 million tonnes. This refers to all land categories.

### 6.3 Analysis and processing of national data

#### 6.3.1 Estimation and forecasting

It is assumed that the woody biomass as presented by Millington mainly refers to forest and Other wooded land. It is further assumed that the data from 1986 is valid for 1990.

All calculations refer to Forest and Other wooded land together.

Total Growing stock 1990 (Forest and other wooded land together) = Total woody biomass / basic density  
Where basic density = 0.58

Growing stock 1990 (Forest and other wooded land together) (m<sup>3</sup>/ha) = Total Growing stock 1990 (Forest and other wooded land together) / (Area of forest + other wooded land) = 16.478 m<sup>3</sup>/ha

This is then applied to the areas in T1 to give values for 2000, 2005 and 2010 reporting years.

## 6.4 Data for Table T6

**Table 6a – Growing stock**

FRA 2010 category	Volume (million cubic meters over bark)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Total growing stock	799	780	770	760				
... of which coniferous	0	0	0	0				
... of which broadleaved	799	780	770	760				
Growing stock of commercial species	n/a	n/a	n/a	n/a				

Note: The figures refer to Forest and Other wooded land together.

**Table 6b – Growing stock of the 10 most common species**

FRA 2010 category / Species name			Growing stock in forest (million cubic meters)		
Rank	Scientific name	Common name	1990	2000	2005
1 <sup>st</sup>	n/a	n/a	n/a	n/a	n/a
2 <sup>nd</sup>	n/a	n/a	n/a	n/a	n/a
3 <sup>rd</sup>	n/a	n/a	n/a	n/a	n/a
4 <sup>th</sup>	n/a	n/a	n/a	n/a	n/a
5 <sup>th</sup>	n/a	n/a	n/a	n/a	n/a
6 <sup>th</sup>	n/a	n/a	n/a	n/a	n/a
7 <sup>th</sup>	n/a	n/a	n/a	n/a	n/a
8 <sup>th</sup>	n/a	n/a	n/a	n/a	n/a
9 <sup>th</sup>	n/a	n/a	n/a	n/a	n/a
10 <sup>th</sup>	n/a	n/a	n/a	n/a	n/a
Remaining			n/a	n/a	n/a
<b>TOTAL</b>			n/a	n/a	n/a

Note: Rank refers to the order of importance in terms of growing stock, i.e. 1<sup>st</sup> is the species with the highest growing stock. Year 2000 is the reference year for defining the species list and the order of the species.

**Table 6c – Specification of threshold values**

Item	Value	Complementary information
Minimum diameter (cm) at breast height <sup>1</sup> of trees included in growing stock (X)	n/a	n/a
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	n/a	n/a
Minimum diameter (cm) of branches included in growing stock (W)	n/a	n/a
Volume refers to “above ground” (AG) or “above stump” (AS)	n/a	n/a

<sup>1</sup> Diameter at breast height (DBH) refers to diameter over bark measured at a height of 1.30 m above ground level or 30 cm above buttresses if these are higher than 1 m.



## 6.5 Comments to Table T6

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total growing stock	The above estimates refer to the combined area of forests and other wooded land.	
Growing stock of broadleaved / coniferous		
Growing stock of commercial species		
Growing stock composition		

Other general comments to the table

## 7 Table T7 – Biomass stock

### 7.1 FRA 2010 Categories and definitions

Category	Definition
Above-ground biomass	All living biomass above the soil including stem, stump, branches, bark, seeds, and foliage.
Below-ground biomass	All biomass of live roots. Fine roots of less than 2mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter.
Dead wood	All non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.

### 7.2 National data

#### 7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Millington A., J. Townsend 1989, Biomass Assessment, Woody Biomass in the SADC Region.	M	Woody Biomass	1989	Primary Data Source

#### 7.2.2 Original data

Total woody biomass ('000 tonnes) = 463 603

### 7.3 Analysis and processing of national data

#### 7.3.1 Estimation and forecasting

All calculations refer to Forest and Other wooded land together.

It is assumed that the biomass of 1986 is the same in 1990. Furthermore, the total woody biomass is assumed to refer to stem biomass. The following conversion factors are then used:

	Forest	OWL
Biomass expansion factor	2.00	2.00

This gives the following estimates

Above-ground biomass (1000 tons)	927 206
Area of Forest+OWL 1990 (1000 ha)	48 509
Above-ground biomass (tons/ha)	19.1

Below-ground biomass is estimated by multiplying the Above-ground biomass by the Root-shoot ratio (0.56)

Below-ground biomass (1000 tons)	519 235
Below-ground biomass (tons/ha)	10.69

The biomass/ hectare values are then applied to the forest and other wooded land area values in table T1 to get the biomass for the reporting years.

Year	<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>
Total Forest and OWL area (1000 ha)	48 509	47 326	46 734	46 142

FRA 2010 category	Biomass (million metric tonnes oven-dry weight)			
	Forest			
	1990	2000	2005	2010
Above-ground biomass	927	904	893	881
Below-ground biomass	519	506	500	493

Note: The figures refer to Forest and Other wooded land together.

#### 7.4 Data for Table T7

FRA 2010 category	Biomass (million metric tonnes oven-dry weight)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Above-ground biomass	927	904	893	881				
Below-ground biomass	519	506	500	493				
Dead wood	n/a	n/a	n/a	n/a				
<b>TOTAL</b>	n/a	n/a	n/a	n/a				

Note: The figures refer to Forest and Other wooded land together.

#### 7.5 Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass	Above –ground biomass is calculated for both forest area and other woodland combined together.	
Below-ground biomass	Existing data did not include this component as the study used satellite data and ground data to derive biomass data without any root assessments to determine below-ground biomass.	No baseline data available
Dead wood	Except for a few localized studies, there is no data on the biomass of dead wood nationally.	No baseline data available

Other general comments to the table
The figures quote include for both forest area and other woodland areas combined.

## 8 Table T8 – Carbon stock

### 8.1 FRA 2010 Categories and definitions

Category	Definition
Carbon in above-ground biomass	Carbon in all living biomass above the soil, including stem, stump, branches, bark, seeds, and foliage.
Carbon in below-ground biomass	Carbon in all biomass of live roots. Fine roots of less than 2 mm diameter are excluded, because these often cannot be distinguished empirically from soil organic matter or litter.
Carbon in dead wood	Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.
Carbon in litter	Carbon in all non-living biomass with a diameter less than the minimum diameter for dead wood (e.g. 10 cm), lying dead in various states of decomposition above the mineral or organic soil.
Soil carbon	Organic carbon in mineral and organic soils (including peat) to a specified depth chosen by the country and applied consistently through the time series.

### 8.2 Analysis and processing of national data

#### 8.2.1 Estimation and forecasting

A/- Based on the results of table 7 (Biomass), the assumption of Carbon stock could be estimated using the standard factor of 0.47

B/- Carbon in the litter has been estimated, based on the standard factor of 2.8 (subtropical) and  
 - Soil carbon has been estimated, based on the factor of 31(Using 2006 IPCC Guidelines as the country has a tropical dry climate and 61% of the soils are sandy)

The biomass/ hectare values are then applied to the forest and other wooded land area values in table T1 to get the biomass for the reporting years.

Year	1990	2000	2005	2010
Total Forest and OWL area (1000 ha)	48 509	47 326	46 734	46 142
Carbon in the litter (1000 t. C)	101 869	99 385	98 141	96 898
Soil carbon (1000 t. C)	1 503 779	1 467 106	1 448 754	1 430 402

### 8.3 Data for Table T8

FRA 2010 Category	Carbon (Million metric tonnes)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Carbon in above-ground biomass	436	425	420	414				
Carbon in below-ground biomass	244	238	235	232				
<b>Sub-total: Living biomass</b>	<b>680</b>	<b>663</b>	<b>655</b>	<b>646</b>				
Carbon in dead wood	n/a	n/a	n/a	n/a				
Carbon in litter	102	99	98	97				
<b>Sub-total: Dead wood and litter</b>	n/a	n/a	n/a	n/a				
Soil carbon	1 504	1 467	1 449	1 430				
<b>TOTAL</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>				

Note: The figures refer to Forest and Other wooded land together.

Soil depth (cm) used for soil carbon estimates	30
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### 8.4 Comments to Table T8

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Carbon in above-ground biomass		
Carbon in below-ground biomass		
Carbon in dead wood		
Carbon in litter		
Soil carbon		

Other general comments to the table

## 9 Table T9 – Forest fires

### 9.1 FRA 2010 Categories and definitions

Category	Definition
Number of fires	Average number of vegetation fires per year in the country.
Area affected by fire	Average area affected by vegetation fires per year in the country.
Vegetation fire (supplementary term)	Any vegetation fire regardless of ignition source, damage or benefit.
Wildfire	Any <u>unplanned and uncontrolled</u> vegetation fire that, regardless of ignition source, may require suppression response, or other action according to agency policy.
Planned fire	A <u>management-ignited</u> vegetation fire that burns within prescription, i.e. the fire is confined to a predetermined area and produces the fire behaviour and fire characteristics required to attain planned fire treatment and/or resource management objectives.

### 9.2 National data

#### 9.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
MODIS active fire data set, University of Maryland (US)	H		2002-2008	MODIS active fire events counts
MODIS 250 satellite images, 7,2,1 onscreen GIS delineation of burned area by DFRR.	H		2006-2008	Burned Area measurements
DFRR Fire Reports	H		2006-2008	Number of actual fires fought on the ground
Weare, P.R.; Yalala A. 1971 “Revised vegetation map of Botswana”, Botswana Notes and Records 3: 131 - 147	M		60’s/70’s	National land cover map available

#### 9.2.2 Classification and definitions

National class	Definition
Forest	Forest is defined according to Weare, P.R.; Yalala, A. 1971 as “dry deciduous forest” and “riparian forest”
Woodland	Other woodland is defined according to Weare, P.R.; Yalala, A. 1971 as “Tree savanna”, “Tree savannah with Mopane” and “Close Tree savannah on rocky hills”
Other land	Other land is defined according to Weare, P.R.; Yalala, A. 1971 as “Aquatic grassland” and unknown.

### 9.2.3 Original data

FRA 2010 category	Average 2006-2008		Annual					
			2006		2007		2008	
	1000 hectares	Number of fires	1000 hectares	number of fires	1000 hectares	number of fires	1000 hectares	number of fires
Total land area affected by fire	8 279	104	6 236	81	6 811	84	11 791	148
... of which on forest	399	n.a	446	n.a.	217	n.a	534	n.a.
... of which on other wooded land	5 105	n.a	4 382	n.a	4 664	n.a	6 271	n.a
... of which on other land	2 775	n.a	1 408	n.a	1 930	n.a	4 986	n.a

Note: Fire statistics based on Remote Sensing and GIS are available from 2006 onwards

Note: Forest is defined according to *Weare, P.R.; Yalala, A. 1971* as “dry deciduous forest’ and “riparian forest”

Note: other woodland is defined according to *Weare, P.R.; Yalala, A. 1971* as “Tree savanna”, tree savannah with *Mopane*” and *Closed tree savanna on rocky hills*”.

Note: other land is defined as aquatic grassland, unknown

n.a. not applicable

### 9.3 Data for Table T9

Table 9a

FRA 2010 category	Annual average for 5-year period					
	1990		2000		2005	
	1000 hectares	number of fires	1000 hectares	number of fires	1000 hectares	number of fires
Total land area affected by fire	n/a	n/a	n/a	n/a	8 279	104
... of which on forest	n/a	n/a	n/a	n/a	399	n/a
... of which on other wooded land	n/a	n/a	n/a	n/a	5 105	n/a
... of which on other land	n/a	n/a	n/a	n/a	2 775	n/a

Note: The figures for the 2005 refer to the averages for the 3-year periods 2006-2008.

Table 9b

FRA 2010 category	Proportion of forest area affected by fire (%)		
	1990	2000	2005
Wildfire	n/a	n/a	n/a
Planned fire	n/a	n/a	n/a

#### 9.4 Comments to Table T9

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Area affected by fire	The burned areas are derived by means of Remote Sensing (daily 250m resolution MODIS images, band combination 7,2,1 ) and GIS	
Number of fires	A fire (and its respective scar) is considered as one single fire per single ignition point and report regardless of its size and spread and flanks burning. If two burning fires join into one fire it will be regarded as one fire and named after the first reported	
Wildfire / planned fire	Though there are planned fires carried out, there is no record on where and how much area had planned fires.	

<b>Other general comments to the table</b>
The country never have any comprehensive records on the area burnt and number of fires prior to 2006 when a fully fledged GIS and Remote Sensing laboratory was established. This facility has increased the Department's ability to detect and analyze fire data.



## **10 Table T10 – Other disturbances affecting forest health and vitality**

Data is not available for this table.

## 11 Table T11 – Wood removals and value of removals

### 11.1 FRA 2010 Categories and definitions

Category	Definition
Industrial roundwood removals	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel).
Woodfuel removals	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

### 11.2 National data

#### 11.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FAO Stat	M	Roundwood and Woodfuel	1988-1991 1988 -2007	

#### 11.2.2 Original data

At the moment there are no industrial roundwood removals as the Moratorium suspending the use of forests for production purposes has been in effect since 1992.

FAO Stat, roundwood

Year	1988	1989	1990	1991	1992
Vol m3 u.b.	79 000	81 000	84 000	87 000	0
Vol m3 u.b.	Average 1990 : 66 200				
Vol m3 o.b.	Average 1990 : 76 130				

FAO Stat, woodfuel

Year	1988	1989	1990	1991	1992
Vol m3 u.b.	611 014	603 736	603 128	602 131	602 829
Vol m3 u.b.	Average 1990 : 604 568				
Vol m3 o.b.	Average 1990 : 695 253				

Year	1998	1999	2000	2001	2002
Vol m3 u.b.	627 897	630 891	635 448	639 809	644 515
Vol m3 u.b.	Average 2000: 635 712				
Vol m3 o.b.	Average 2000 : 731 069				

Year	2003	2004	2005	2006	2007
Vol m3 u.b.	649570	654980	660750	665032	669000
Vol m3 u.b.	Average 2005 : 659 866				
Vol m3 o.b.	Average 2005 :758 846				

### 11.3 Data for Table T11

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990	2000	2005	1990	2000	2005
Total volume (1000 m <sup>3</sup> o.b.)	76	n/a	n/a	695	731	759
... of which from forest	76	0	0	695	731	759
Unit value (local currency / m <sup>3</sup> o.b.)	n/a	n/a	n/a	n/a	n/a	70
Total value (1000 local currency)	n/a	n/a	n/a	n/a	n/a	53 130

	1990	2000	2005
Name of local currency	Botswana Pula	Botswana Pula	Botswana Pula

### 11.4 Comments to Table T11

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total volume of industrial roundwood removals	Commercial timber harvesting has since been suspended in the country between 1991 and 1992. This moratorium is still in place to-date.	
Total volume of woodfuel removals	No data currently available except for ad hoc studies that were location specific. FAO Stats adopts for this report.	
Unit value	Average price for woodfuel is P 70.00 per half tonne as derived from data wood harvesters.	
Total value		

Other general comments to the table

## **12 Table T12 – Non-wood forest products removals and value of removals**

Data is not available for this table.

## **13 Table T13 – Employment**

Data is not available for this table.

## 14 Table T14 – Policy and legal framework

### 14.1 FRA 2010 Categories and definitions

Term	Definition
Forest policy	Forest policy is the set of orientations and principles of actions adopted by public authorities in harmony with national socio-economic and environmental policies in a given country to guide future decisions in relation to the management, use and conservation of forest and tree resources for the benefit of the society.
Forest law	Set of rules enacted by the legislative authority of a country regulating the access, management, conservation and use of forest resources.

### 14.2 Data for Table T14

Indicate the existence of the following (2008)			
<b>1. Forest policy statement with national scope</b>		Yes	
	<input checked="" type="checkbox"/>	No	
If Yes above, provide:	Year of endorsement		
	Reference to document		
<b>2. National forest programme (nfp)</b>		Yes	
	<input checked="" type="checkbox"/>	No	
If Yes above, provide:	Name of nfp in country		
	Starting year		
	Current status	<input type="checkbox"/>	In formulation
		<input type="checkbox"/>	In implementation
		<input type="checkbox"/>	Under revision
		<input type="checkbox"/>	Process temporarily suspended
Reference to document or web site			
<b>3. Law (Act or Code) on forest with national scope</b>	<input checked="" type="checkbox"/>	Yes, specific forest law exists	
	<input type="checkbox"/>	Yes, but rules on forests are incorporated in other (broader) legislation	
	<input type="checkbox"/>	No, forest issues are not regulated by national legislation	
If Yes above, provide:	Year of enactment	20 <sup>th</sup> March 1968	
	Year of latest amendment	March 2005	
	Reference to document	www1.mewt.gov.bw (See general comment below)	

In case the responsibility for forest policy- and/or forest law-making is decentralized, please indicate the existence of the following and explain in the comments below the table how the responsibility for forest policy- and law-making is organized in your country.		
<b>4. Sub-national forest policy statements</b>		Yes
	X	No
If Yes above, indicate the number of regions/states/provinces with forest policy statements		
<b>5. Sub-national Laws (Acts or Codes) on forest</b>		Yes
	X	No
If Yes above, indicate the number of regions/states/provinces with Laws on forests		

**Explanatory notes to the reporting table:**

1. The national forest policy document or statement describes the objectives, priorities and means for implementation of the forest policy. It is endorsed when it is officially recognised as a government policy or instruction. The endorsement is formalised by the Minister in charge of forests by a dated and signed document.
2. The term “national forest programme” is a generic expression referring to a wide range of approaches towards forest policy formulation, planning and implementation at national and sub-national levels and providing a framework and guidance for country-driven forest sector development in consultation and participation of all stakeholders and in consistence with policies of other sectors and international policies.
3. The term “law on forest” refers to a Law (Act or Code) providing specific rules on forests and forest sector management, such as access, management and use of forest resources. The Law is enacted when the legislative authority adopted its text.
4. Same as (1) but the policy documents or statements refer to sub-national administrative units, e.g. States in a Federation or Autonomous Regions or Provinces.
5. Same as (3) but indicate if specific Laws on forests exist at sub-national level (at the level of regions/states/provinces).

### 14.3 Comments to Table T14

Variable / category	Comments related to data, definitions, etc.
Forest policy statement with national scope	The National Forestry Policy is still in Draft form and awaiting approval by the Legislative house.
National forest programme (nfp)	Currently the National Forest Programme is not available but there are plans to develop one as the National forest Policy as soon as it has been approved by Parliament.
Law (Act or Code) on forest with national scope	Currently, the law is only applicable in protected areas but requires the consent of the land authorities or land owners outside protected areas. The current Act is being reviewed to among others, broaden the scope of its applicability nationally, to cater for emerging economic and environmental challenges, for proper implementation of the new policy as it will provide its legal back up
Sub-national forest policy statements	Currently we are using a National Forest Policy because we are a unitary State (as opposed to Federal State which can have Sub-national forest policy/laws/regulations etc at provincial state, district arrangements)
Sub-national Laws (Acts or Codes) on forest	Currently we are using a National Forest Policy because we are a unitary State (as opposed to Federal State which can have Sub-national forest policy/laws/regulations etc at provincial state, district arrangements)

#### Other general comments to the table

Please note that the website address is currently not available as it is not yet launched as it can only be viewed within Government Data Network only but plans are at an advanced stage to launch it soon.

## 15 Table T15 – Institutional framework

### 15.1 FRA 2010 Categories and definitions

Term	Definition
Minister responsible for forest policy-making	Minister holding the main responsibility for forest issues and the formulation of the forest policy.
Head of Forestry	The Head of Forestry is the Government Officer responsible for implementing the mandate of the public administration related to forests.
Level of subordination	Number of administrative levels between the Head of Forestry and the Minister.
University degree	Qualification provided by University after a minimum of 3 years of post secondary education.

### 15.2 Data for Table T15

Table 15a

FRA 2010 Category	2008
Minister responsible for forest policy formulation : please provide full title	Minister of Environment, Wildlife and Tourism
Level of subordination of Head of Forestry within the Ministry	1 <sup>st</sup> level subordination to Minister
	2 <sup>nd</sup> level subordination to Minister
	X 3 <sup>rd</sup> level subordination to Minister
	4 <sup>th</sup> or lower level subordination to Minister
Other public forest agencies at national level	Botswana College of Agriculture University of Botswana
Institution(s) responsible for forest law enforcement	- Department of Forestry & Range Resources - Botswana Police Services - Botswana Unified Revenue Services - Department of Agricultural Research

Table 15b

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	n/a	n/a	637	21% (135)	629	22% (140)
...of which with university degree or equivalent	n/a	n/a	42	14 % (6)	45	20% (9)

Note: Excludes people employed in State-owned enterprises, education and research, as well as temporary / seasonal workers.



### 15.3 Comments to Table T15

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Minister responsible for forest policy formulation		
Level of subordination of Head of Forestry within the Ministry	In terms of the levels of subordination, there are two officers between the Director i.e. The Permanent Secretary and the Deputy Permanent Secretary.	
Other public forest agencies at national level	Botswana College of Agriculture provide training on forestry aspects at Diploma level but there are plans to introduce a BSc (Forest & Range) in the near future.	
Institution(s) responsible for forest law enforcement	Botswana Police Service helps in prosecution of all cases that relating to forest offences whereby they are given powers under the current legislation to confiscate forest produce illegally, search and arrest guilty individual for difference offence and so on.	
Human resources within public forest institutions	<p>The majority of the Departmental staff is mostly Industrial Class employees (77%) who are either Primary School or High School Certificate holders. The remainder is composed of certificate holders to a PhD holder. The breakdown is as follows:</p> <p>PhD = 1  MSc = 13  BSc = 31  Diploma = 46  Certificate = 57</p>	There is a slight decline in the staff complement in 2008 as some of the posts have fallen vacant and some of these have been converted to more senior posts to recruit qualified personnel.

#### Other general comments to the table

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## 16 Table T16 – Education and research

### 16.1 FRA 2010 Categories and definitions

Term	Definition
Annual graduation of students	Number of students that have successfully completed a Bachelor's or higher degree in forest science or achieved a certificate or diploma as forest technician.
Doctor's degree (PhD)	University (or equivalent) education with a total duration of about 8 years.
Master's degree (MSc) or equivalent	University (or equivalent) education with a total duration of about five years.
Bachelor's degree (BSc) or equivalent	University (or equivalent) education with a duration of about three years.
Technician certificate or diploma	Qualification issued from a technical education institution consisting of 1 to 3 years post secondary education.
Publicly funded forest research centers	Research centers implementing research programmes on forest matters. Funding is public or channelled through public institutions.

### 16.2 Data for Table T16

FRA 2010 Category	Annual graduation of students within the country					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Master's degree in Forest Science	0	0	0	0	0	0
Bachelor's degree in Forest Science	0	0	0	0	0	0
Forest technician certificate / diploma	0	0	0	0	0	0
FRA 2010 Category	Professionals working in public forest research centres					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Doctor's degree (PhD)	0	0	0	0	0	0
Master's degree (MSc) or equivalent	0	0	0	0	0	0
Bachelor's degree (BSc) or equivalent	0	0	0	0	0	0

### 16.3 Comments to Table T16

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Annual graduation of students within the country	The country does not have a fully fledged training institute for forest science. Training from Diploma to Doctoral level is currently being done externally.	
Professionals working in public forest research centres	There is no formal Forest Research Centre in the country except for the Department of Agricultural Research whose main mandate is carry research on arable crops and livestock with little emphasis on forest aspects.	
Other general comments to the table		

## 17 Table T17 – Public revenue collection and expenditure

### 17.1 FRA 2010 Categories and definitions

Category	Definition
Forest revenue	All government revenue collected from the domestic production and trade of forest products and services. For this purpose, forest products include: roundwood; sawnwood; wood-based panels; pulp and paper; and non-wood forest products. As far as possible, this should include revenue collected by all levels of government (i.e. central, regional/provincial and municipal level), but it should exclude the income of publicly owned business entities.
Public expenditure	All government expenditure on forest related activities (further defined below).
Operational expenditure (sub-category to Public expenditure)	All government expenditure on public institutions solely engaged in the forest sector. Where the forest administration is part of a larger public agency (e.g. department or ministry), this should only include the forest sector component of the agency's total expenditure. As far as possible, this should also include other institutions (e.g. in research, training and marketing) solely engaged in the forest sector, but it should exclude the expenditure of publicly owned business entities.
Transfer payments (sub-category to Public expenditure)	All government expenditure on direct financial incentives paid to non-government and private-sector institutions, enterprises communities or individuals operating in the forest sector to implement forest related activities.
Domestic funding	Public expenditure funded from domestic public financial resources, including: retained forest revenue; forest-related funds; and allocations from the national budget (i.e. from non-forest sector public revenue sources).
External funding	Public expenditure funded from grants and loans from donors, non-governmental organisations, international lending agencies and international organisations, where such funds are channelled through national public institutions.

### 17.2 National data

#### 17.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Government Accounting & Budgeting System (GABS)	H	Budget allocations for both recurrent and development	2006	The system captures all financial details regarding approved estimates, warranted provisions, and actual expenditure for all line items in the operational expenditure for a given financial year.

#### 17.2.2 Classification and definitions

National class	Definition
Recurrent budget	Public expenditure is funded from domestic public financial resources and usually these funds are allocated on an annual basis to cover all operational expenses of the department.
Development budget	These are funds allocated for the implementation of a specific project in a given year. These projects normally have a project memorandum detailing project activities and expenditures.

### 17.2.3 Original data

FRA 2010 Categories	Revenues (1000 local currency)	
	2008	2009
Forest revenue	569.557	593.316

FRA 2010 Categories	Domestic funding (1000 local currency)		External funding (1000 local currency)		Total (1000 local currency)	
	2008	2009	2008	2009	2008	2009
Operational expenditure	60 261.798	62 464.894	0	0	60 261.798	62 464.894
Transfer payments	0	0	0	0	0	0
<b>Total public expenditure</b>	60 261.798	62 464.894	0	0	60 261.798	62 464.894

### 17.3 Data for Table T17

Table 17a - Forest revenues

FRA 2010 Categories	Revenues (1000 local currency)	
	2000	2005*
Forest revenue	n/a	569.557

\*Note: Information of 2008 to be used for 2005.

Table 17b - Public expenditure in forest sector by funding source

FRA 2010 Categories	Domestic funding (1000 local currency)		External funding (1000 local currency)		Total (1000 local currency)	
	2000	2005	2000	2005	2000	2005
Operational expenditure	n/a		n/a		n/a	
Transfer payments	n/a		n/a		n/a	
<b>Total public expenditure</b>	n/a		n/a		n/a	
If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.	<input type="checkbox"/>	Reforestation				
	<input type="checkbox"/>	Afforestation				
	<input type="checkbox"/>	Forest inventory and/or planning				
	<input type="checkbox"/>	Conservation of forest biodiversity				
	<input type="checkbox"/>	Protection of soil and water				
	<input type="checkbox"/>	Forest stand improvement				
	<input type="checkbox"/>	Establishment or maintenance of protected areas				
	<input type="checkbox"/>	Other, specify below				

Note: Information of 2008 to be used for 2005.

**17.4 Comments to Table T17**

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest revenue	<p>The conclusive data on forest revenue is only available for reported periods stated as proper records have been kept since the introduction of GABS in 2006. Unfortunately the system retains records for only 2 years. Revenue data includes forest nursery sales, sales of tenders and non-wood forest products permit sales.</p> <p>Note: Information of 2008 be used for 2005.</p>	
Operational expenditure	<p>The conclusive data on forest revenue is only available for reported periods stated as proper records have been kept since the introduction of GABS in 2006. Unfortunately the system retains records for only 2 years. Operational expenditure includes funds for staff field travel claims (subsistence allowance), Indigenous woodland management, nursery upgrading etc.</p> <p>Note: Information of 2008 be used for 2005.</p>	
Transfer payments	<p>The Department currently does not have an arrangement for direct financial incentives paid to non-government and private-sector institutions, enterprises, communities or individuals</p>	

**Other general comments to the table**

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