



Forestry Department

Food and Agriculture Organization of the United Nations

**GLOBAL FOREST RESOURCES
ASSESSMENT 2010**

COUNTRY REPORT

BELIZE

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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).

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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.

Contents

INTRODUCTION.....	5
1 TABLE T1 – EXTENT OF FOREST AND OTHER WOODED LAND.....	6
2 TABLE T2 – FOREST OWNERSHIP AND MANAGEMENT RIGHTS.....	10
3 TABLE T3 – FOREST DESIGNATION AND MANAGEMENT.....	14
4 TABLE T4 – FOREST CHARACTERISTICS.....	17
5 TABLE T5 – FOREST ESTABLISHMENT AND REFORESTATION.....	19
6 TABLE T6 – GROWING STOCK.....	20
7 TABLE T7 – BIOMASS STOCK.....	23
8 TABLE T8 – CARBON STOCK.....	25
9 TABLE T9 – FOREST FIRES.....	27
10 TABLE T10 – OTHER DISTURBANCES AFFECTING FOREST HEALTH AND VITALITY.....	28
11 TABLE T11 – WOOD REMOVALS AND VALUE OF REMOVALS.....	30
12 TABLE T12 – NON-WOOD FOREST PRODUCTS REMOVALS AND VALUE OF REMOVALS..	32
13 TABLE T13 – EMPLOYMENT.....	33
14 TABLE T14 – POLICY AND LEGAL FRAMEWORK.....	35
15 TABLE T15 – INSTITUTIONAL FRAMEWORK.....	37
16 TABLE T16 – EDUCATION AND RESEARCH.....	39
17 TABLE T17 – PUBLIC REVENUE COLLECTION AND EXPENDITURE.....	39

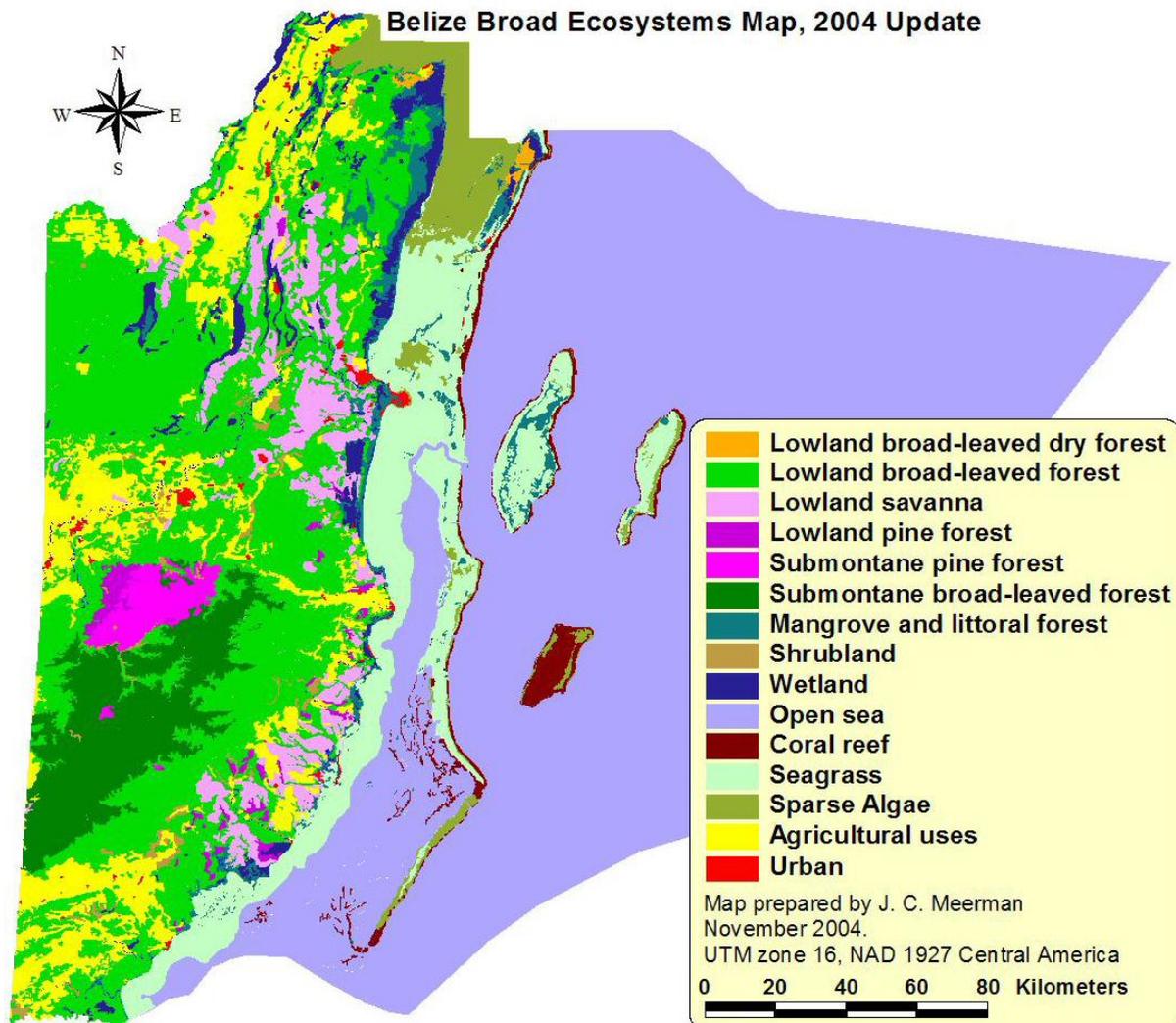
Report preparation and contact persons

No report has been received from Belize.

This report is the result of a desk study prepared by the FRA secretariat in Rome, which summarizes existing available information using the established format for FRA 2010 country reports.

Introduction

The map below is the most recent update of the Belize Ecosystems map (<http://biological-diversity.info/Ecosystems.htm>) which is an update of the Meerman and Sabido (2001) Belize Ecosystems Map.¹



GIS data sets (ArcView shape files) for the 2001 publication (reference year about 1997) and for the map shown in the figure above (reference year 2004) are available for download from the Web site referred to above and have been used for the analysis in this report.

¹ Meerman, J. and W. Sabido. 2001. Central American Ecosystems: Belize. Programme for Belize, Belize City. 2 volumes 50 + 88 pp.

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
Meerman, J. and W. Sabido. 2001. Central American Ecosystems: Belize. Programme for Belize, Belize City	H	Ecosystem map	1996-1998	Uses the UNESCO ecosystem categories. GIS dataset used for analysis
http://biological-diversity.info/Ecosystems.htm	H	Updated ecosystem map	2004	Uses the UNESCO ecosystem categories. GIS dataset used for analysis
FAOSTAT. 2009	H	Inland water bodies	all	

1.2.2 Classification and definitions

The ecosystem map uses the UNESCO classification. A total of about 80 different non-marine categories were distinguished. The description and definition of each of these categories can be found in the Meerman and Sabido report, vol. 2 that can be downloaded from http://biological-diversity.info/Downloads/Volume_IIweb_s.pdf

1.2.3 Original data

The following table shows the original data in summarized form.

Category	1997	2004
Tropical broad-leaved forest	1 305 580	1 235 964
Mangroves	91 920	95 595
Tropical needle-leaved forest	45 727	44 685
Forest Plantations	2 135	2 212
Shrubland	84 411	96 950
Agriculture	366 438	419 002
Urban	10 133	19 597
Savanna	195 192	190 476
Wetlands	69 538	62 873
Total land area	2 171 072	2 167 354
Sub-total Water bodies	46 787	46 309
TOTAL	2 217 860	2 213 663

1.3 Analysis and processing of national data

1.3.1 Calibration

In order to ensure that the areas add up to the total areas according to official statistics as maintained by FAOSTAT, a calibration was carried out. The area of inland water bodies was calculated as the difference of the total country area less total land area.

	1997	2004
Total land area (FAOSTAT)	2 281 000	2 281 000
Calibration factor	1.05063	1.05244

By applying the calibration factors to the original data, the following table was obtained:

Category	Calibrated data (ha)	
	1997	2004
Tropical broad-leaved forest	1 371 685	1 300 773
Mangroves	96 574	100 607
Tropical needle-leaved forest	48 042	47 028
Forest Plantations	2 243	2 328
Sub-total Forest	1 518 544	1 450 736
Shrubland (Other wooded land)	88 685	102 033
Agriculture	384 992	440 972
Urban	10 646	20 625
Savanna	205 075	200 463
Wetlands	73 059	66 170
Sub-total (Other land)	673 771	728 231
Total land area	2 281 000	2 281 000

1.3.2 Estimation and forecasting

Data for the reporting years were estimated by a linear interpolation and extrapolation of the calibrated data in the table above. The following table shows the estimated figures:

Category	Estimated and forecasted data (ha)			
	1990	2000	2005	2010
Tropical broad-leaved forest	1 442 597	1 341 294	1 290 642	1 239 991
Mangroves	92 541	98 302	101 183	104 064
Tropical needle-leaved forest	49 056	47 608	46 884	46 160
Forest Plantations	2 158	2 279	2 340	2 401
Sub-total Forest	1 586 352	1 489 483	1 441 049	1 392 615
Shrubland (Other wooded land)	75 336	94 405	103 940	113 475
Agriculture	329 011	408 983	448 970	488 956
Urban	666	14 922	22 050	29 178
Savanna	209 687	203 099	199 804	196 510
Wetlands	79 948	70 107	65 186	60 266
Sub-total (Other land)	619 312	697 111	736 011	774 910
Total land area	2 281 000	2 281 000	2 281 000	2 281 000

1.3.3 Reclassification into FRA 2010 categories

The tables above show how the original data were reclassified.

1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	1 586	1 489	1 441	1 393
Other wooded land	75	94	104	113
Other land	619	697	736	775
...of which with tree cover	n.a.	n.a.	n.a.	n.a.
Inland water bodies	16	16	16	16
Total for country	2 297	2 297	2 297	2 297

1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest		
Other wooded land		
Other land		
Other land with tree cover		
Inland water bodies		

Other general comments to the table

Expected year for completion of ongoing/planned <u>national</u> forest inventory and/or RS survey / mapping	
Field inventory	
Remote sensing survey / mapping	

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, communities, private co-operatives, corporations and other business entities, private 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 private 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.
Categories related to the holder of management rights of public forest resources	
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
King, et al.,1988. Tropical Forestry Action Plan Report – Final Version	H	Acreage and ownership of land with vegetation (forest) cover	1988	
Wilson, 1995. National Protected Areas Systems Plan – Synthesis Report	H	Forest cover	1995	

2.2.2 Classification and definitions

Belize generally utilizes three categories of land ownership. National lands are those owned by the government and managed by the Lands and Surveys Department; Protected Areas (including Forest Reserves) are still government-owned but managed by the Forest Department, while private lands are owned by individuals, families or companies, etc.

2.2.3 Original data

Land tenure	Area (ha)	%
Public property	1 434 119	63.36
Private property	841 234	36.64

Source: Land Information Centre, Lands & Surveys Department, Ministry of Natural Resources – shape files. Summary of land tenure ship

2.3 Analysis and processing of national data

The 1988 Tropical Forestry Action Plan indicated the proportions of the ownership of the terrestrial area. Assuming little change between the tenure-ship ratios, this value was used to derive the proportion of forested land ownership in 1990. The same cannot be done for the later reporting years since the rate of land use change increased considerably during the last decade.

2.4 Data for Table T2

Table 2a - Forest ownership

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	1 005	nda	nda
Private ownership	581	nda	nda
...of which owned by individuals	nda	nda	nda
...of which owned by private business entities and institutions	nda	nda	nda
...of which owned by local communities	nda	nda	nda
...of which owned by indigenous / tribal communities	nda	nda	nda
Other types of ownership	0	nda	nda
TOTAL	1 586	1 489	1 441

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

Does ownership of trees coincide with ownership of the land on which they are situated?	<input type="checkbox"/>	Yes
	<input type="checkbox"/>	No
If No above, please describe below how the two differ:		

Table 2b - Holder of management rights of public forests

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public Administration			
Individuals			
Private corporations and institutions			
Communities			
Other			
TOTAL			

2.5 Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership		
Private ownership		
Other types of ownership		
Management rights		

Other general comments to the table

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.
Categories of primary designated functions	
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.
Special designation and management categories	
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 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
UNEP-WCMC. World Data Base on Protected Areas.	M	Protected areas	2009	

3.2.2 Original data

According to UNEP and the World Conservation Monitoring Centre, currently (2009) there are 598 729 hectares of protected areas in Belize within the IUCN categories I – IV. All the protected area has been reported under conservation of biodiversity, assuming that most of the areas are forests.

The designation of the remaining forest area is unknown.

3.3 Data for Table T3

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	nda	nda	nda	0
Protection of soil and water	nda	nda	nda	0
Conservation of biodiversity	nda	nda	nda	599
Social services	nda	nda	nda	0
Multiple use	nda	nda	nda	0
Other (please specify in comments below the table)	nda	nda	nda	0
No / unknown	nda	nda	nda	794
TOTAL	1 586	1 489	1 441	1 393

Table 3b – Special designation and management categories

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

3.4 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production		
Protection of soil and water		

Conservation of biodiversity	Corresponds to all protected areas within IUCN categories I – IV. May include some areas that are not forest.	
Social services		
Multiple use		
Other		
No / unknown designation		
Area of permanent forest estate		
Forest area within protected areas		
Forest area under sustainable forest management		
Forest area with management plan		

Other general comments to the table

Available data are insufficient to determine any designation other than conservation

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).
Characteristics categories	
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 (sub-category)	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 (sub-category)	Planted forest, where the planted/seeded trees are predominantly of introduced species.
Special categories	
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

See data reported under tables T1 and T3.

4.3 Analysis and processing of national data

Area of forest under conservation 2010 was used as an expert estimate for primary forest area. It is assumed constant for all reporting years.

Area of forest plantations and mangroves were taken directly from the table in chapter 1.3.2.

4.4 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	599	599	599	599
Other naturally regenerated forest	984.8	887.7	839.7	791.6
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
Planted forest	2.2	2.3	2.3	2.4
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
TOTAL	1 586	1 489	1 441	1 393

Table 4b

FRA 2010 Categories	Area (1000 hectares)			
	1990	2000	2005	2010
Rubber plantations (Forest)	n.a.	n.a.	n.a.	n.a.
Mangroves (Forest and OWL)	92.5	98.3	101.2	104.1
Bamboo (Forest and OWL)	n.a.	n.a.	n.a.	n.a.

4.5 Comments to Table T4

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest	Expert estimate based on area under conservation.	
Other naturally regenerating forest		
Planted forest		
Rubber plantations		
Mangroves	Some previous assessments were in the order of 70 000 ha but that a more recent assessment by WCMC also produced a figure of about 95 000 ha.	
Bamboo		

Other general comments to the table

5 Table T5 – Forest establishment and reforestation

No data are available for this reporting 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
CCAD-PROARCA/CAPAS-USAID. 1998. <i>Estimación de la cantidad de carbono almacenado y captado (masa aérea) en los bosques de la República de Belize.</i> By Lenin Corrales. Belize, Septiembre 1998		Biomass	1998	Extracted from FAO, Forest Resources Assessment Working paper 69.

6.2.2 Original data

The biomass data as of table T7, and which were estimated based on data from the source above, were used as input for estimating the total growing stock. No data are available on species composition.

6.3 Analysis and processing of national data

Biomass data from table T7 were divided by a biomass conversion and expansion factor of 1.3 (humid tropical forest, 120-200 m³/ha) in order to estimate the total growing stock.

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	257	242	234	226	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.
... of which broadleaved	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Growing stock of commercial species	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

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 st					
2 nd					
3 rd					
4 th					
5 th					
6 th					
7 th					
8 th					
9 th					
10 th					
Remaining					
TOTAL					

Note: Rank refers to the order of importance in terms of growing stock, i.e. 1st 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 ² of trees included in growing stock (X)		
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)		
Minimum diameter (cm) of branches included in growing stock (W)		
Volume refers to “above ground” (AG) or “above stump” (AS)		

² 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		
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
CCAD-PROARCA/CAPAS-USAID. 1998. <i>Estimación de la cantidad de carbono almacenado y captado (masa aérea) en los bosques de la República de Belize</i> . By Lenin Corrales. Belize, Septiembre 1998		Biomass	1998	Extracted from FAO, Forest Resources Assessment Working paper 69.

7.2.2 Classification and definitions

Definition of biomass pools are the same as the IPCC guidelines and FRA 2010 definitions.

7.2.3 Original data

Above-ground biomass = 211 t/ha.

Forest area according to table T1.

No data are available on carbon in dead wood.

7.3 Analysis and processing of national data

Applying a root-shoot ratio of 0.24, we get a below-ground biomass of 51 t/ha. The biomass per hectare has been applied to the forest area figures in table T1.

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	335	314	304	294	n.a.	n.a.	n.a.	n.a.
Below-ground biomass	81	76	73	71	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.
TOTAL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

7.5 Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass		
Below-ground biomass		
Dead wood		

Other general comments to the table

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 National data

8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
CCAD-PROARCA/CAPAS-USAID. 1998. <i>Estimación de la cantidad de carbono almacenado y captado (masa aérea) en los bosques de la República de Belize.</i> By Lenin Corrales. Belize, Septiembre 1998		Biomass	1998	Extracted from FAO, Forest Resources Assessment Working paper 69.

8.2.2 Original data

The biomass data from table T7 which were estimated based on data from the source above, were used as input for estimating the carbon stock. No data are available on carbon in dead wood, litter and soil.

8.3 Analysis and processing of national data

A carbon fraction of 0.47 was applied.

8.4 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	157	148	143	138	n.a.	n.a.	n.a.	n.a.
Carbon in below-ground biomass	38	36	35	33	n.a.	n.a.	n.a.	n.a.
Sub-total: Living biomass	195	183	177	171	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.
Carbon in litter	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sub-total: Dead wood and litter	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Soil carbon	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Soil depth (cm) used for soil carbon estimates	
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8.5 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

The Forest Department maintains some records of wildfires in forest reserves in certain parts of the country. Those in the reserves are generally caused by lightning. Wildfires, however, occurs in other parts of the country on both national and private land. Information about these is not recorded and it is therefore not possible to estimate the areas damaged by fire.

10 Table T10 – Other disturbances affecting forest health and vitality

10.1 FRA 2010 Categories and definitions

Term	Definition
Disturbance	Damage caused by any factor (biotic or abiotic) that adversely affects the vigour and productivity of the forest and which is not a direct result of human activities.
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.
Category	Definition
Disturbance by insects	Disturbance caused by insect pests.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as bacteria, fungi, phytoplasma or virus.
Disturbance by other biotic agents	Disturbance caused by biotic agents other than insects or diseases, such as wildlife browsing, grazing, physical damage by animals, etc.
Disturbance caused by abiotic factors	Disturbances caused by abiotic factors, such as air pollution, snow, storm, drought, etc.

10.2 National data

10.2.1 Original data

During the last decade (1990 – 2000), Belize was been spared from major hurricane damage. This decade several major hurricanes have damaged areas of forests and wooded lands. However, the recorded information does not allow for estimation of the damaged areas.

The Mountain Pine Ridge Forest Reserve in the mid-western part of the country representing the largest block of pine forests in a managed forest was severely affected by infestation of bark beetles between 1999 and 2002. This resulted in damage to and death of approximately seventy percent (70 %) of the forest. An estimated, but unconfirmed ten to fifteen percent of the pine forests of the South Coastal Plains were similarly affected by the bark beetle infestation.

Given the limited data available, only table 10b is reported upon.

10.3 Data for Table T10

Table 10b – Major outbreaks of insects and diseases affecting forest health and vitality

Description / name	Tree species or genera affected (scientific name)	Year(s) of latest outbreak	Area affected (1000 hectares)	If cyclic, approx. cycle (years)
Bark beetle	<i>Pinus</i>	1999-2002	n.a.	n.a.

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
FAOSTAT		Removals	1988-2007	

11.2.2 Original data

Year	Ind. RW m3 u.b.	Woodfuel m3 u.b.
1988	61 600	126 000
1989	61 600	126 000
1990	61 600	126 000
1991	61 600	126 000
1992	61 600	126 000
1998	61 600	126 000
1999	61 600	126 000
2000	61 600	126 000
2001	61 600	126 000
2002	61 600	126 000
2003	61 600	126 000
2004	61 600	126 000
2005	61 600	126 000
2006	29 000	126 000
2007	41 000	669 800

Source: FAOSTAT, © FAO Statistics Division, 7 September 2009

11.3 Analysis and processing of national data

Five-year averages were calculated and multiplied by 1.15 to obtain volumes over bark.

11.4 Data for Table T11

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990	2000	2005	1990	2000	2005
Total volume (1000 m ³ o.b.)	71	71	59	145	145	270
... of which from forest	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Unit value (local currency / m ³ o.b.)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total value (1000 local currency)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Note: The figures for the reporting years refer to the averages of annually affected areas for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively.

	1990	2000	2005
Name of local currency			

11.5 Comments to Table T11

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total volume of industrial roundwood removals		
Total volume of woodfuel removals		
Unit value		
Total value		

Other general comments to the table

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

There are no data available for this reporting table.

13 Table T13 – Employment

13.1 FRA 2010 Categories and definitions

Category	Definition
Full-time equivalents (FTE)	A measurement equal to one person working full-time during a specified reference period.
Employment	Includes all persons in paid employment or self-employment.
Paid employment	Persons who during a specified reference period performed some work for <u>wage or salary</u> in cash or in kind.
Self-employment	Persons who during a specified reference period performed some work for <u>profit or family gain</u> in cash or in kind (e.g. employers, own-account workers, members of producers' cooperatives, contributing family workers).

13.2 National data

13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Lebedys 2008. Contribution of the forestry sector to national economies 1990-2006. FAO.		Formal employment in forestry.	1990-2006	Data from national statistics office.

13.2.2 Original data

Employment (1000 FTE)	1990	2000	2005
Forestry (ISIC Div. 02)	1	1	1

13.3 Data for Table T13

FRA 2010 Category	Employment (1000 years FTE)		
	1990	2000	2005
Employment in primary production of goods	n.a	n.a	n.a
...of which paid employment	1	1	1
...of which self-employment	n.a	n.a	n.a
Employment in management of protected areas	n.a	n.a	n.a

13.4 Comments to Table T13

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Employment in primary production of goods		
Paid employment / self-employment		
Employment in management of protected areas		

Other general comments to the table

14 Table T14 – Policy and legal framework

14.1 FRA 2010 Categories and definitions

Term	Definition
Forest policy	A 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 society.
Forest policy statement	A document that describes the objectives, priorities and means for implementation of the forest policy.
National forest programme (nfp)	A generic expression that refers to a wide range of approaches towards forest policy formulation, planning and implementation at national and sub-national levels. The national forest programme provides a framework and guidance for country-driven forest sector development with participation of all stakeholders and in consistence with policies of other sectors and international policies.
Law (Act or Code) on forest	A 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)			
Forest policy statement with national scope	<input type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Year of endorsement		
	Reference to document		
National forest programme (nfp)	<input type="checkbox"/>	Yes	
	<input 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			
Law (Act or Code) on forest with national scope	<input 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		
	Year of latest amendment		
	Reference to document		

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.	
Sub-national forest policy statements	Yes
	No
If Yes above, indicate the number of regions/states/provinces with forest policy statements	
Sub-national Laws (Acts or Codes) on forest	Yes
	No
If Yes above, indicate the number of regions/states/provinces with Laws on forests	

14.3 Comments to Table T14

Variable / category	Comments related to data, definitions, etc.
Forest policy statement with national scope	
National forest programme (nfp)	
Law (Act or Code) on forest with national scope	
Sub-national forest policy statements	
Sub-national Laws (Acts or Codes) on forest	

Other general comments to the table

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 – Institutions

FRA 2010 Category	2008	
Minister responsible for forest policy formulation : please provide full title		
Level of subordination of Head of Forestry within the Ministry		1 st level subordination to Minister
		2 nd level subordination to Minister
		3 rd level subordination to Minister
		4 th or lower level subordination to Minister
Other public forest agencies at national level		
Institution(s) responsible for forest law enforcement		

Table 15b – Human resources

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff						
...of which with university degree or equivalent						

Notes:

1. Includes human resources within public forest institutions at sub-national level
2. 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		
Other public forest agencies at national level		
Institution(s) responsible for forest law enforcement		
Human resources within public forest institutions		

Other general comments to the table

16 Table T16 – Education and research

No data are available for this reporting table.

17 Table T17 – Public revenue collection and expenditure

No data are available for this reporting table.