

# GLOBAL FOREST RESOURCES ASSESSMENT 2015

## COUNTRY REPORT

# **Malawi**

Rome, 2014

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Global Forest Resources Assessment (FRA). This country report is prepared as a contribution to the FAO publication, the Global Forest Resources Assessment 2015 (FRA 2015).

The content and the structure are in accordance with the recommendations and guidelines given by FAO in the document Guide for country reporting for FRA 2015 (<http://www.fao.org/3/a-au190e.pdf>). These reports were submitted to FAO as official government documents.

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### Introductory Text

Place an introductory text on the content of this report

<p>The forest resources in Malawi seem to be declining steadily. The reasons for the decline are attributed to agriculture expansion, dependence on wood fuel for energy, high population growth and high levels of poverty. Although efforts are being made to replace the exploited forest resources through tree planting supported by both government and donors, the gap still remains big between the harvested areas and the area rehabilitated.</p> <p>Fires remain one of the biggest problems that affects management of both natural woodlands and industrial softwood plantations as well as fuelwood and poles plantation.</p> <p>The extrapolated and deduced figures in the report might not give a true picture of what is happening on the ground since the last Forest resources Mapping and Biomass Assessment for Malawi was done in 1990. Since then all FRAs have been relying on extrapolations, deductions and forecasts. The government strongly feels that it is high time to undertake, with an external support, another study that will assist it properly plan and manage the resources.</p>
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### Desk Study?

Check "yes" if this survey is a Desk Study, "no" otherwise	
Desk Study?	no

## 1. What is the area of forest and other wooded land and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 1.1 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 in situ. 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 ; 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".
...of which with tree cover ( <i>sub-category</i> )	Land considered as "Other land", that is predominantly agricultural or urban lands use and has patches of tree cover that span 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. It includes bothe forest and non-forest tree species.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.
Forest expansion	Expansion of forest on land that, until then, was not defined as forest.
...of which afforestation ( <i>sub-category</i> )	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not defined as forest.
...of which natural expansion of forest ( <i>sub- category</i> )	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).
Deforestation	The conversion of forest to other land use or the longterm reduction of the tree canopy cover below the minimum 10 percent threshold.
...of which human induced ( <i>sub-category</i> )	Human induced conversion of forest to other land use or the permanent reduction of the tree canopy cover below the minimum 10 percent threshold.
Reforestation	Natural regeneration or re-establishment of forest through planting and/or deliberate seeding on land already in forest land use.
...of which artificial reforestation ( <i>sub- category</i> )	Re-establishment of forest through planting and/or deliberate seeding on land already in forest land use.

### 1.2 National data

#### 1.2.1 Data sources

References to sources of information	Variables	Years	Additional comments
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1	Department of Forestry, Ministry of Forestry and Natural Resources. 1993. Forest Resources Mapping and Biomass Assessment for Malawi . Implementing agency: Satellitbild	Growing Stock	1973 1991 1993	N/A
2	Department of Forestry, Tree Planting Returns	Seedlings	2000-2008	N/A
3	Department of Forestry, Ministry of Environment and climate Change Management 2012, Forest Resource Mapping Project under The Japanese Grant for Forest Preservation Programme	Growing Stock	2012	N/A
4	Atlas of Malawi: Land cover and land cover change 1990 - 2010 by FAO. Government of Malawi and the Norwegian Embassy 2013	N/A	2013	N/A

### 1.2.2 Classification and definitions

National class	Definition
B	Built-up area. Urban areas around major cities, but also large infrastructural areas such as airports.
Ef	Agriculture in forest area Extensive agriculture (20-70% cultivated land). Forest is the natural vegetation in this class, broken frequently, however, by patches of cultivation, often smallholdings.
Eg	Agriculture in mainly grass area Extensive agriculture (20-70% cultivated land) Found only in the southernmost part of the country, in flood-prone areas around Elephant Marsh in the Shire river valley.
Fbf	Brachyteria in flat area. Forest, less than 20% open land. Non-evergreen forest with brachystegia as main species.
Fbh	Brachyteria in hilly area. Forest, less than 20% open land. Non-evergreen forest with brachystegia as main species.
Fe	Evergreen forest. Forest, less than 20% open land. Defined by property of having green leaves throughout the whole year, even during the dry seasons. The distribution of species is significantly different from that in brachystegia forest. Occurs in areas with high and evenly distributed rainfall, mainly at high altitude such as Mt. Mulanje, Nyika and Viphya. Often found near Brachystegia forest in hilly areas, but also common in open natural vegetation grass areas on high altitudes, giving a mottled pattern in the satellite imagery.
F1	Logged forest. Logged areas are normally smaller than 100 hectares, and these were therefore not mapped.

Fpe	Eucalyptus plantation. Forest, less than 20% open land. Plantations usually protected, owned and managed by government, but can also have private owners. The interpretation was concentrated on plantations larger than the smallest mapping unit 100 hectares. Numerous other private plantations within agricultural areas were too small to be mapped.
Fpg	Gmelina plantation. Found in the Lilongwe district only. Forest, less than 20% open land. Plantations usually protected, owned and managed by government, but can also have private owners. The interpretation was concentrated on plantations larger than the smallest mapping unit 100 hectares. Numerous other private plantations within agricultural areas were too small to be mapped.
Fpp	Pine plantation. Widely spread all over the country, mainly on high altitudes. Local knowledge of the locations of pine plantations proved important. Forest, less than 20% open land. Plantations usually protected, owned and managed by government, but can also have private owners. The interpretation was concentrated on plantations larger than the smallest mapping unit 100 hectares. Numerous other private plantations within agricultural areas were too small to be mapped.
Fpr	Rubber plantation. Relatively new plantation species. Found in the Nkhatabay district only. Forest, less than 20% open land. Plantations usually protected, owned and managed by government, but can also have private owners. The interpretation was concentrated on plantations larger than the smallest mapping unit 100 hectares. Numerous other private plantations within agricultural areas were too small to be mapped.
Fpt	Tung plantation. Found in areas around Mzuzu only. The extent of tung plantations has decreased during the last 20 years, remaining ones often existing side by side with other tree plantations. Accordingly, mapping units are complexes with tung plantations as predominant land cover. Forest, less than 20% open land. Plantations usually protected, owned and managed by government, but can also have private owners. The interpretation was concentrated on plantations larger than the smallest mapping unit 100 hectares. Numerous other private plantations within agricultural areas were too small to be mapped.
Ia	Arable land Intensive agriculture (more than 70% cultivated land) Dominates South and Central regions. Contains smallholder cultivation as well as plantations smaller than 100 hectares. Crop can be maize, ground nuts, cassava, cashew nuts, cotton ect. Small scattered forest patches and single trees occur.
Ipc	Coffee/Tea/Macademia Intensive agriculture plantations, larger than 100 hectares (more than 70% of total land area is cultivated land) Found in the Nkhatabay district, but mainly in the south of Malawi in large estates in the Thyolo and Mulanje districts. Larger field structure than in Arable land (Ia).
Ipl	Leucaena Intensive agriculture plantations, larger than 100 hectares (more than 70% of total land area is cultivated land). A shrub grown for agroforestry purposes. Found in the Machinga and Chikwawa districts only.

Ips	Sugar Intensive agriculture plantations, larger than 100 hectares (more than 70% of total land area is cultivated land). Large estates with characteristic field patterns in the Nkhotakota and Chikwawa districts
Ipt	Tobacco/Maize Intensive agriculture plantations, larger than 100 hectares (more than 70% of total land area is cultivated land). Small and large estates spread all over Malawi with a concentration on the Central region. Rotation cropping tobacco-maize. Large estates usually located in flat areas of existing or former <i>Brachystegia</i> forests. Often a characteristic pattern with long narrow strips, but irregular rectangular fields can also occur.
Ir	Rice scheme Intensive agriculture plantations, larger than 100 hectares (more than 70% of total land area is cultivated land). Irrigated paddy rice cultivation found in the Karonga district only. Identifiable by its shape of irrigated area in the dry surroundings.
M	Marshy area or swamp Found in all three regions. Waterlogged areas, usually with grass vegetation and often partly cultivated.
Nb	Bare rock Non-vegetated land. Small class, usually granite rock outcrops, occurring in all three regions.
Nr	River bed or beach Non-vegetated land. Small class, small narrow areas along lakes, beaches and rivers. Only in Nkhotakota and Salima districts were the beaches large enough to be mapped.
Od	Dambo (often cultivated) Areas along natural drainage patterns in flat and undulating areas. Dambos can be considered as riverbeds of intermittent rivers, prone to flooding during wet seasons and therefore uninhabited. The ground cover is grass, often used for grazing. Soil and moisture conditions make parts of the dambos favorable for cultivation in many cases, which is reflected in images by agricultural patterns. Open natural vegetation: contains more than 20% open land and less than 20% of its total area is under cultivation.
Og	Grass Found at high altitudes on mountain ridges and plateaus, in all three regions of Malawi. Open natural vegetation: contains more than 20% open land and less than 20% of its total area is under cultivation.
Os	Savanna Natural grassland with scattered trees. Found only in flat areas along the southwestern shores of Lake Malawi. Characterized by the lack of agricultural pattern in non-forested flat areas. Open natural vegetation: contains more than 20% open land and less than 20% of its total area is under cultivation.
Unclassed	Null
W	Water surface. Lakes and wide rivers.

### 1.2.3 Original data

<b>Forest area</b>
--------------------



National class	Original data (1000 ha)	
	1973	1991
B		22
Ef		2 433
Eg		235
Fbh	2 400	1 686
Fbf	1 913	733
Fe	88	83
Fl	-	5
Fpe	5	24
Fpg	1	1
Fpp	42	107
Fpr	-	3
Fpt	4	2
Ia		2 783
Ipc		44
Ipl		7
Ips		21
Ipt		244
Ir		7
M		177
Nb		16
Nr		0
Od		415
Og		311
Os		39

Unclassed	4 948	2
<b>TotalLandArea</b>	<b>9 399</b>	<b>9 399</b>
W	2 423	2 423
<b>Total</b>	<b>11 822</b>	<b>11 822</b>

### Forest expansion, reforestation

Original information is based on expert knowledge and internal forestry records on tree planting and plantation management.

## 1.3 Analysis and processing of national data

### 1.3.1 Adjustment

Note to 1.3

### Forest expansion, reforestation

Based on expert knowledge and internal communication (Department of Forestry, Tree Planting Returns), it is assumed the following:

In the 2000, the average area for planted forests per year had been 18 000 ha.

Then in 2005, the average area for planted forests per year had reached 22 000 ha.

With a survival rate et 85 %

Annual forest establishment is, in 2000 : 15 300 ha, and in 2005: 18 700 ha.

Mainly planted species are exotic

### Forest area

FAOSTAT	Area ('000 ha)	Calibr. Factor
Land Area	9 408	1.0009398
Total Country Area	11 848	
Inland Water	2 440	
	Country area according to data source ('000 ha)	11 821.9

After adjustment, we get:					
	<b>Calibrated Area (in 1000 ha)</b>				
<b>National class</b>	<b>1973</b>		<b>1991</b>		
B	-		22		
Ef	-		2 435		
Eg	-		236		
Fbh	2 402		1 687		
Fbf	1 915		734		
Fe	88		83		
Fl	-		5		
Fpe	5		24		
Fpg	1		1		
Fpp	42		107		
Fpr	-		3		
Fpt	4		2		
Ia	-		2 786		
Ipc	-		44		
Ipl	-		7		
Ips	-		21		
Ipt	-		245		
Ir	-		7		
M	-		177		
Nb	-		16		
Nr	-		0		
Od	-		415		

Og	-	311
Os	-	39
Unclassed	4 952	2
<b>TotalLandArea</b>	<b>9 408</b>	<b>9 408</b>

### 1.3.2 Estimation and forecasting

<b>Forest area</b>						
After reclassification, the following table is obtained:						
	<b>Area (1000 hectares)</b>					
	<b>1973</b>			<b>1991</b>		
Forest	4 456			3 863		
OWL	-			-		
OL	4 952			5 545		
<b>TotalLandarea</b>	<b>9 408</b>			<b>9 408</b>		
Water	2 440			2 440		
<b>Total country area</b>	<b>11 848</b>			<b>11 848</b>		
The amount of forest has been estimated by linear extrapolation for 1990, 2000, 2005 and 2010 after reclassification.						
<b>Area (1000 hectares)</b>						
	<b>1973</b>	<b>1991</b>	<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>

Forest	4 456	3 863	3 896	3 567	3 402	3 237
Other wooded land	-	-				
Other land	4 952	5 545	5 512	5 841	6 006	6 171
Inland water bodies	2 440	2 440	2 440	2 440	2 440	2 440
<b>TOTAL</b>	<b>11 848</b>	<b>11 848</b>	<b>11 848</b>	<b>11 848</b>	<b>11 848</b>	<b>11 848</b>

## 1.3.3 Reclassification

<b>Forest area</b>				
	<b>FRA CLASSIFICATION</b>			
<b>National class</b>	<b>Forest</b>	<b>Other wooded land</b>	<b>Other land</b>	<b>Inland water</b>
B			100%	
Ef	50%		50%	
Eg			100%	
Fbh	100%			
Fbf	100%			
Fe	100%			
F1	100%			
Fpe	100%			
Fpg	100%			
Fpp	100%			
Fpr	100%			
Fpt	100%			
Ia			100%	

Ipc			100%	
Ipl			100%	
Ips			100%	
Ipt			100%	
Ir			100%	
M			100%	
Nb			100%	
Nr			100%	
Od			100%	
Og			100%	
Os			100%	
Unclassed			100%	
W				100%

## 1.4 Data

Table 1a






Categories		Area (000 hectares)				
		1990	2000	2005	2010	2015
	Forest	3896	3567	3402	3237	3147
	Other wooded land	0	0	0	0	0
	Other land	5532	5861	6026	6191	6281
	... of which with tree cover	N/A	N/A	N/A	N/A	N/A
	Inland water bodies	2420	2420	2420	2420	2420
	TOTAL	11848.00	11848.00	11848.00	11848.00	11848.00

Table 1b

Categories	Annual forest establishment / loss (000 hectares per year)	...of which of introduced species (000 hectares per year)
------------	--	---

		1990	2000	2005	2010	1990	2000	2005	2010
CFRQ	Forest expansion	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which afforestation	N/A	15.3	18.7	18	N/A	15.3	18.7	18
CFRQ	... of which natural expansion of forest	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	Deforestation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which human induced	N/A	N/A	N/A	17.9	N/A	N/A	N/A	N/A
CFRQ	Reforestation	N/A	1.5	2	3	N/A	N/A	N/A	N/A
CFRQ	... of which artificial	N/A	1.5	2	3	N/A	1.5	2	3

## Tiers

Category	Tier for status	Tier for reported trend
Forest	Tier 2	Tier 2
Other wooded land	Tier 2	Tier 2
Forest expansion	Tier 2	Tier 2
Deforestation	Tier 2	Tier 1
Reforestation	Tier 2	Tier 1

## Tier criteria

Category	Tier for status	Tier for reported trend
<ul style="list-style-type: none"> <li>• Forest</li> <li>• Other wooded land</li> <li>• Afforestation</li> <li>• Reforestation</li> <li>• Natural expansion of forest</li> <li>• Deforestation</li> </ul>	<b>Tier 3</b> : Data sources: Either recent (less than 10 years ago) National Forest Inventory or remote sensing, with ground truthing, or programme for repeated compatible NFIs <b>Tier 2</b> : Data sources: Full cover mapping / remote sensing or old NFI (more than 10 years ago) <b>Tier 1</b> : Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other

## 1.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trends
Forest	N/A	The amount of forest has been estimated by linear extrapolation for 2010.
Other wooded land	There is an unknown area of other wooded land which is included under the other categories. The definition of the national vegetation classes did not allow for a reclassification to other wooded land.	N/A

Other land	N/A	N/A
Other land with tree cover	N/A	N/A
Inland water bodies	N/A	N/A
Forest expansion	N/A	N/A
Deforestation	N/A	N/A
Reforestation	N/A	N/A

#### Other general comments to the table

Due to absence of sufficient information, land use type Ef (Agriculture in forest area) was classified as 50% forest and 50% other land. Other land with tree cover refers to land use class Ipl, which consists of leucaena, grown for agroforestry purposes in intensive agriculture plantations. According to the original data source, estimations for plantations only included those larger than the smallest mapping unit of 100 hectares. Numerous other private plantations were too small to be mapped. For this reason, the plantation area (and thus the forest area) obtained in the original data is likely to be an underestimate.



## 2. What is the area of natural and planted forest and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 2.1 Categories and definitions

Term	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Naturalized introduced species	Other naturally regenerated forest where the tree species are predominantly non-native and do not need human help to reproduce/maintain populations over time.
Introduced species	A species, subspecies or lower taxon occurring <b>outside</b> 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).
Category	Definition
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.
...of which of introduced species ( <i>sub-category</i> )	Other naturally regenerated forest where the trees are predominantly of introduced species.
...of which naturalized ( <i>sub-sub category</i> )	Other naturally regenerated forest where the trees are predominantly of naturalized introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
...of which of introduced species ( <i>sub-category</i> )	Planted forest where the planted/seeded trees are predominantly of introduced species.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
...of which planted ( <i>sub-category</i> )	Mangroves predominantly composed of trees established through planting.

### 2.2 National data

#### 2.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Department of Forestry, Ministry of Forestry and Natural Resources. 1993. Forest Resources Mapping and Biomass Assessment for Malawi . Implementing agency: Satellitbild	Growing Stock	1973 1991	N/A

2	Department of Forestry, Ministry of Environment and climate Change Management 2012, Forest Resource Mapping Project under The Japanese Grant for Forest Preservation Programme	Growing Sock	2012	N/A
3	Atlas of Malawi: Land cover and land cover change 1990 - 2010 by FAO. Government of Malawi and the Norwegian Embassy 2013	N/A	2013	N/A
4	N/A	N/A	N/A	N/A

### 2.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

### 2.2.3 Original data

From Question 1		
	<b>Calibrated area ('000 ha)</b>	
<b>National class</b>	<b>1973</b>	<b>1991</b>
Ef	-	2 435
Fbh	2 402	1 687
Fbf	1 915	734
Fe	88	83
Fl	-	5
From Question 4:		
	<b>CALIBRATED AREA ('000 ha)</b>	

<b>National Classification</b>	<b>1973</b>	<b>1991</b>
Forest Plantations	51	137

## 2.3 Analysis and processing of national data

### 2.3.1 Adjustment

### 2.3.2 Estimation and forecasting

After reclassification, we get:

	<b>Area ('000 ha)</b>	
	<b>1973</b>	<b>1991</b>
Primary forests	2402	1687

Values for 1990, 2000, 2005 and 2010 were calculated through linear intrapolation and extrapolation.

	<b>Area ('000 ha)</b>					
	<b>1973</b>	<b>1991</b>	<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>
Primary forests	2402	1687	1727	1330	1132	934

Planted forest is estimated based on expert knowledge, based on the plantation activities and establishment (see comments).

<b>National Classification</b>	<b>CALIBRATED AREA ('000 ha)</b>	
	<b>1973</b>	<b>1991</b>
Forest Plantations	51	137

Linear interpolation total was done in order to obtain an estimate for 1990 for forest plantations (which is equal to 132 000 ha).

- for 2000, planted forest = 132 000 + 18 000 (annual planting) x 5 x 0,85 (rate of survival) – 1 100 (plantation harvesting) x 10 = 197 500 ha

(Assumption is made that planting effort during these ten years mainly equal to 18 000 ha, annually planting in 2000, multiplied by 5);

- for 2005, planted forest = 197 500 + 22 000 (annual planting) x 5 (years) x 0,85 (rate of survival) – 1 100 (plantation harvesting) x 5 = 285 500 ha;

- for 2010, planted forest = 132 000 + (22 000 (annual planting) x 2 (years) + 19 000 (annual planting) x 3 (years)) x 0,85 (rate of survival) – 1 100 (plantation harvesting) x 5 = 365 850 ha.

### 2.3.3 Reclassification

	Primary	Other naturally regenerated
Ef		100%
Fbh	100%	
Fbf		100%
Fe		100%
F1		100%

## 2.4 Data

Table 2a







Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Primary forest	1727	1330	1132	934	845
	Other naturally regenerated forest	2037	2040	1985	1938	1883
	... of which of introduced species	N/A	N/A	N/A	N/A	N/A
	... of which naturalized	N/A	N/A	N/A	N/A	N/A
	Planted forest	132	197	285	365	419
	... of which of introduced species	132	197	285	365	419
TOTAL		3896.00	3567.00	3402.00	3237.00	3147.00

Table 2b

Primary forest converted to (000 ha)		
1990-2000	2000-2010	2010-2015

Other natural regeneration	Planted	Other land	Other natural regeneration	Planted	Other land	Other natural regeneration	Planted	Other land
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 2c

Categories	Area (000 hectares)				
	1990	2000	2005	2010	2015
Mangroves (forest and OWL)	N/A	N/A	N/A	N/A	N/A
... of which planted	N/A	N/A	N/A	N/A	N/A

## Tiers

Category	Tier for status	Tier for reported trend
Primary forest	Tier 1	Tier 1
Other naturally regenerated forest	Tier 1	Tier 1
Planted forest	Tier 1	Tier 1
Mangroves	Tier 1	Tier 1

## Tier Criteria

Category	Tier for status	Tier for reported trend
Primary forest/Other naturally regenerated forest/Planted forest	<p><b>Tier 3</b> : Data sources: Recent (less than 10 years) National Forest Inventory or remote sensing with ground truthing or data provided by official agencies or programme for repeated compatible NFIs</p> <p><b>Tier 2</b> : Data sources: Full cover mapping/ remote sensing or old NFI (more than 10 years)</p> <p><b>Tier 1</b> : Other</p>	<p><b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status)</p> <p><b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status)</p> <p><b>Tier 1</b> : Other</p>

## 2.5 Comments

Category	Comments related to data definitions etc	Comments on reported trend
Primary forest	N/A	N/A
Other naturally regenerating forest	N/A	N/A

Planted forest	N/A	In the 1995, the average area for planted forests per year had been 18 000 ha. Then, in 2005, the average area for planted forests per year had reached 22 000 ha. But tree planting has decreased in recent years because of reduced donor support in afforestation and reforestation. Plantation activity is estimated to be 19 000 ha/year (between 2008 and 2010). (To be noted: the survival rate is 85 % and rate of harvesting : 1 100 ha/y).
Mangroves	N/A	N/A

**Other general comments to the table**

N/A

### 3. What are the stocks and growth rates of the forests and how have they changed?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

#### 3.1 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees with a minimum diameter of 10 cm at breast height (or above buttress if these are higher). Includes the stem from ground level up to a top diameter of 0 cm, excluding branches.
Net Annual Increment (NAI)	Average annual volume of gross increment over the given reference period less that of natural losses on all trees, measured to minimum diameters as defined for "Growing stock".
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 2 mm 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.
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 soil depth of 30 cm.

#### 3.2 National data

##### 3.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Department of Forestry, Ministry of Forestry and Natural Resources. 1993. Forest Resources Mapping and Biomass Assessment for Malawi. Implementing agency: Satellitbild	Growing stock	1991	N/A

2	Department of Forestry, Ministry of Environment and climate Change Management 2012, Forest Resource Mapping Project under The Japanese Grant for Forest Preservation Programme	Growing Stock	2012	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 3.2.2 Classification and definitions

National class	Definition
5 cm and includes stem and branches down to a minimum diameter of 2 cm. " /> Growing stock The data source does not give a clear definition of tree volume, but the procedure used for calculating volume of felled sample trees indicates that the volume figures refer to trees with diameter > 5 cm and includes stem and branches down to a minimum diameter of 2 cm.	N/A
N/A	N/A
N/A	N/A
N/A	N/A

### 3.2.3 Original data

<b>Growing stock</b>		
The data source provides the following data for natural forests for the reference year 1991:		
<b>Forestclass</b>	<b>Volume (1000 m3)</b>	<b>Area (1000 ha)</b>
<b>Fe</b> (Evergreen forest)	20 610	82.8
<b>Fbh</b> (Brachystegia forest in hilly areas)	188 152	1 689.6
<b>Fbf</b> (Brachystegia forest in flat areas)	65 760	734.7
<b>Total</b>	<b>274 522</b>	<b>2 507.1</b>
From these original data we can calculate the average volume of natural forest.		
Average volume = 109.5 m <sup>3</sup> /ha		



**Carbon stock**

Biomass data has been used as input for the carbon estimations.

Area data from Question 1 has been used as input for the carbon stocks of litter and soil.

**3.3 Analysis and processing of national data****3.3.1 Adjustment****Growing stock**

Given that surface area adjustment has already been done for Question 1, no further adjustment is necessary.

**3.3.2 Estimation and forecasting****3.3.3 Reclassification****Growing stock**

The original data on growing stock only refer to natural forests, but as no other information is available on growing stock of planted forests, the average volume per hectare as above has been applied to the area reported as forest in Question 1 for all four reference years.

**Biomass stock**

The analysis is based on the growing stock data presented in table T6, to which the following formula and conversion factors have been applied:

$$\text{Above ground biomass (AGB)} = \text{Growing stock} * \text{wood density} * \text{BEF}$$

$$\text{Below ground biomass (BGB)} = \text{AGB} * 0.24$$

$$\text{Wood density} = 0.58 \text{ Tons /m}^3$$

$$\text{BEF} = 1.2$$

(Note : same formula have been applied in the 2005 report)

Data for dead wood biomass has not been calculated.

**Carbon stock**

A/- Carbon stock is calculated by multiplying the biomass by 0.47. Carbon stocks of litter and soil have not been estimated.

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 47 (tropical moist and LAC soils).

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

Year	1990	2000	2005	2010
Total Forest area (1000 ha)	3 896	3 567	3 402	3 237
Carbon in the litter	10 909	9 988	9 526	9 064
Soil carbon	183 112	167 649	159 894	152 139

### 3.4 Data

Table 3a




Category		Growing stock volume (million m <sup>3</sup> over bark)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
	Total growing stock	427	391	373	354	345	N/A	N/A	N/A	N/A	N/A
	... of which coniferous	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	... of which broadleaved	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 3b

Category/Species name			Growing stock in forest (million cubic meters)			
Rank	Scientific name	Common name	1990	2000	2005	2010
1 st	N/A	N/A	N/A	N/A	N/A	N/A
2 nd	N/A	N/A	N/A	N/A	N/A	N/A
3 rd	N/A	N/A	N/A	N/A	N/A	N/A
4 th	N/A	N/A	N/A	N/A	N/A	N/A
5 th	N/A	N/A	N/A	N/A	N/A	N/A

6 th	N/A	N/A	N/A	N/A	N/A	N/A
7 th	N/A	N/A	N/A	N/A	N/A	N/A
8 th	N/A	N/A	N/A	N/A	N/A	N/A
9 th	N/A	N/A	N/A	N/A	N/A	N/A
10 th	N/A	N/A	N/A	N/A	N/A	N/A
Remaining			N/A	N/A	N/A	N/A
TOTAL			.00	.00	.00	.00

**THE PRE-FILLED VALUES FOR GROWING STOCK REFER TO THE FOLLOWING THRESHOLD VALUES (SEE TABLE BELOW)**

Item	Value	Complementary information
Minimum diameter (cm) at breast height of trees included in growing stock (X)	5 cm	N/A
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	2 cm	N/A
Minimum diameter (cm) of branches included in growing stock (W)	2 cm	N/A
Volume refers to above ground (AG) or above stump (AS)	AS	N/A

**PLEASE NOTE THAT THE DEFINITION OF GROWING STOCK HAS CHANGED AND SHOULD BE REPORTED AS GROWING STOCK DBH 10 CM INCLUDING THE STEM FROM GROUND LEVEL UP TO A DIAMETER OF 0 CM, EXCLUDING BRANCHES.**

Table 3c




Category		Net annual increment (m <sup>3</sup> per hectare and year)				
		Forest				
		1990	2000	2005	2010	2015
	Net annual increment	N/A	N/A	N/A	N/A	N/A
	... of which coniferous	N/A	N/A	N/A	N/A	N/A
	... of which broadleaved	N/A	N/A	N/A	N/A	N/A

Table 3d

Category	Biomass (million metric tonnes oven-dry weight)	
	Forest	Other wooded land











		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
	Above ground biomass	297	272	260	246	240	N/A	N/A	N/A	N/A	N/A
	Below ground biomass	71	65	62	59	57	N/A	N/A	N/A	N/A	N/A
	Dead wood	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL		368.00	337.00	322.00	305.00	297.00	.00	.00	.00	.00	.00

Table 3e

Category		Carbon (Million metric tonnes)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
	Carbon in above ground biomass	140	128	122	116	113	N/A	N/A	N/A	N/A	N/A
	Carbon in below ground biomass	33	31	29	28	27	N/A	N/A	N/A	N/A	N/A
	<i>Subtotal Living biomass</i>	173	159	151	144	140	N/A	N/A	N/A	N/A	N/A
	Carbon in dead wood	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Carbon in litter	11	10	10	9	9	N/A	N/A	N/A	N/A	N/A
	<i>Subtotal Dead wood and litter</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Soil carbon	183	168	160	152	148	N/A	N/A	N/A	N/A	N/A
TOTAL		367.00	337.00	321.00	305.00	297.00	.00	.00	.00	.00	.00

## Tiers

Variable/category	Tier for status	Tier for trend
Total growing stock	Tier 2	Tier 2
Net annual increment	Tier 2	Tier 2

Above ground biomass	Tier 1	Tier 1
Below ground biomass	Tier 1	Tier 1
Dead wood	Tier 1	Tier 1
Carbon in above-ground biomass	Tier 1	Tier 1
Carbon in below ground biomass	Tier 1	Tier 1
Carbon in dead wood and litter	Tier 1	Tier 1
Soil carbon	Tier 1	Tier 1

### Tier criteria

Category	Tier for status	Tier for reported trend
Total growing stock	Tier 3: Data sources Recent 10 years National Forest Inventory or remote sensing with ground truthing or programme for repeated compatible NFI 10 years Domestic volume functions Tier 2: Data sources/registers and statistics modelling or old NFI 10 years or partial field inventory Tier 1: Other data sources	Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Domestic growth functions Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 tier for status Tier 1: Other
Net annual increment	Tier 3: Scientifically tested national volume and growth functions Tier 2: Selection of volume and growth functions as relevant as possible Tier 1: Other	Tier 3: Confirmation/adjustment of functions used through scientific work Tier 2: Review work done to seek alternative functions Tier: 1 Other
Biomass	Tier 3: Country-specific national or sub-national biomass conversion expansion factors applied or other domestic or otherwise nationally relevant biomass studies Tier 2: Application of country specific national or sub-national biomass conversion factors from other country with similar climatic conditions and forest types Tier 1: International/regional default biomass expansion factors applied	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other
<ul style="list-style-type: none"> <li>Carbon in above ground biomass</li> <li>Carbon in below ground biomass</li> <li>Carbon in dead wood and litter</li> <li>Soil carbon</li> </ul>	Tier 3: Country-specific national or sub-national biomass conversion expansion factors applied Tier 2: Application of country specific national or sub-national biomass conversion factors form from other country with similar climatic conditions and forest types Tier 1: International/regional default biomass expansion factors applied	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other

### 3.5 Comments on growing stock biomass and carbon

Category	Comments related to data definitions etc	Comments on the reported trend
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Total growing stock	N/A	N/A
Growing stock of broadleaved coniferous	N/A	N/A
Growing stock composition	N/A	N/A
Net annual increment	N/A	N/A
Above-ground biomass	N/A	N/A
Below-ground biomass	N/A	N/A
Dead wood	N/A	N/A
Carbon in above-ground biomass	N/A	N/A
Carbon in below-ground biomass	N/A	N/A
Carbon in dead wood	N/A	N/A
Carbon in litter	N/A	N/A
Soil carbon	N/A	N/A

**Other general comments to the table**

Whilst the biomass stock can be deduced from the growing stock, it is important that a comprehensive study on biomass be undertaken so as to give a true picture of the situation. Otherwise relying on extrapolation and deductions will not give a true picture of the situation on the ground.

## 4. What is the status of forest production and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 4.1 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.
Non wood forest product (NWFP)	Goods derived from forests that are tangible and physical objects of biological origin other than wood.
Commercial value of NWFP	For the purpose of this table, value is defined as the commercial market value at the forest gate.
Category	Definition
Production forest	Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.
Multiple use forest	Forest area designated for more than one purpose and where none of these alone is considered as the predominant designated function.
Total wood removals	The total of industrial round wood removals and woodfuel removals.
...of which woodfuel	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

### 4.2 National data

#### 4.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Department of Forestry, Ministry of Forestry and Natural Resources. 1993. Forest Resources Mapping and Biomass Assessment for Malawi . Implementing agency: Satellitbild	Forest reserves, proposed forest reserves, national parks, Blantyre fuelwood planning area	1991	N/A
2	Department of Forestry, Ministry of Environment and climate Change Management 2012, Forest Resource Mapping Project under The Japanese Grant for Forest Preservation Programme	Growing Stock	2012	N/A
3	Atlas of Malawi: Land cover and land cover change 1990 - 2010 by FAO. Government of Malawi and the Norwegian Embassy 2013	N/A	2013	N/A

4	N/A	N/A	N/A	N/A
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## 4.2.2 Classification and definitions

National class	Definition
Same as for Question 1.	N/A
N/A	N/A
N/A	N/A
N/A	N/A

## 4.2.3 Original data

Data for 1991. Source: Department of Forestry, Ministry of Forestry and Natural Resources, 1993	
Forestreserves	Area (ha)
Fe	34 292.2
Fbh	539 865.2
Fbf	59 893.3
Fl	4 817.4
Fpe	12 812.3
Fpp	102 317.5
Fpr	1.6
Fpt	5.4
Ef	14 589.1
Total	768 594
National Parks	Area (ha)
Fe	25 988.3



Fbh	128 643.0
Fbf	238 870.9
Fpp	762.1
Ef	4 189.9
Total	398 454

<b>Game Reserves</b>	<b>Area (ha)</b>
Fbh	208 985.0
Fbf	135 588.7
Ef	14 865.0
Total	359 439

<b>Proposed Forest Reserves</b>	<b>Area (ha)</b>
Fe	950.4
Fbh	105 119.9
Fbf	16 671.3
Ef	21 769.4
Total	144 511

<b>Blantyre Fuelwood Planning Area</b>	<b>Area (ha)</b>
Fbh	36 458.6

Fbf	3 558.9
Fpe	1 170.1
Ef	19 092.3
Total	60 279.9

Summarising the original data, we get:

Type	Area (ha)
Forests in Forest reserves	768 594
Forests in National Parks	398 454
Forests in Game Reserves	359 439
Forests in Proposed Forest Reserves	144 511
Forests in the Blantyre Fuelwood Planning Area	60 279.9

In addition to the above, the author also gives the following national figures for plantations:

National Classification	CALIBRATED AREA ('000 ha)	
	1973	1991
Fpe	4.63	24.07
Fpg	0.61	0.72
Fpp	41.63	107.39
Fpr	0.00	2.67

Fpt	3.79	1.71
Summarising, this gives:		
	<b>CALIBRATED AREA ('000 ha)</b>	
<b>National Classification</b>	<b>1973</b>	<b>1991</b>
Forest Plantations	51	137

### 4.3 Analysis and processing of national data

#### 4.3.1 Adjustment

<b>FAOSTAT</b>	Area ('000 ha)	Calibr. Factor
Land Area	9408	1.0009398
Total Country Area	11 848	
Inland Water	2 440	

Country area according to data source (1000 ha)	11 821.9
--	----------

After adjustment of the original data:

<b>Type</b>	<b>Area (ha)</b>
Forests in Forest reserves	768 594
Forests in National Parks	398 454

Forests in Game Reserves	359 439
Forests in Proposed Forest Reserves	144 511
Forests in the Blantyre Fuelwood Planning Area	60 279.9

## 4.3.2 Estimation and forecasting

A-

	<b>Production (ha)</b>	<b>Conservation of Biodiversity (ha)</b>	<b>No or unknown function (ha)</b>
Forests in Forest reserves	768 594		
Forests in National Parks	762.0	397 692	
Forests in Game Reserves		359 439	
Forests in Proposed Forest Reserves			144 511
Forests in the Blantyre Fuelwood Planning Area	60 279.9		
<b>Total</b>	<b>829 635.9</b>	<b>757 131</b>	<b>144 511</b>

Due to lack of more recent data, the area of production and conservation for natural forests are assumed constant for all reporting years.

Planted forest is estimated based on expert knowledge, based on the plantation activities and establishment (see comments).

	<b>CALIBRATED AREA ('000 ha)</b>
--	----------------------------------

<b>National Classification</b>	<b>1973</b>	<b>1991</b>
Forest Plantations	51	137

Linear interpolation total was done in order to obtain an estimate for 1990 for forest plantations (which is equal to 132 000 ha).

- for 2000, planted forest = 132 000 + 18 000 (annual planting) x 5 x 0,85 (rate of survival) – 1 100 (plantation harvesting) x 10 = 197 500 ha

(Assumption is made that planting effort during these ten years mainly equal to 18 000 ha, annually planting in 2000, multiplied by 5);

- for 2005, planted forest = 197 500 + 22 000 (annual planting) x 5 (years) x 0,85 (rate of survival) – 1 100 (plantation harvesting) x 5 = 285 500 ha;

- for 2010, planted forest = 132 000 + (22 000 (annual planting) x 2 (years) + 19 000 (annual planting) x 3 (years)) x 0,85 (rate of survival) – 1 100 (plantation harvesting) x 5 = 365 850 ha.

	<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>
Plantation (Production)	132	197	285	365
Natural forest (Production)	830	830	830	830
Sub-total Production	962	1027	1115	1195
Natural forest (Conservation)	757	757	757	757
Unknown	2177	1783	1530	1285
<b>TOTAL</b>	<b>3896</b>	<b>3567</b>	<b>3402</b>	<b>3237</b>

B -Area of permanent forest estate is the total area of forests in forest reserves, national parks and game reserves

<b>Type</b>	<b>Area (ha)</b>
Forests in Forest reserves	768 594
Forests in National Parks	398 454
Forests in Game Reserves	359 439
Total	1 526 487

The 1991 value was reported as 1990 value. It is assumed that the area remains table from 2000 to 2010.

## 4.3.3 Reclassification

	Production	Conservation of Biodiversity	No or unknown function
Forests in Forest reserves	100%		
Forests in National Parks	0.2%	99.8%	
Forests in Game Reserves		100%	
Forests in Proposed Forest Reserves			100%
Forests in the Blantyre Fuelwood Planning Area	100%		

The 0.2 percent of Forests in National Parks allocated to Production function, consist on a small area (762 ha) of pine plantations located within national parks.

## 4.4 Data

Table 4a



Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Production forest	962	1027	1115	1195	1206
	Multiple use forest	0	0	0	0	0

Table 4b

Rank	Name of product	Key species	Commercial value of NWFP removals 2010 (value 1000 local currency)	NWFP category
1 st	N/A	N/A	N/A	N/A
2 nd	N/A	N/A	N/A	N/A
3 rd	N/A	N/A	N/A	N/A
4 th	N/A	N/A	N/A	N/A

5 th	N/A	N/A	N/A	N/A
6 th	N/A	N/A	N/A	N/A
7 th	N/A	N/A	N/A	N/A
8 th	N/A	N/A	N/A	N/A
9 th	N/A	N/A	N/A	N/A
10 th	N/A	N/A	N/A	N/A
TOTAL			.00	

2010	
Name of local currency	N/A

Category
<b>Plant products / raw material</b>
1 Food
2 Fodder
3 Raw material for medicine and aromatic products
4 Raw material for colorants and dyes
5 Raw material for utensils handicrafts construction
6 Ornamental plants
7 Exudates
8 Other plant products
<b>Animal products / raw material</b>
9 Living animals
10 Hides skins and trophies
11 Wild honey and beewax
12 Wild meat
13 Raw material for medicine
14 Raw material for colorants

15 Other edible animal products
16 Other non-edible animal products

Table 4c Pre-filled data from FAOSTAT

Year	FRA 2015 category (1000 m <sup>3</sup> u.b.)	
	Total wood removals	...of which woodfuel
1990	6044.443	5164.443
1991	6002.063	5122.063
1992	6132.139	5207.139
1993	5918.708	4988.708
1994	6031.33	5101.33
1995	6296.283	4896.283
1996	6201.751	4801.751
1997	6227.059	4827.059
1998	6281.301	4881.301
1999	6321.718	4921.718
2000	6364.075	4964.075
2001	6395.659	4995.659
2002	6429.117	5029.117
2003	6464.449	5064.449
2004	6501.655	5101.655
2005	6540.741	5140.741
2006	6589.348	5189.348
2007	6640.1	5240.1
2008	6693	5293
2009	6748.068	5348.068
2010	6805.34	5405.34



2011	6865.603	5465.603
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## Tiers

Category	Tier for status	Tier for reported trend
Production forest	Tier 1	Tier 1
Multiple use forest	Tier 1	Tier 1

## Tier Criteria

Category	Tier for status	Tier for reported trend
Production forest Multiple use forest	Tier 3: Updated including field verifications national forest maps including functions Tier 2: Forest maps older than 6 years including forest functions Tier 1: Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other

## 4.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Production forest	N/A	N/A
Multiple use forest	N/A	N/A
Total wood removals	N/A	N/A
Commercial value of NWFP	N/A	N/A

## Other general comments to the table

N/A
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## 5. How much forest area is managed for protection of soil and water and ecosystem services?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 5.1 Categories and definitions

Category	Definition
Protection of soil and water	Forest area designated or managed for protection of soil and water
...of which production of clean water ( <i>sub-category</i> )	Forest area primarily designated or managed for water production, where most human uses are excluded or heavily modified to protect water quality.
...of which coastal stabilization ( <i>sub-category</i> )	Forest area primarily designated or managed for coastal stabilization.
...of which desertification control ( <i>sub-category</i> )	Forest area primarily designated or managed for desertification control.
...of which avalanche control ( <i>sub-category</i> )	Forest area primarily designated or managed to prevent the development or impact of avalanches on human life assets or infrastructure.
...of which erosion, flood protection or reducing flood risk ( <i>sub-category</i> )	Forest area primarily designated or managed for protecting communities or assets from the impacts of erosion riparian floods and landslides or for providing flood plain services.
...of which other ( <i>sub-category</i> )	Forest area primarily designated or managed for other protective functions.
Ecosystem services, cultural or spiritual values	Forest area primarily designated or managed for selected ecosystem services or cultural or spiritual values.
...of which public recreation ( <i>sub-category</i> )	Forest area designated or managed for public recreation.
...of which carbon storage or sequestration ( <i>sub-category</i> )	Forest area designated or managed for carbon storage or sequestration.
...of which spiritual or cultural services ( <i>sub-category</i> )	Forest area designated or managed for spiritual or cultural services.
...of which other ( <i>sub-category</i> )	Forest area designated or managed for other ecosystem services.

### 5.2 National data

#### 5.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments

1	Department of Forestry, Ministry of Forestry and Natural Resources, 1993. Forest Resources Mapping and Biomass Assessment for Malawi. Implementing Agency: Satellitbild	N/A	N/A	N/A
2	Department of Forestry, Ministry of Environment and climate Change Management 2012, Forest Resource Mapping Project under The Japanese Grant for Forest Preservation Programme	N/A	N/A	N/A
3	Atlas of Malawi: Land cover and land cover change 1990 - 2010 by FAO. Government of Malawi and the Norwegian Embassy 2013	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 5.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

### 5.2.3 Original data

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## 5.3 Analysis and processing of national data

### 5.3.1 Adjustment

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### 5.3.2 Estimation and forecasting

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## 5.3.3 Reclassification

## 5.4 Data

Table 5a

Categories		Forest area (1000 hectares)				
		1990	2000	2005	2010	2015
CRQ	Protection of soil and water	1000	1000	1000	1000	1000
CRQ	... of which production of clean water	N/A	N/A	N/A	N/A	N/A
CRQ	... of which coastal stabilization	0	0	0	0	0
CRQ	... of which desertification control	0	0	0	0	0
CRQ	... of which avalanche control	0	0	0	0	0
CRQ	... of which erosion, flood protection or reducing flood risk	N/A	N/A	N/A	N/A	N/A
CRQ	... of which other (please specify in comments below the table)	N/A	N/A	N/A	N/A	N/A

## Other

There 1 million hectares of forest reserves used for different purposes like biodiversity conservation, water catchment protection and erosion control

Table 5b

Categories	Forest area (1000 hectares)				
	1990	2000	2005	2010	2015
Ecosystem services, cultural or spiritual values	1000	1000	1000	1000	1000
...of which public recreation	N/A	N/A	N/A	N/A	N/A

...of which carbon storage or sequestration	N/A	N/A	N/A	N/A	N/A
...of which spiritual or cultural services	N/A	N/A	N/A	N/A	N/A
...of which other (please specify in comments below the table)	N/A	N/A	N/A	N/A	N/A

### Tiers

Category	Tier for reported trend	Tier for status
Protection of soil and water	Tier 1	Tier 1
Ecosystem services, cultural or spiritual values	Tier 1	Tier 1

### Tier criteria

Category	Tier for status	Tier for reported trend
Protection of soil and water	Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations or legislation relating to soil and water protection. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other
<ul style="list-style-type: none"> <li>Cultural or spiritual values</li> <li>Public recreation</li> <li>Spiritual or cultural services</li> <li>Other</li> </ul>	Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other

### 5.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Protection of soil and water	N/A	N/A
Production of clean water	N/A	N/A
Coastal stabilization	N/A	N/A

Desertification control	N/A	N/A
Avalanche control	N/A	N/A
Erosion, flood protection or reducing flood risk	N/A	N/A
Other protective functions	N/A	N/A
Ecosystem services, cultural or spiritual values	N/A	N/A
Public recreation	N/A	N/A
Carbon storage or sequestration	N/A	N/A
Spiritual or cultural services	N/A	N/A
Other ecosystem services	N/A	N/A

**Other general comments to the table**

N/A

## 6. How much forest area is protected and designated for the conservation of biodiversity and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 6.1 Categories and definitions

Category	Definition
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.
Forest area within protected areas	Forest area within formally established protected areas independently of the purpose for which the protected areas were established.

### 6.2 National data

#### 6.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Department of Forestry, Ministry of Forestry and Natural Resources. 1993. Forest Resources Mapping and Biomass Assessment for Malawi . Implementing agency: Satellitbild	Forest reserves, proposed forest reserves, national parks, Blantyre fuelwood planning area	1991	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 6.2.2 Classification and definitions

National class	Definition
Same as for Question 1.	N/A
N/A	N/A
N/A	N/A
N/A	N/A

### 6.2.3 Original data

See 4.2.3.

## 6.3 Analysis and processing of national data

### 6.3.1 Adjustment

See 4.3.1.

### 6.3.2 Estimation and forecasting



See 4.3.2.

### 6.3.3 Reclassification

See 4.3.3.

## 6.4 Data

Table 6

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Conservation of biodiversity	757	757	757	757	757
	Forest area within protected areas	757	757	757	757	757

### Tiers

Category	Tier for status	Tier for reported trend
Conservation of biodiversity	Tier 1	Tier 1
Forest area within protected areas	Tier 1	Tier 1

### Tier criteria

Category	Tier for status	Tier for reported trend
----------	-----------------	-------------------------



<ul style="list-style-type: none"> <li>• Conservation of biodiversity</li> <li>• Forests within protected areas</li> </ul>	<p>Tier 3: Data obtained from national or state agencies responsible for conservation and protected area or legislation relating to area protection. Tier 2: Studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates Tier 1 Other</p>	<p><b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other</p>
--	--	--

## 6.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Conservation of biodiversity	Total area of forests national parks and game reserves	N/A
Forest area within protected areas	Total area of forests national parks and game reserves	N/A

Other general comments to the table
N/A

## 7. What is the area of forest affected by woody invasive species?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 7.1 Categories and definitions

Category	Definition
Invasive species	Species that are non-native to a particular ecosystem and whose introduction and spread cause, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health.

### 7.2 National data

#### 7.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 7.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

#### 7.2.3 Original data

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### 7.3 Analysis and processing of national data

#### 7.3.1 Adjustment

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7.3.2 Estimation and forecasting

7.3.3 Reclassification

**7.4 Data**

Table 7

Scientific name of woody invasive species	Forest area affected (000 ha)	
	2005	2010
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
Total	N/A	N/A

Tiers

Category	Tier for status	Tier for reported trend
Invasive species	N/A	N/A

Tier Criteria

Category	Tier for status	Tier for reported trend
----------	-----------------	-------------------------

Invasive species	Tier 3: Systematic assessment in forest inventory or other survey (e.g. by conservation department) within the last 5 years) Tier 2: Systematic assessment in forest inventory or other survey (e.g. by conservation department conducted more than 5 years ago) Tier 1: Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other
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### 7.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Invasive species	N/A	N/A

Other general comments to the table
N/A

## 8. How much forest area is damaged each year?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 8.1 Categories and definitions

Category	Definition
Number of fires	Number of fires per year
Burned area	Area burned per year
Outbreaks of insects	A detectable reduction in forest health caused by a sudden increase in numbers of harmful insects.
Outbreaks of diseases	A detectable reduction in forest health caused by a sudden increase in numbers of harmful pathogens, such as bacteria, fungi, phytoplasma or virus.
Severe weather events	Damage caused severe weather events, such as snow, storm, drought, etc.

### 8.2 National data

#### 8.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 8.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

#### 8.2.3 Original data

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## 8.3 Analysis and processing of national data

### 8.3.1 Adjustment

### 8.3.2 Estimation and forecasting

### 8.3.3 Reclassification

## 8.4 Data

Table 8a

Category		000 ha, number of fires									
		2003		2004		2005		2006		2007	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
	Total land area burned	594.25	N/A	489.95	N/A	581.7	N/A	502.11	N/A	531.32	N/A
	... of which forest area burned	46.66	163	53.49	39	59.9	93	71.93	9	95.49	N/A
Category		2008		2009		2010		2011		2012	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
	Total land area burned	553.46	N/A	391.81	N/A	476.44	N/A	465.05	N/A	488.24	N/A
	... of which forest area burned	63.05	220	29.7	41	73.33	216	57.56	142	84.81	96

Table 8b

Outbreak category	Description/name	Year(s) of latest outbreak	Area damaged (000 hectares)
N/A	N/A	1993	N/A
N/A	N/A	1990	N/A

N/A	N/A	1987	N/A
N/A	N/A	1984	N/A
N/A	N/A	2008	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

### Outbreak category

1 Insects

2 Diseases

3 Severe weather events

### Tiers

Category	Tier for status	Tier for trend
Area affected by fire	Tier 2	Tier 2
<ul style="list-style-type: none"> <li>• Insects</li> <li>• Diseases</li> <li>• Severe weather events</li> </ul>	N/A	N/A

### Tier criteria

Category	Tier for status	Tier for reported trend
Burned area	<b>Tier 3</b> : National fire monitoring routines <b>Tier 2</b> : Remote sensing surveys <b>Tier 1</b> : Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other
<ul style="list-style-type: none"> <li>• Insects</li> <li>• Diseases</li> <li>• Severe weather events</li> </ul>	<b>Tier 3</b> : Systematic survey (e.g. via inventory or aerial damage assessment) <b>Tier 2</b> : Management records <b>Tier 1</b> : Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other

### 8.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
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Burned area	Country records for burnt area were only for the hectarage subjected to fires in industrial timber plantation and fuelwood and pole plantations. It does not include fires in natural woodlands. FAO data detected through remote sensing have been used to fill in table 8a.	The area keeps on fluctuating depending on the length of the rainy season and the number of fires. The shoerter the rainy season the longer the fire season
Insects	N/A	N/A
Diseases	N/A	N/A
Severe weather events	N/A	N/A

**Other general comments to the table**

N/A



## 9. What is the forest area with reduced canopy cover?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

Category	Definition
Reduction in canopy cover	Forest that has undergone a reduction of canopy cover of more than 20% between the years 2000 and 2010 within the forest canopy cover range of 30-80% as detected by the MODIS VCF sensor.

Table 9

Category	Area of forest with reduced canopy cover (000 ha)
Reduction in canopy cover	146.69

Tiers

Category	Tier for reported trend
Reduction in canopy cover	Tier 2

Tier criteria

Category	Tier for reported trend
Reduction in canopy cover	<b>Tier 3</b> : Remote sensing with ground truthing and/or Landsat imagery <b>Tier 2</b> : Remote sensing using Modis (using pre-filled data provided by FAO) <b>Tier 1</b> : Expert opinion

Comments

Category	Comments related to data definitions etc
Reduction in canopy cover	N/A

Other general comments

--

## 10. What forest policy and regulatory framework exists to support implementation of sustainable forest management SFM?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 10.1 Categories and definitions

Category	Definition
Policies supporting sustainable forest management	Policies or strategies that explicitly encourage sustainable forest management.
Legislation and regulations supporting sustainable forest management	Legislation and regulations that govern and guide sustainable forest management, operations and use.

### 10.2 National data

#### 10.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	National Forest Policy	Objectives and strategies	1996	N/A
2	Forestry Act	Sections	1997	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 10.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

#### 10.2.3 Original data

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### 10.3 Data

Table 10

Category				
	National	Sub-national		
		Regional	Provincial/State	Local
Policies supporting sustainable forest management	yes	yes	yes	
... of which, in <u>publicly</u> owned forests	yes	yes	yes	
... of which, in <u>privately</u> owned forests	yes	yes	yes	
Legislation and regulations supporting sustainable forest management	yes	yes	yes	
... of which, in <u>publicly</u> owned forests	yes	yes	yes	
... of which, in <u>privately</u> owned forests	yes	yes	yes	

#### 10.4 Comments

Variable / category	Comments related to data definitions etc
Policies supporting sustainable forest management	N/A
Legislation and regulations supporting sustainable forest management	N/A

Other general comments

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## 11. Is there a national platform that promotes stakeholder participation in forest policy development?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 11.1 Categories and definitions

Category	Definition
National stakeholder platform	A recognized procedure that a broad range of stakeholders can use to provide opinions, suggestions, analysis, recommendations and other input into the development of national forest policy.

### 11.2 National data

#### 11.2.1 Data sources

	References to sources of information	Years	Additional comments
1	N/A	N/A	N/A
2	N/A	N/A	N/A
3	N/A	N/A	N/A
4	N/A	N/A	N/A

Table 11

Is there a national platform that promotes or allows for stakeholder participation in forest policy development?	yes
--	-----

### 11.3 Comments

Category	Comments related to data definitions etc
National stakeholder platform	The National forestry Forum is the national stakeholder platform

Other general comments

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## 12. What is the forest area intended to be in permanent forest land use and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 12.1 Categories and definitions

Category	Definition
Forest area intended to be in permanent forest land use	Forest area that is designated or expected to be retained as forest and is highly unlikely to be converted to other land use.
...of which permanent forest estate ( <i>sub-category</i> )	Forest area that is designated by law or regulation to be retained as forest and may not be converted to other land use.

### 12.2 National data

#### 12.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Department of Forestry, Ministry of Forestry and Natural Resources. 1993. Forest Resources Mapping and Biomass Assessment for Malawi . Implementing agency: Satellitbild	Forest reserves, proposed forest reserves, national parks, Blantyre fuelwood planning area	1991	N/A
2	Forest Resource Mapping Project	Drowing stock	2012	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 12.2.2 Classification and definitions

National class	Definition
Same as for Question 1.	N/A
N/A	N/A
N/A	N/A
N/A	N/A

### 12.2.3 Original data

See 4.2.3.

## 12.3 Analysis and processing of national data

### 12.3.1 Adjustment

See 4.3.1.

### 12.3.2 Estimation and forecasting



See 4.3.2.

### 12.3.3 Reclassification

See 4.3.3.

## 12.4 Data

Table 12

Categories		Forest area 2010 (000 ha)
	Forest area intended to be in permanent forest land use	2526
	... of which permanent forest estate	1526

### Tiers

Category	Tier for status
Forest area intended to be in permanent forest land use	Tier 1
Permanent forest estate	Tier 1

### Tier Criteria

Category	Tier for status
Forest area intended to be in permanent forest land use	<b>Tier 3</b> : National or sub-national land use plans strategy documents or other reports within the past 10 years <b>Tier 2</b> : National or sub-national land use plans strategy documents or other reports within the past 20 years <b>Tier 1</b> : Other

Permanent forest estate	<b>Tier 3</b> : National or sub-national land use plans strategy documents or other reports within the past 10 years <b>Tier 2</b> : National or sub-national land use plans strategy documents or other reports within the past 20 years <b>Tier 1</b> : Other
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### 12.5 Comments

Category	Comments related to data definitions etc
Forest area intended to be in permanent forest land use	N/A
Permanent forest estate	Area of permanent forest estate is the total area of forests in forest reserves, national parks and game reserves

### Other general comments

--

### 13. How does your country measure and report progress towards SFM at the national level?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

#### 13.1 Categories and definitions

Category	Definition
Forest area monitored under a national forest monitoring framework	Forest area monitored by a national monitoring framework or systems that provide measurement based periodic monitoring of forest extent and quality.
Forest reporting at national scale	National reporting of forest extent and characteristics that includes some measure of progress toward sustainable forest management.

#### 13.2 National data

##### 13.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

##### 13.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

#### 13.3 Data

Table 13a



Category	% of total forest area	Most recent year	Check all boxes that apply					
			Continuous	Periodic	Permanent ground plots	Temporary ground plots	Aerial/remote sensing sample based	Aerial/remote sensing full coverage
Forest inventory	N/A	N/A						
Other field assessments	N/A	N/A						
Updates to other sources	N/A	N/A						
Expert estimate	N/A	N/A						

Table 13b

Type of forest reporting used at national scale	Check boxes that apply
1 Criteria and Indicators reporting	no
2 Periodic national state of the forest report	yes
3 Other (please document)	
4 None	

Other type of forest reporting
N/A

## 13.4 Comments

Category	Comments
N/A	N/A
N/A	N/A
N/A	N/A

Other general comments

--

## 14. What is the area of forest under a forest management plan and how is this monitored?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 14.1 Categories and definitions

Category	Definition
Forest area with management plan	Forest area that has a long-term documented management plan, aiming at defined management goals which is periodically revised
...of which for production ( <i>sub-category</i> )	Forest management plan mainly focused on production
...of which for conservation ( <i>sub-category</i> )	Forest management plan mainly focused on conservation
Monitoring of forest management plans	Government monitoring of forest management plan implementation conducted through field visits or audits of forest management plan performance

### 14.2 National data

#### 14.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 14.3 Data

Table 14a

Forest plan type	Forest area 2010 (000 ha)
Forest area with management plan	0
... of which for production	0
... of which for conservation	0

Table 14b

Indicate which (if any) of the following are required in forest management plans in your country	
1 Soil and water management	yes

2 High conservation value forest delineation	yes
3 Social considerations community involvement	yes

Table 14c

<b>Percent of area under forest management plan that is monitored annually</b>	<b>0</b>
--	----------

## Tiers

Category	Tier for status
Forest area with management plan	Tier 3
Percent of area under forest management plan that is monitored annually	Tier 3

## Tier criteria

Category	Tier for status
Forest area with management plan	<b>Tier 3</b> : Reports that describe national records 5 years old or less that contain long-term forest monitoring plans <b>Tier 2</b> : Industry or other records indicating the presence of a long-term forest management plan <b>Tier 1</b> : Other
Percent of area under forest management plan that is monitored annually	<b>Tier 3</b> : Government documentation of monitoring extent <b>Tier 2</b> : Reports from forest managers or other documental sources <b>Tier 1</b> : Other

## 14.4 Comments

Category	Comments
Forest area with management plan	N/A
N/A	N/A
N/A	N/A

## Other general comments

--

## 15. How are stakeholders involved in the management decision making for publicly owned forests?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 15.1 Categories and definitions

Category	Definition
Stakeholder involvement	Stakeholder involvement is defined as significant inputs into at least one aspect of forest management at the operational scale

Table 15

Please indicate the type of stakeholder involvement in forest management decision making required in your country	
1. Planning phase	yes
2. Operations phase	yes
3. Review of operations	yes

Tiers

Category	Tier for status
Type of stakeholder inputs	Tier 3

Tier criteria

Category	Tier for status
Type of stakeholder inputs	<b>Tier 3</b> : Government (national or sub-national) documentation of stakeholder inputs <b>Tier 2</b> : Government (national or subnational) requirement but stakeholder inputs not documented <b>Tier 1</b> : Other

### 15.2 Comments

Category	Comments
N/A	N/A
N/A	N/A
N/A	N/A

Other general comments

--

## 16. What is the area of forest under an independently verified forest certification scheme?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 16.1 Categories and definitions

Category	Definition
FSC certification	Forest area certified under the Forest Stewardship Council certification scheme
PEFC certification	Forest area certified under the Programme for the Endorsement of Forest Certification scheme
Other international forest management certification	Forest area certified under an international forest management certification scheme with published standards and is independently verified by a third-party, excluding FSC and PEFC certification.
Certified forest area using a domestic forest management certification scheme	Area certified under a forest management certification scheme with published standards that are nationally recognized and independently verified by a thirdparty

### 16.2 Data

Table 16a













International forest management certification		Forest area (000 ha)						
		2000	2001	2002	2003	2004	2005	2006
	FSC	0	0	0	0	0	0	0
	PEFC	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0
		2007	2008	2009	2010	2011	2012	
	FSC	0	0	0	0	0	0	
	PEFC	0	0	0	0	0	0	
	Other	0	0	0	0	0	0	

Table 16b

Domestic forest management certification		Forest area (000 ha)						
		2000	2001	2002	2003	2004	2005	2006
	N/A	0	0	0	0	0	0	0
	N/A	0	0	0	0	0	0	0
	N/A	0	0	0	0	0	0	0

		2007	2008	2009	2010	2011	2012	
		0	0	0	0	0	0	
		0	0	0	0	0	0	
		0	0	0	0	0	0	

## Tier criteria

Category	Tier for status
<b>International</b> forest management certification	Tier 3: International forest management scheme records maintained by the certifying organization for the reporting year Tier 2: International forest management scheme records reported by the certifying organization for a period 2 years prior to the reporting year Tier: 1 Other
<b>Domestic</b> forest management certification	Tier 3: National registry reports for domestic forest management certification maintained by the certifying organization for the reporting year Tier 2: Domestic forest management scheme records reported by the certifying organization for a period 2 years prior to the reporting year Tier: 1 Other

## Tiers

Category	Tier for status
<b>International</b> forest management certification	Tier 3
<b>Domestic</b> forest management certification	N/A

## 16.3 Comments

Category	Comments related to data definitions etc
Certified forest area using an international forest management certification scheme	N/A
Domestic forest management certification	N/A

## Other general comments

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## 17. How much money do governments collect from and spend on forests?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 17.1 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 revenue include: <ul style="list-style-type: none"> <li>• <b>Goods</b> : roundwood; sawnwood; biomass; woodbased panels; pulp and paper and non-wood forest products.</li> <li>• <b>Services</b> : including concession fees and royalties, stumpage payments, public timber sales revenue taxes and charges based on forest area or yield, taxes on domestic trade and export of forest products, special levies on forestry activities and payments into forest related funds, other miscellaneous inspection, licence and administrative fees levied by forest administrations, permit and licence fees for recreation and other forest related activities.</li> </ul>
Public expenditure on forestry	All government expenditure on forest related activities.

### 17.2 National data

#### 17.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Note to 17.2 Information, based on the Malawi Government – Budget Document.	N/A	N/A	N/A
2	Malawi Government – Budget Document	N/A	2005	N/A
3	Malawi Government - Budget Document	N/A	2010	N/A
4	N/A	N/A	N/A	N/A

### 17.3 Data

Table 17

Category	Revenues / expenditures (000 local currency)		
	2000	2005	2010
Forest revenue	73000	164330	500000
Public expenditure on forestry	124000	214000	1900000
	2000	2005	2010

Name of Local Currency	Malawi Kwacha	N/A	N/A
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#### 17.4 Comments

Category	Comments related to data definitions etc
Forest revenue	N/A
Public expenditure on forestry	Operational expenditure excludes salaries for officers. The operational expenditure budget has mainly been incremental and not activity based. Transfer payments exist but it is difficult to get the right figures, because of poor record keeping.
Other general comments	N/A

Other general comments

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## 18. Who owns and manages the forests and how has this changed?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 18.1 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.
...of which owned by the state at national scale ( <i>sub-category</i> )	Forest owned by the State at the national scale or administrative units of the public administration or by institutions or corporations owned by the public administration.
...of which owned by the state at the sub-national government scale ( <i>sub-category</i> )	Forest owned by the State at the sub-national government scale or administrative units of the public administration or by institutions or corporations owned by the public administration.
Private ownership	Forest owned by individuals, families, communities, private cooperatives corporations and other business entities, private, religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
...of which individuals ( <i>sub-category</i> )	Forest owned by individuals and families.
...of which private business entities and institutions ( <i>sub-category</i> )	Forest owned by private corporations cooperatives companies and other business entities as well as private nonprofit organizations such as NGOs nature conservation associations, and private religious and educational institutions etc.
...of which local tribal and indigenous communities ( <i>sub-category</i> )	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area or forest owned by communities of indigenous or tribal people The community members are coowners that share exclusive rights and duties and benefits contribute to the community development.
Unknown ownership	Forest area where ownership is unknown includes areas where ownership is unclear or disputed.
Categories related to management rights of public forests	Definition
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 companies	Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities private cooperatives, private nonprofit 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.

### 18.2 National data

## 18.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Department of Forestry, Ministry of Forestry and Natural Resources, 1993. Forest Resources Mapping and Biomass Assessment for Malawi. Implementing Agency: Satellitbild	N/A	N/A	N/A
2	Department of Forestry, Ministry of Environment and climate Change Management 2012, Forest Resource Mapping Project under The Japanese Grant for Forest Preservation Programme	N/A	N/A	N/A
3	Atlas of Malawi: Land cover and land cover change 1990 - 2010 by FAO. Government of Malawi and the Norwegian Embassy 2013	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

## 18.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

## 18.2.3 Original data

<p>Note to 18.2</p> <p>Statistical information and data relating to forest ownership and management rights is not available. However, forests are owned and managed by government (public), private institutions, individuals and local communities.</p> <p>Ownership of trees coincides with ownership of the land on which they are situated. However, no inventory has been done to ascertain the sizes of the different categories</p>
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## 18.3 Analysis and processing of national data

### 18.3.1 Adjustment

### 18.3.2 Estimation and forecasting

### 18.3.3 Reclassification

## 18.4 Data

Table 18a

Categories		Forest area (1000 hectares)			
		1990	2000	2005	2010
CFRQ	Public ownership	N/A	N/A	N/A	
CFRQ	... of which owned by the state at national scale	N/A	N/A	N/A	2400
CFRQ	... of which owned by the state at the sub-national government scale	N/A	N/A	N/A	N/A
CFRQ	Private ownership	N/A	N/A	N/A	15
CFRQ	... of which owned by individuals	N/A	N/A	N/A	N/A
CFRQ	... of which owned by private business entities and institutions	N/A	N/A	N/A	15
CFRQ	... of which owned by local, tribal and indigenous communities	0	0	0	0
CFRQ	Unknown ownership	N/A	N/A	N/A	N/A
TOTAL		.00	.00	.00	2415.00

Tiers

Category	Tier for status	Tier for reported trend
Public ownership	Tier 3	Tier 3
Private ownership	Tier 2	Tier 2
Unknown ownership	Tier 1	Tier 1

## Tier criteria

Category	Tier for status	Tier for reported trend
Ownership	Tier 3: National forestry statistics registers of land titles or maps on land ownership or all forest area under one ownership category that is five years old or less. Tier 2: National forestry statistics registers of land titles or maps on land ownership or questionnaires that are more than five years old. Tier 1: Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other

Table 18b - Holder of management rights of public forests

Categories	Forest area (000 hectares)			
	1990	2000	2005	2010
Public Administration	2400	2400	2400	2400
Individuals	N/A	N/A	N/A	N/A
Private companies	N/A	N/A	N/A	15
Communities	N/A	N/A	N/A	N/A
Other	N/A	N/A	N/A	N/A
TOTAL	2400.00	2400.00	2400.00	2415.00

Category	Tier for reported trend	Tier for status
Public Administration	Tier 1	Tier 1
Individuals	N/A	N/A
Private companies	Tier 1	Tier 1
Communities	N/A	N/A
Other	N/A	N/A

## 18.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Public ownership	Owned by government but includes game reserves and nation parks	N/A
Private ownership	N/A	N/A
Unknown ownership	Very difficult to determine without a proper survey	N/A
Management rights	N/A	N/A

**Other general comments to the table**

Forests are owned and managed by government (public), private institutions, individuals and local communities. Ownership of trees coincides with ownership of the land on which they are situated. However, no inventory has been done to ascertain the sizes of the different categories

## 19. How many people are directly employed in forestry?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 19.1 Categories and definitions

Category	Definition
Full-time equivalents (FTE)	A measurement equal to one person working full-time during a specified reference period.
Employment in forestry	Employment in activities related to production of goods derived from forests. This category corresponds to the ISIC/NACE Rev. 4 activity A02 (Forestry and logging).

### 19.2 National data

#### 19.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Lebedys, A. 2003. Trends and current status of the contribution of the forest sector to national economies (final draft).FAO, Rome	1990-2000	N/A	N/A
2	Annual Economic Report 2008, Ministry of Economic Planning and Development	2008	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 19.2.2 Classification and definitions

National class	Definition
Log sales	Logs harvested by the department of forestry and sold by the roadside
Royalties	Sales of standing timber from state forests and forest reserves.
Log sales to Raiply	Sales of standing timber to Raiply Ltd.
Miscellaneous Receipts	This includes a variety of sales. The most important for 1990 being the royalties on wood from customary land and Viphya farm sales.

#### 19.2.3 Original data



Employment in forestry, logging and related services
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1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
808	821	911	921	921	927	938	955	975	996	996

Employment in forestry, logging and related services = 100% Primary production of goods.

### 19.3 Data

Table 19

Category		Employment (000 years FTE)			
		1990	2000	2005	2010
	Employment in forestry	0.808	0.996	0.996	0.996
	... of which female	N/A	N/A	N/A	N/A

### 19.4 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Employment in forestry	Only paid employment is included	N/A

#### Other general comments to the table

Using data from the National Statistical Service of Malawi, data was calculated by taking the employment per cubic metre of round wood production for the year 2000 and using the production data in the years 1990-1999 to estimate the likely level of employment. For this reason, the data is considered to be an under-estimate. Data taken from the Malawi Government Annual Economic Report 2008. Some of the data is based on Lebedys#s document

## 20. What is the contribution of forestry to Gross Domestic Product (GDP)?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 20.1 Categories and definitions

Category	Definition
Gross value added from forestry (at basic prices)	This category corresponds to the ISIC/NACE Rev. 4 activity A02 (Forestry and logging).

### 20.2 Data

Table 20 (Pre-filled data from UNdata/EUROSTAT)

Category	Million	Currency	Year for latest available information
Gross value added from forestry (at basic prices)	4979	Malawi kwacha	2007

### 20.3 Comments

Category	Comments
Gross value added from forestry (at basic prices)	N/A

Other general comments

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## 21. What is forest area likely to be in the future

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 21.1 Categories and definitions

Category	Definition
Government target/aspiration for forest area	Government target/aspiration for forest area for a specific year.
Forests earmarked for conversion	Forest area that is allocated/classified or scheduled to be converted into non-forest uses.

### 21.2 National data

#### 21.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 21.3 Data

Table 21a

Category	Forest area (000 ha)	
	2020	2030
Government target/aspiration for forest area	N/A	N/A

Table 21b

Category	Forest area (000 ha)
	2013
Forests earmarked for conversion	N/A

### 21.4 Comments

Category	Comments
Government target/aspiration for forest area	N/A

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Forests earmarked for conversion	N/A
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Other general comments

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