Jamaica

Global Forest Resources Assessment 2015

Country Report Jamaica
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.

TABLE OF CONTENTS

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Introductory Text

Place an introductory text on the content of this report

This report was prepared for the FAO -FRA 2015 by the Forestry Department of Jamaica. Time series data used cover the period 1989 to 1998 using LANDSAT ^{TM} images. External data were also provided by the FRA team.

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 *(sub-category)*	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 *(sub-category)*	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 *(sub-category)*	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 *(sub-category)*	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 *(sub-category)*	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

1	Evelyn O. B and Camirand R., 2003. Forestry cover and deforestation in Jamaica: an analysis of forest cover and estimates over time. Jamaica. International Forestry Review, 5(4), 2003, pp. 354-363 (Table 6)	Forest cover, forest type classification, land use/cover change	1989 and 1998	Analysis of forest cover change over period 1989 to 1998 using LANDSAT TM images, aerial photos and field checks. Online at www.forestry.gov.jm
2	Annual Reports (Forestry Department)	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

1.2.2 Classification and definitions

National class	Definition
Bamboo	Bambusa vulgaris (bamboo brakes) on the lower shale hills (disturbed forest)
Mangrove	Edaphic forest (areas with brackish water) composed of trees with stilt roots or pneumatopores, species indicators such as Rhizophora mangle (red mangrove)
Closed broadleaf	Closed primary forest with broadleaf trees at least 5 m tall and crown interlocking, with minimal human disturbance
Disturbed broadleaf	Disturbed broadleaf forest with trees at least 5 m tall and species-indicators of disturbance such as Ceropia peltata (trumpet tree)
Short open dry	Open scrub, shrub, bush or brushland with trees or shrubs 1-5 m tall and crowns not in contact, in drier parts of Jamaica with species-indicators such as Prosopis juliflora (cashaw) or Stenocereus hystrix (columnar cactus)
Swamp	Edaphic forest (soil waterlogging) with a single tree storey with species-indicators such as Symphonia globulifera (hog plum) and Roystonea princeps (royal palm)
Tall open dry	Open natural woodland or forest with trees at least 5 m tall and crown not in contact, in drier parts of Jamaica with species-indicators such as Bursera simaruba (red birch)
Bamboo and fields	50% bamboo; >25% fields" /> >50% bamboo; >25% fields
Bamboo and Disturbed broadleaf forest	50% bamboo; > 25% Disturbed broadleaf forest" /> >50% bamboo; > 25% Disturbed broadleaf forest
Bauxite extraction and Disturbed broadleaf forest	50% bauxite extraction; >25% Disturbed broadleaf forest" /> >50% bauxite extraction; >25% Disturbed broadleaf forest
Fields and Disturbed broadleaf forest	50% fields; >25% Disturbed broadleaf forest" /> >50% fields; >25% Disturbed broadleaf forest
Fields or Disturbed broadleaf forest and Pine plantation	50% fields or Disturbed broadleaf forest; >25% Pine plantation " /> >50% fields or Disturbed broadleaf forest; >25% Pine plantation

Disturbed broadleaf forest and fields	50% Disturbed broadleaf forest; >25% fields" /> >50% Disturbed broadleaf forest; >25% fields
Buildings and other infrastructure	Buildings and other constructed features such as airstrips, quarries, etc.
Bauxite extraction	Surface mining/bauxite
Bare rock	Bare sand/rock
Fields	Herbaceous crops, fallow, cultivated grass/legumes
Herbaceous wetlands	Edaphic vegetation (soil waterlogging) with herbaceous plants
Plantations	Tree crops, shrub crops like sugar cane, bananas, citrus and coconuts
Water bodies	Lakes, rivers
Small islands	Mostly sand/limestone, unvegetated small islands (cays)
Water bodies	Lakes, rivers
Small islands	Mostly sand/limestone, unvegetated small islands (cays)

1.2.3 Original data

Land use/cover change in Jamaica (1989-1998)

National classes	1989 '000 ha	1998 '000 ha
Forests land use		
Bamboo	**2.8**	**3.0**
Mangrove	**9.8**	**9.7**
Closed broadleaf	**88.7**	**88.2**
Disturbed broadleaf	**177.2**	**174.8**
Short open dry	**12.1**	**12.1**
Swamp	**2.4**	**2.2**
Tall open dry	**42.1**	**42.0**

TOTAL	**335.1**	**332.0**
Mixed land use		
Bamboo and fields	**29.8**	**29.0**
Bamboo and disturbed broadleaf	**12.3**	**12.7**
Bauxite and disturbed broadleaf	**1.6**	**2.9**
Fields and disturbed broadleaf	**118.9**	**118.0**
Fields/Disturbed broadleaf and pine plantation	**8.9**	**8.2**
Disturbed broadleaf and fields	**166.8**	**166.0**
TOTAL	**338.3**	**336.8**
Non-Forest land use		
Buildings/other infrastructure	**51.9**	**52.3**
Bauxite	**1.2**	**4.9**
Bare rock	**0.9**	**0.9**
Fields	**273.2**	**274.5**
Herbaceous wetlands	**10.9**	**10.9**
Plantations	**83.1**	**82.3**
Water bodies	**1.6**	**1.6**
Small islands	**0.2**	**0.2**
Total	**423.0**	**427.6**
Total area of country	**1096.4**	**1096.4**

Source:*Forestry cover and deforestation in Jamaica: an analysis of forest cover and estimates over time.*

1.3 Analysis and processing of national data

1.3.1 Adjustment

Source	Total land area (1000 hectares)
National data	**1096.4**
FAOSTAT	**1099**

Calibration factor = (1099/1096) = 1.002371397

1.3.2 Estimation and forecasting

National classes	1989 '000 ha [a]	1998 '000 ha [b]	1990[1] '000 ha [c]	2000[1] '000 ha [d]	2005[1] '000 ha [e]	2010[1] '000 ha [f]
Forests land use						
Bamboo	2.8	3.0	2.8	3.0	3.1	3.3
Mangrove	9.8	9.7	9.8	9.7	9.6	9.6
Closed broadleaf	88.7	88.2	88.9	88.3	88.0	87.7
Disturbed broadleaf	177.2	174.8	177.3	174.7	173.3	172.0
Short open dry	12.1	12.1	12.1	12.1	12.1	12.1
Swamp	2.4	2.2	2.4	2.2	2.0	1.9
Tall open dry	42.1	42.0	42.2	42.1	42.0	42.0
Total	**335.1**	**332.0**	**335.5**	**332.1**	**330.1**	**328.6**
Mixed land use						
Bamboo and fields	29.8	29.0	29.8	28.9	28.4	28.0

Bamboo and disturbed broadleaf	12.3	12.7	12.4	12.8	13.0	13.3
Bauxite and disturbed broadleaf	1.6	2.9	1.7	3.2	3.9	4.6
Fields and disturbed broadleaf	118.9	118.0	119.1	118.0	117.5	117.1
Fields/ Disturbed broadleaf and pine plantation	8.9	8.2	8.9	8.2	8.2	7.3
Disturbed broadleaf and fields	166.8	166.0	167.1	166.2	165.7	165.3
Total	**338.3**	**336.8**	**339.0**	**337.3**	**336.7**	**335.6**
Non-Forest Land Use						
Non-Forest land use	407.0	411.6	408.5	413.6	416.2	418.7
Water	16.0	16.0	16.0	16.0	16.0	16.0
Total	**423.0**	**427.6**	**424.5**	**429.6**	**432.2**	**434.8**
Grand Total	**1096.4**	**1096.4**	**1099.0**	**1099.0**	**1099.0**	**1099.0**

The class fields/disturbed broadleaf and pine plantation comprises pine and hardwood plantations

ha_a = original data for year 1989

ha_b = original data for year 1998

$ha_c = ha_a + (ha_b - ha_a)/9 * \text{calibration factor}$

$ha_d = (ha_b + (ha_b - ha_a)/9 * 2) * \text{calibration factor}$

$ha_e = (ha_b + (ha_b - ha_a)/9 * 7) * \text{calibration factor}$

$ha_f = (ha_b + (ha_b - ha_a)/9 * 12) * \text{calibration factor}$

*Areas are multiplied by the calibration factor to arrive at the FAO STAT Country total.

* [1] Data for the years 1990, 2000 and 2005 were estimated using linear interpolation of the data from 1989 and 1998. Similarly, data for year 2010 were forecasted using the same linear trend.

*Total Hectare for water was used as 16,000 hectares (total as reported by FOA STAT)

1.3.3 Reclassification

National Classes	FRA Categories					
	IWB	Forest	OWL	Other Lands	Total	OLWTC
Bamboo		100%				
Mangrove		100%			100%	
Closed broadleaf		100%			100%	
Disturbed broadleaf		100%			100%	
Short open dry			100%		100%	
Swamp		100%			100%	
Tall open dry		100%			100%	
Bamboo and Fields 3			75%	25%	100%	
Bamboo and disturbed broadleaf		100%			100%	
Bauxite and disturbed broadleaf			25%	75%	100%	
Fields and disturbed broadleaf			25%	75%	100%	

Fields/ Disturbed broadleaf and pine		100%			100%	
Disturbed broadleaf and Fields 3			75%	25%	100%	
None-Forest land use				100%	100%	14.5%
Water	100%				100%	

OLWTC classification by expert opinion

Fails to satisfy height criterion for that of forest for FRA classification

This class was classified as forest because of the pine and hardwood plantations making up its composition

3 Mixed land use with classification of >50% and >25% are used as 75% and 25% for this report

1.4 Data

Table 1a

Categories		Area (000 hectares)				
		1990	2000	2005	2010	2015
CFRQ	Forest	344.6	340.9	339.2	337.1	335.2
CFRQ	Other wooded land	190	188.8	188	187.6	186.9
CFRQ	Other land	548.3	553.3	555.8	558.3	560.9
CFRQ	... of which with tree cover	82.1	82.4	82.7	83	83.2
CFRQ	Inland water bodies	16	16	16	16	16
	TOTAL	1098.90	1099.00	1099.00	1099.00	1099.00

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	0.239	0.327	0.269	0.318	0.178	0.267	0.207	0.256
CFRQ	... of which afforestation	0.178	0.265	0.207	0.256	0.178	0.267	0.207	0.256
CFRQ	... of which natural expansion of forest	0.062	0.062	0.062	0.062	0	0	0	0
CFRQ	Deforestation	0.437	0.437	0.437	0.437	0.083	0.083	0.083	0.083
CFRQ	... of which human induced	0.437	0.437	0.437	0.437	0.083	0.083	0.083	0.083
CFRQ	Reforestation	0.08	0.07	0.06	0.06	0.08	0.07	0.06	0.06
CFRQ	... of which artificial	0.08	0.07	0.06	0.06	0.08	0.07	0.06	0.06

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 2
Reforestation	Tier 2	Tier 2

Tier criteria

Category	Tier for status	Tier for reported trend
• Forest • Other wooded land • Afforestation • Reforestation • Natural expansion of forest • Deforestation	**Tier 3** : Data sources: Either recent (less than 10 years ago) National Forest Inventory or remote sensing, with ground truthing, or programme for repeated compatible NFIs **Tier 2** : Data sources: Full cover mapping / remote sensing or old NFI (more than 10 years ago) **Tier 1** : Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

1.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trends
Forest	Fields/Disturbed broadleaf and pine is classified as forest because of the pine and hardwood plantations making up its composition	Using the 1989 and the 1998 land-use date, the areas for the reported years are then extrapolated.

Other wooded land	The mixed areas are placed in other wooded lands instead of forest because it is not sure that these areas fit the 10% crown cover criterion. In the past these areas were classified as other wooded lands because they did not fit the 1967 FAO's forest definition of "more than 20% crown cover". Because the analysis was done using Landsat TM a more detailed analysis would have to be done, possibly using aerial photographs, in order to extract the areas that fit the 2001/2005 definition of more than 10% crown cover. Short open dry type fails to satisfy height criterion for that of forest for FRA classification	N/A
Other land	N/A	N/A
Other land with tree cover	This category include plantations such as banana, citrus, coconut etc	N/A
Inland water bodies	FAOSTAT figure of 16 000 ha is used for the report although discrepancy exists with the inventory figure of 1 600 ha for inland water bodies	N/A
Forest expansion	Data taken from various reports at the Forestry Department (annual, regional and zonal) showing plantation establishment on areas previously not classified as forest along with areas showing land use change from non forest to forest through natural means	N/A
Deforestation	Established through reference source #1. Mainly man made activities for farming, housing, mining and infrastructure establishments	N/A
Reforestation	Areas previously planted and harvested are replanted. This area is minimal in acreage	N/A

Other general comments to the table
The disturbed areas were considered as other wooded land. If these areas were considered as forest, the area of forest on the island may show an increase when in fact there is no increase. This may put us back into the confused situation Jamaica was in the 1990s when FAO reported a significant decrease in forest. As it is now, there is clarification and consistency between the reports over the years, facilitating comparison and analysis. There is a discrepancy between the area of water reported by FAO STAT and that reported by the Statistical Institute of Jamaica (STATIN). FAOSTAT is reporting 16, 000 ha while the official figure by STATIN is 1,600 ha. The area reported by FAOSTAT. is used for this exercise. Efforts will be made to correct the discrepancy between data source and FAOSTAT

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 outside 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 *(sub-category)*	Other naturally regenerated forest where the trees are predominantly of introduced species.
...of which naturalized *(sub-sub category)*	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 *(sub-category)*	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 *(sub-category)*	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	Evelyn O. B and Camirand R., 2003. Forestry cover and deforestation in Jamaica: an analysis of forest cover and estimates over time. Jamaica. International Forestry Review, 5(4), 2003, pp. 354-363 (Table 6)	Classes for Forests and Other wooded lands	1989 & 1998	classification, definitions, tables etc. are extracted form information for Table T1 Online at www.forestry.gov.jm
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

2.2.2 Classification and definitions

National class	Definition
Mangrove	Edaphic forest (areas with brackish water) composed of trees with stilt roots or pneumatopores, species indicators such as Rhizophora mangle (red mangrove)
Closed broadleaf	Closed primary forest with broadleaf trees at least 5 m tall and crown interlocking, with minimal human disturbance
Disturbed broadleaf	Disturbed braodleaf foresr with trees at least 5 m tall and species-indicators of disturbance such as Ceropia peltata (trumpet tree)
Swamp	Edaphic forest (soil waterlogging) with a single tree storey with species-indicators such as Symphonia globulifera (hog plum) and Roystonea princeps (royal palm)
Tall open dry	Open natural woodland or forest with trees at least 5 m tall and crown not in contact, in drier parts of Jamaica with species-indicators such as Bursera simaruba (red birch)
Caribbean pine plantation	Forest plantation with Pinus caribaea
Other species plantation	Forest plantation with other species such as Hibiscus elatus (blue mahoe), Swietenia macrophylia (Honduras mahogany), Tectona grandis (teak), Eucalyptus saligna, Cedrela odorata (cedar), etc

2.2.3 Original data

Land use/cover change in Jamaica (1989-1998)

National classes	**1989** **'000 ha**	**1998** **'000 ha**
Forests land use		
Bamboo	2.8	3.0
Mangrove	9.8	9.7
Closed broadleaf	88.7	88.2
Disturbed broadleaf	177.2	174.8
Short open dry	12.1	12.1

Swamp	2.4	2.2
Tall open dry	42.1	42.0
TOTAL	**335.1**	**332.0**
Mixed land use		
Bamboo and fields	29.8	29.0
Bamboo and disturbed broadleaf	12.3	12.7
Bauxite and disturbed broadleaf	1.6	2.9
Fields and disturbed broadleaf	118.9	118.0
Fields/Disturbed broadleaf and pine plantation	8.9	8.2
Disturbed broadleaf and fields	166.8	166.0
TOTAL	**338.3**	**336.8**

2.3 Analysis and processing of national data

2.3.1 Adjustment

Same as Question1

2.3.2 Estimation and forecasting

Not necessary

2.3.3 Reclassification

1.1.1

National classes	1990 '000 ha	2000 '000 ha	2005 '000 ha	2010 '000 ha	FRA 2010 classes						
					Primary	Other naturally regenerated	Other naturally regenerated, Introduced	Planted	Planted, Introduced	Mangrove	Bamboo
Forests land use											
Bamboo	2.8	3.1	3.2	3.3		100%	100%				100%
Mangrove	9.8	9.7	9.6	9.6		100%				100%	
Closed broadleaf	88.9	88.3	88.0	87.7	100%						
Disturbed broadleaf	177.4	174.7	173.3	172.0		100%					
Swamp	2.4	2.2	2.0	1.9		100%					
Tall open dry	42.2	42.1	42.0	42.0		100%					
Fields/ Disturbed broadleaf and pine plantation	8.8	8.1	7.7	7.3				100%	98.8%		
Bamboo and disturbed broadleaf	12.4	12.8	13.0	13.3		100%	75%				75%
Total	**344.6**	**340.9**	**339.0**	**337.1**							

Source: Extracted from 1.3.2 Estimation and forecasting and 1.3.3 Reclassification into FRA 2010 classes

The class fields/disturbed broadleaf and pine plantation comprises pine and hardwood plantations

2.4 Data

Table 2a

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
CFRQ	Primary forest	88.9	88.3	88	87.7	87.5

CFRQ	Other naturally regenerated forest	246.9	244.4	243	242	240.8
CFRQ	... of which of introduced species	38.8	38.9	39	39.2	39.3
CFRQ	... of which naturalized	38.8	38.9	39	39.2	39.3
CFRQ	Planted forest	8.9	8.2	8.2	7.3	6.9
CFRQ	... of which of introduced species	8.8	8.1	8.1	7.2	6.8
TOTAL		344.70	340.90	339.20	337.00	335.20

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
0.675	0	0.025	0.675	0	0.025	0.675	0	0.025

Table 2c

Categories	Area (000 hectares)				
	1990	2000	2005	2010	2015
Mangroves (forest and OWL)	9.8	9.7	9.6	9.6	9.5
... of which planted	0	0	0	0.1	0.1

Tiers

Category	Tier for status	Tier for reported trend
Primary forest	Tier 2	Tier 2
Other naturally regenerated forest	Tier 2	Tier 2
Planted forest	Tier 2	Tier 2
Mangroves	Tier 2	Tier 2

Tier Criteria

Category	Tier for status	Tier for reported trend

Primary forest/Other naturally regenerated forest/Planted forest	**Tier 3** : 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 **Tier 2** : Data sources: Full cover mapping/ remote sensing or old NFI (more than 10 years) **Tier 1** : Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

2.5 Comments

Category	Comments related to data definitions etc	Comments on reported trend
Primary forest	All of closed broadleaf forests.	N/A
Other naturally regenerating forest	This classification related to all our forests except Planted (Plantation) forests and Closed broadleaf forest which is classified as Primary forest.	N/A
Planted forest	Only our plantations (Pine forest and hardwood plantations) are considered as Planted forests	N/A
Mangroves	As stated in the report, detailed assessments of mangroves are not available and figures as stated in table 1 will be used for mangrove forest classification. Other mangrove figures will be arrived at using expert knowledge.	Although other mangrove data are available the accuracy of the data is not known and as such these figures will not be used until further analysts are done to clarify data accuracy. Planted mangroves are as a result of funded project to replace mangroves damage by natural and man-made activities

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	Camirand R. and Evelyn O.B., 2003. Forestry Department-Trees for Tomorrow Project. 2004. National Forest Inventory Report 2003, Main Report and Appendices 1 to V	Area and Volume, biomass	2003	N/A

2	Davis, C., Evelyn, O.B., Simpson, L.A. and Smith, I.T., 2008. Jamaica's Greenhouse Gas Emissions Inventory, 2000 – 2005, Final Report	Biomass Stock, carbon	2000-2005	Tables 4-9 and 4-13
3	FAO. Guidelines for Countries reporting to FRA 2010	Default tables	N/A	Appendix 5, Tables 5.52, 5.9ix and 5.10x
4	N/A	N/A	N/A	N/A

3.2.2 Classification and definitions

National class	Definition
Bamboo	Bambusa vulgaris (bamboo brakes) on the lower shale hills (disturbed forest)
Mangrove	Edaphic forest (areas with brackish water) composed of trees with stilt roots or pneumatopores, species indicators such as Rhizophora mangle (red mangrove)
Closed broadleaf	Closed primary forest with broadleaf trees at least 5 m tall and crown interlocking, with minimal human disturbance
Disturbed broadleaf	Disturbed broadleaf forest with trees at least 5 m tall and species-indicators of disturbance such as Ceropia peltata (trumpet tree)
Short open dry	Open scrub, shrub, bush or brushland with trees or shrubs 1-5 m tall and crowns not in contact, in drier parts of Jamaica with species-indicators such as Prosopis juliflora (cashaw) or Stenocereus hystrix (columnar cactus)
Swamp	Edaphic forest (soil waterlogging) with a single tree storey with species-indicators such as Symphonia globulifera (hog plum) and Roystonea princeps (royal palm)
Tall open dry	Open natural woodland or forest with trees at least 5 m tall and crown not in contact, in drier parts of Jamaica with species-indicators such as Bursera simaruba (red birch)
Bamboo and fields	50% bamboo; >25% fields" /> >50% bamboo; >25% fields
Bamboo and Disturbed broadleaf forest	50% bamboo; > 25% Disturbed broadleaf forest" /> >50% bamboo; > 25% Disturbed broadleaf forest
Bauxite extraction and Disturbed broadleaf forest	50% bauxite extraction; >25% Disturbed broadleaf forest" /> >50% bauxite extraction; >25% Disturbed broadleaf forest
Fields and Disturbed broadleaf forest	50% fields; >25% Disturbed broadleaf forest" /> >50% fields; >25% Disturbed broadleaf forest
Fields or Disturbed broadleaf forest and Pine plantation	50% fields or Disturbed broadleaf forest; >25% Pine plantation " /> >50% fields or Disturbed broadleaf forest; >25% Pine plantation
Disturbed broadleaf forest and fields	50% Disturbed broadleaf forest; >25% fields" /> >50% Disturbed broadleaf forest; >25% fields

3.2.3 Original data

Total Volume by forest types

Name	Area (ha)	Volume (‘000 m^3)
Closed Broadleaf	88230.5	17088.5
Disturbed Broadleaf	174724.6	28909.9
Tall Open Dry	41998.5	1585.9
Short Open Dry	12104	275.9
Riparian/Swamp	2247	407.3
Mangrove	9730.8	765.1
Caribbean Pine Plantations	4287	512.0
Other Species Plantation	3900	576.5
Forest total	**337222.4**	**50121.1**
Disturbed Broadleaf Forest & Non-Forest Land Use	165953.8	15534.9
Non-Forest Land Use & Disturbed Broadleaf Forest	165639.8	10996.8
Mixed Total	**331593.6**	**26531.7**
Total	**668816.0**	**76652.8**

Source: National Forest Inventory Report 2003, Main Report and Appendices 1 to V (Table 25; extract)

Total Volume and aboveground living biomass by forest types

National class	Ha (1998)	Volume (m3/ha)	Total Volume (000 m3)	Total Above Ground Biomass ('000 t)
Closed Broadleaf	88,231	194	17,089	22,974

Disturbed Broadleaf	174,725	165	28,910	42,090
Tall Open Dry	41,998	38	1,586	4,876
Short Open Dry	12,104	23	276	1,095
Riparian/Swamp	2,247	181	407	566
Mangrove	9,731	79	765	1,623
Caribbean Pine Plantations	4,287	119	512	339
Other Species Plantation	3,900	148	577	889
Forest Total	**337,223**			**74,453**
Disturbed Broadleaf Forest &	124,466	94	15,535	30,173
Non-Forest Land Use	41,489			
Non-Forest Land Use &	124,229			
Disturbed Broadleaf Forest	41,410	66	9,017	20,840
Mixed Total	**331,594**			**51,013**
Total	**668,817**			**125,466**

Source: Draft Report Jamaica's Greenhouse Gas Emission Inventory, 2000 to 2005 (Table 4-12)(extract)

Area (%) of Jamaica by Holdridge life (ecological) zone

National class	Tropical rain forest	Tropical moist deciduous forest	Tropical dry forest	Tropical mountain forest	**Total (%)**
Closed Broadleaf	3.21	0.99	0.25	3.59	**8.04**

Disturbed Broadleaf	2.18	3.42	6.69	3.65	**15.94**
Tall Open Dry	0.02	0.08	3.55	0.19	**3.84**
Short Open Dry	0.00	0.00	1.11	0.00	**1.11**
Riparian/ Swamp	0.00	0.01	0.20	0.00	**0.21**
Mangrove	0.00	0.02	0.86	0.00	**0.88**
Caribbean Pine Plantations	0.33	0.02	0.00	0.04	**0.39**
Other Species Plantation	0.09	0.10	0.00	0.16	**0.35**
Forest Total	**5.83**	**4.64**	**12.66**	**7.63**	**30.76**
Disturbed Broadleaf Forest &	0.95	1.88	4.43	4.09	**11.35**
Non-Forest Land Use					
Non-Forest Land Use &					
Disturbed Broadleaf Forest	0.48	0.91	1.26	1.14	**3.79**
Mixed Total	**1.43**	**2.79**	**5.69**	**5.23**	**15.14**
Sub Total	**7.26**	**7.43**	**18.35**	**12.86**	**45.90**

Source: Draft Report Jamaica's Greenhouse Gas Emission Inventory, 2000 to 2005 (Table 4-8)(extract)

Carbon :

Area (%) of Jamaica by IPCC Soil Classes

Area (%) of Land by Land use and IPCC Soil Classes

National class	GHG Inventory Classes		High Activity Clay	Low Activity Clay	Sandy Soils	Wetland Soil	Grand Total
Forest Land Use							
Closed broadleaf	Forest Land		7.82	0.22	0.00	0.00	8.04
Disturbed broadleaf	Forest Land		14.92	0.93	0.00	0.00	15.94
Tall open dry	Forest Land		3.72	0.12	0.00	0.00	3.84
Short open dry	Forest Land		1.03	0.09	0.00	0.00	1.11
Swamp	Forest Land		0.05	0.14	0.01	0.00	0.2
Mangrove	Forest Land		0.88	0.00	0.01	0.00	0.89
Pine plantation	Forest Land		0.28	0.11	0.00	0.00	0.39
Other species plantation	Forest Land		0.27	0.09	0.00	0.00	0.36
Sub Total			**28.96**	**1.71**	**0.02**	**0.00**	**30.76**
Mixed							
Disturbed Broadleaf	75% Forest Land		10.27	1.06	0.01	0.02	11.35
Non-Forest Land	25% Other Land		3.42	0.35	0.00	0.01	3.78
Non-Forest Land use &	75%	Other Land	7.3	0.68	0.00	0.00	7.98
		Grassland	2.3	0.21	0.00	0.00	2.52
Disturbed Broadleaf Forest	25% Forest Land		4.21	0.39	0.00	0.00	4.41
Sub Total			**27.51**	**2.70**	**0.01**	**0.02**	**30.24**

Source: Draft Report Jamaica's Greenhouse Gas Emission Inventory, 2000 to 2005 (Table 4-13), extract

Example of area calculations by GHG Inventory class subcategories

Area (ha) of Jamaica by land use class and Holdridge life (ecological) zone			**GHG Inventory Classes sub-categories**			
National class	**GHG Inventory Classes**	Grand Total	Tropical rain forest	Tropical moist deciduous forest	Tropical dry forest	Tropical mountain systems
Forest Land Use						
Closed broadleaf	Forest Land	88123	35183	10851	2740	39348
Disturbed broadleaf	Forest Land	174131	23815	37361	73083	39873
Tall open dry	Forest Land	41968	219	874	38799	2077
Short open dry	Forest Land	12058	0	0	12058	0
Swamp	Forest Land	2222	0	106	2117	0
Mangrove	Forest Land	9717	0	221	9497	0
Pine plantation	Forest Land	4138	3502	212	0	424
Other species plantation	Forest Land	3900	1003	1114	0	1783
Sub Total		**336258**	63721	**50739**	**138293**	**83505**
Mixed						
Disturbed Broadleaf	75% Forest Land	124261	10423	20601	48506	44731
Non-Forest Land	25% Other Land	41439	3476	6870	16176	14917

Non-Forest Land use &	75%	Other Land	94483	12060	22621	31432	28370
		Grassland	29997	3829	7182	9979	9007
Disturbed Broadleaf Forest	25% Forest Land		41361	5280	9903	13760	12419
Sub Total			**331541**	35068	**67176**	**119853**	**109444**

Source: Draft Report Jamaica's Greenhouse Gas Emission Inventory, 2000 to 2005 (Table 4-9), extract

Default reference (under native vegetation) soil organic C stocks (SOC_{ref}) for mineral soils (tonnes C ha^{-1} in 0-30 cm depth)

Climate region	**High Activity Clay**	**Low Activity Clay**	**Sandy Soils**	**Wetland Soil**
Tropical, dry	38.00	35	31	86
Tropical, moist	65.00	47	39	
Tropical, wet	44.00	60	66	
Tropical, montane	88.00	63	34	

Source: Table 5.10 [x] of Guidelines for Countries reporting to FRA 2010 (extract)

3.3 Analysis and processing of national data

3.3.1 Adjustment

Not needed

3.3.2 Estimation and forecasting

National Class	Volume (m3/ ha)	'000 ha	Total Above Ground Biomass	Below ground biomass by ecological zone				Total Below Ground Biomass	Reclassification into FRA 2015 classes			
				Tropical rain forest	Tropical moist deciduous forest	Tropical dry forest	Tropical mountain forest		Forest	OWL	OL	
				Ratio of below ground to above ground biomass								
				0.37	0.24	0.28	0.27					
Closed Broadleaf	194	87.5	22.80	3.37	0.67	0.20	2.75	7.0	100%			
Disturbed Broadleaf	165	170.7	41.06	2.08	2.11	4.83	2.54	11.6	100%			
Tall Open Dry	38	41.9	4.88	0.01	0.02	1.26	0.07	1.4	100%			
Short Open Dry	23	12.1	1.10			0.31		0.3		100%		
Riparian/ Swamp	181	1.8	0.45		0.01	0.12		0.1	100%			
Mangrove	79	9.5	1.59		0.01	0.43		0.4	100%			
Caribbean Pine Plantations	119	2.6	0.21	0.06	0.00		0.00	0.1	100%			
Other Species Plantation	148	4.2	0.96	0.09	0.07		0.12	0.3	100%			
Forest Total		330.3	73.05	5.61	2.89	7.15	5.48	21.13				

Disturbed Broadleaf Forest & Non-Forest Land Use	**94**	**166.4**	**22.73**	**0.71**	**0.90**	**2.48**	**2.21**	**6.3**		**100 %**		
Non-Forest Land Use & Disturbed Broadleaf Forest	**66**	**164.9**	**25.22**	**3.73**	**0.73**	**0.21**	**3.06**	**7.7**	**24.2%**	**75.8%**		
Mixed Total		**331.3**	**48.03**	**4.44**	**1.63**	**2.70**	**5.27**	**14.0**				
Total		**661.6**	**121.54**	**10.05**	**4.53**	**9.85**	**10.75**	**35.2**				

Volume Calculations

:

Original data	Year 2003		Volume (m3/ha)							
Name	Area (ha)	Volume (000 m3)		**Year 1990**		**Year 2000**		**Year 2005**		**Year 2010**	
				Area (‘000 ha)	**Volume M^3 /’000 ha**	Area (‘000 ha)	**Volume M^3 /’000 ha**	Area (‘000 ha)	**Volume M^3 /’000 ha**	Area (‘000 ha)	**Volume M^3 /’000 ha**
Closed Broadleaf	88230.5	17088.5	193.68	88.9	17209.4	88.3	17101.5	88.0	87.7	87.7	16993.7
Disturbed Broadleaf	174724.6	28909.9	165.46	177.3	29336.0	174.7	28902.5	173.3	172.0	172.0	28460.2
Tall Open Dry	41998.5	1585.9	37.76	42.2	1593.1	42.1	1588.9	42.0	42.0	42.0	1584.7

Short Open Dry	12104	275.9	22.79	12.1	276.5	12.1	276.5	12.1	12.1	12.1	276.5
Riparian/ Swamp	2247	407.3	181.26	2.4	432.0	2.2	391.7	2.0	1.9	1.9	351.3
Mangrove	9730.8	765.1	78.63	9.8	771.5	9.7	762.7	9.6	9.6	9.6	754.0
Caribbean Pine Plantations	4287	512.0	119.43	5.0	597.2	4.3	513.6	4.3	3.1	3.1	372.0
Other Species Plantation	3900	576.5	147.82	3.9	576.5	3.9	576.5	3.9	4.1	4.1	611.8
Forest Total	**337222.4**	**50121.1**	148.63	**341.6**	**50792.1**	**337.3**	**50113.8**	**335.2**	**49788.0**	**332.6**	**49404.1**
Disturbed Broadleaf Forest & Non-Forest Land Use	165953.8	15534.9	93.61	167.1	15642.8	166.2	15559.4	165.7	15511.1	165.3	15476.0
Non-Forest Land Use & Disturbed Broadleaf Forest	165639.8	10996.8	66.39	165.8	11008.4	165.9	11015.1	165.9	11015.4	166.3	11038.0
Mixed Total	**331593.6**	**26531.7**		**332.9**	**26651.2**	**332.1**	**26574.5**	**331.6**	**26526.6**	**331.6**	**26514.0**
Total	**668816.0**	**76652.8**		**674.5**	**77443.3**	**669.4**	**76688.3**	**666.8**	**76314.6**	**664.2**	**75918.1**

Volume m3/' ha = Volume (‘000 m3) / Area (ha) * 1000; from original data in Table 6.2.3

‘000 ha (for reporting years) = Area from Table 1.3.2, Estimating and forecasting

Volume (M^3 /’000 ha) =Volume m3/ha * Area (‘000 ha) for reporting year

Non-Forest Land Use and Disturbed Broadleaf Forest = Bamboo, Bamboo and fields, Bamboo and disturbed broadleaf, Bauxite and disturbed broadleaf, and Fields and disturbed broadleaf from 1.3.2.

Biomass Calculations :

For Year 1990

National Class	Volume (m3/ ha)	'000 ha	**Total Above Ground Biomass**	Below ground biomass by ecological zone				**Total Below Ground Biomass**	Reclassification into FRA 2010 classes			
				Tropical rain forest	Tropical moist deciduous forest	Tropical dry forest	Tropical mountain forest		Forest	OWL	OL	
				Ratio of below ground to above ground biomass								
				0.37	**0.24**	**0.28**	**0.27**					
Closed Broadleaf	194	88.9	23.17	3.42	0.68	0.20	2.79	7.10	100%			
Disturbed Broadleaf	165	177.3	42.65	2.16	2.20	5.01	2.64	12.00	100%			
Tall Open Dry	38	42.2	4.91	0.01	0.02	1.27	0.07	1.37	100%			
Short Open Dry	23	12.1	1.10			0.31		0.31		100%		
Riparian/ Swamp	181	2.4	0.60		0.01	0.04		0.04	100%			
Mangrove	79	9.8	1.64		0.01	0.45		0.46	100%			
Caribbean Pine Plantations	119	5.0	0.39	0.12	0.00		0.01	0.14	100%			
Other Species Plantation	148	3.9	0.89	0.08	0.06		0.11	0.26	100%			
Forest Total		**341.6**	**75.36**	**5.80**	**2.99**	**7.28**	**5.62**	**21.68**				

Disturbed Broadleaf Forest & Non-Forest Land Use	94	167.1	22.83	0.71	0.91	2.50	2.22	6.33		100 %		
Non-Forest Land Use & Disturbed Broadleaf Forest	66	165.8	25.36	3.75	0.73	0.21	3.08	7.78	22.4%	77.6%		
Mixed Total		**332.9**	**48.20**	**4.46**	**1.64**	**2.71**	**5.30**	**14.11**				
Total		**674.5**	**123.56**	**10.26**	**4.63**	**9.99**	**10.92**	**35.79**				

Total Above Ground biomass = (Volume*0.6*(EXP(3.213-0.506*LN(Volume*0.6)))*ha)/1000 for Other species

= (Volume*0.51*1.3*ha)/1000 for Caribbean pine

Below Ground biomass = % of national class in ecological zone / total % of national class * above ground biomass * ratio for ecological zone

*Volume and Ha taken from Volume table

*Ratio taken from FRA Guidelines for Countries reporting to FRA 2010, Appendix 5, Table 5.3 [3]

For Year 2000

National Class	Volume (m3/ ha)	'000 ha	**Total Above Ground Biomass**	Below ground biomass by ecological zone				**Total Below Ground Biomass**	Reclassification into FRA 2010 classes			
				Tropical rain forest	Tropical moist deciduous forest	Tropical dry forest	Tropical mountain forest		Forest	OWL	OL	

				Ratio of below ground to above ground biomass								
				0.37	**0.24**	**0.28**	**0.27**					
Closed Broadleaf	194	88.3	23.01	3.40	0.68	0.20	2.77	**7.05**	100%			
Disturbed Broadleaf	165	174.7	42.03	2.13	2.16	4.94	2.60	**11.83**	100%			
Tall Open Dry	38	42.1	4.90	0.01	0.02	1.27	0.07	**1.37**	100%			
Short Open Dry	23	12.1	1.10			0.31		**0.31**		100%		
Riparian/ Swamp	181	2.2	0.55		0.01	0.15		**0.15**	100%			
Mangrove	79	9.7	1.62		0.01	0.44		**0.45**	100%			
Caribbean Pine Plantations	119	4.3	0.34	0.11	0.00		0.01	**0.12**	100%			
Other Species Plantation	148	3.9	0.89	0.08	0.06		0.11	**0.26**	100%			
Forest Total		**337.3**	**74.44**	**5.73**	**2.95**	**7.31**	**5.56**	**21.54**				
Disturbed Broadleaf Forest & Non-Forest Land Use	94	166.2	22.71	0.70	0.90	2.48	2.21	**6.30**		100 %		
Non-Forest Land Use & Disturbed Broadleaf Forest	66	165.9	25.38	3.76	0.73	0.21	3.08	**7.78**	23.3%	76.7%		

Mixed Total		**332.1**	**48.09**	**4.46**	**1.63**	**2.70**	**5.29**	**14.08**				
Total		**669.4**	**122.53**	**10.19**	**4.58**	**10.00**	**10.85**	**35.62**				

Total Above Ground biomass = (Volume*0.6*(EXP(3.213-0.506*LN(Volume*0.6)))*ha)/1000 for Other species

= (Volume*0.51*1.3*ha) for Caribbean pine

Below Ground biomass = % of national class in ecological zone / total % of national class * above ground biomass * ratio for ecological zone

*Volume and Ha taken from Volume table

*Ratio taken from FRA Guidelines for Countries reporting to FRA 2010, Appendix 5, Table 5.3 [3]

For Year 2005

National Class	Volume (m3/ ha)	'000 ha	**Total Above Ground Biomass**	Below ground biomass by ecological zone				**Total Below Ground Biomass**	Reclassification into FRA 2010 classes			
				Tropical rain forest	Tropical moist deciduous forest	Tropical dry forest	Tropical mountain forest		Forest	OWL	OL	
				Ratio of below ground to above ground biomass								
				0.37	**0.24**	**0.28**	**0.27**					
Closed Broadleaf	194	88.0	22.93	3.39	0.68	0.20	2.76	**7.03**	100%			
Disturbed Broadleaf	165	173.3	41.69	2.11	2.15	4.90	2.58	**11.73**	100%			
Tall Open Dry	38	42.00	4.89	0.01	0.02	1.27	0.07	**1.37**	100%			
Short Open Dry	23	12.1	1.10			0.31		**0.31**		100%		
Riparian/ Swamp	181	2.0	0.50		0.01	0.13		**0.14**	100%			
Mangrove	79	9.6	1.61		0.01	0.44		**0.45**	100%			

Caribbean Pine Plantations	119	4.3	0.34	0.11	0.00		0.01	**0.12**	100%			
Other Species Plantation	148	3.9	0.89	0.08	0.06		0.11	**0.26**	100%			
Forest Total		**335.20**	**73.95**	**5.70**	**2.93**	**7.25**	**5.53**	**21.40**				
Disturbed Broadleaf Forest & Non-Forest Land Use	94	165.7	22.64	0.70	0.90	2.47	2.20	**6.28**		100 %		
Non-Forest Land Use & Disturbed Broadleaf Forest	66	165.9	25.38	3.76	0.73	0.21	3.08	**7.78**	23.7%	76.3%		
Mixed Total		**331.6**	**48.02**	**4.46**	**1.63**	**2.69**	**5.28**	**14.06**				
Total		**666.8**	**121.97**	**10.16**	**4.56**	**9.93**	**10.81**	**35.46**				

Total Above Ground biomass = (Volume*0.6*(EXP(3.213-0.506*LN(Volume*0.6)))*ha)/1000 for Other species

= (Volume*0.51*1.3*ha) for Caribbean pine

Below Ground biomass = % of national class in ecological zone / total % of national class * above ground biomass * ratio for ecological zone

*Volume and Ha taken from Volume table

*Ratio taken from FRA Guidelines for Countries reporting to FRA 2010, Appendix 5, Table 5.3 [3]

For Year 2010

National Class	Volume (m3/ ha)	'000 ha	**Total Above Ground Biomass**	Below ground biomass by ecological zone				**Total Below Ground Biomass**	Reclassification into FRA 2010 classes			
				Tropical rain forest	Tropical moist deciduous forest	Tropical dry forest	Tropical mountain forest		Forest	OWL	OL	
				Ratio of below ground to above ground biomass								
				0.37	**0.24**	**0.28**	**0.27**					
Closed Broadleaf	194	87.7	22.85	3.38	0.68	0.20	2.76	**7.01**	100%			
Disturbed Broadleaf	165	172.0	41.38	2.09	2.13	4.86	2.56	**11.65**	100%			
Tall Open Dry	38	42.0	4.89	0.01	0.02	1.27	0.07	**1.37**	100%			
Short Open Dry	23	12.1	1.10			0.31		**0.31**		100%		
Riparian/ Swamp	181	1.9	0.48		0.01	0.13		**0.13**	100%			
Mangrove	79	9.6	1.61		0.01	0.44		**0.45**	100%			
Caribbean Pine Plantations	119	3.1	0.24	0.08	0.00		0.01	**0.09**	100%			
Other Species Plantation	148	4.1	0.93	0.09	0.06		0.12	**0.27**	100%			
Forest Total		**332.6**	**73.51**	**5.64**	**2.91**	**7.20**	**5.50**	**21.26**				
Disturbed Broadleaf Forest & Non-Forest Land Use	94	165.3	22.59	0.70	0.90	2.47	2.20	**6.26**		100 %		

Non-Forest Land Use & Disturbed Broadleaf Forest	66	166.3	25.44	3.77	0.73	0.21	3.09	**7.80**	24.2%	75.8%		
Mixed Total		**331.6**	**48.03**	**4.47**	**1.63**	**2.68**	**5.29**	**14.07**				
Total		**664.2**	**121.51**	**10.11**	**4.54**	**9.88**	**10.79**	**35.33**				

Total Above Ground biomass = (Volume*0.6*(EXP(3.213-0.506*LN(Volume*0.6)))*ha)/1000 for Other species

= (Volume*0.51*1.3*ha) for Caribbean pine

Below Ground biomass = % of national class in ecological zone / total % of national class * above ground biomass * ratio for ecological zone

*Volume and Ha taken from Volume table

*Ratio taken from FRA Guidelines for Countries reporting to FRA 2010, Appendix 5, Table 5.3 [3]

For year 2015

National Class	Volume (m3/ ha)	'000 ha	**Total Above Ground Biomass**	Below ground biomass by ecological zone				**Total Below Ground Biomass**	Reclassification into FRA 2015 classes			
				Tropical rain forest	Tropical moist deciduous forest	Tropical dry forest	Tropical mountain forest		Forest	OWL	OL	
				Ratio of below ground to above ground biomass								
				0.37	0.24	0.28	0.27					
Closed Broadleaf	194	87.5	22.80	3.37	0.67	0.20	2.75	**7.0**	100%			
Disturbed Broadleaf	165	170.7	41.06	2.08	2.11	4.83	2.54	**11.6**	100%			

Tall Open Dry	38	41.9	4.88	0.01	0.02	1.26	0.07	**1.4**	100%			
Short Open Dry	23	12.1	1.10			0.31		**0.3**		100%		
Riparian/ Swamp	181	1.8	0.45		0.01	0.12		**0.1**	100%			
Mangrove	79	9.5	1.59		0.01	0.43		**0.4**	100%			
Caribbean Pine Plantations	119	2.6	0.21	0.06	0.00		0.00	**0.1**	100%			
Other Species Plantation	148	4.2	0.96	0.09	0.07		0.12	**0.3**	100%			
Forest Total		**330.3**	**73.05**	**5.61**	**2.89**	**7.15**	**5.48**	**21.13**				
Disturbed Broadleaf Forest & Non-Forest Land Use	94	166.4	22.73	0.71	0.90	2.48	2.21	**6.3**		100 %		
Non-Forest Land Use & Disturbed Broadleaf Forest	66	164.9	25.22	3.73	0.73	0.21	3.06	**7.7**	24.2%	75.8%		
Mixed Total		**331.3**	**48.03**	**4.44**	**1.63**	**2.70**	**5.27**	**14.0**				
Total		**661.6**	**121.54**	**10.05**	**4.53**	**9.85**	**10.75**	**35.2**				

Total Above Ground biomass = (Volume*0.6*(EXP(3.213-0.506*LN(Volume*0.6)))*ha)/1000 for Other species

= (Volume*0.51*1.3*ha) for Caribbean pine

Below Ground biomass = % of national class in ecological zone / total % of national class * above ground biomass * ratio for ecological zone

*** Volume and Ha taken from Table 3.3.2a (Volume calculations), Estimating and forecasting**

*** Ratio taken from FRA Guide for Countries reporting for FRA 2015, Appendix 5, Table 5.3** [3]

Carbon Calculation:

Carbon stock calculation for above and below ground

FRA 2010 category	**Biomass (million metric tonnes oven-dry weight)**					**Carbon stock (Million tonnes)**			
	Forest								
	1990	**2000**	**2005**	**2010**	IPCC Default Value	**1990**	**2000**	**2005**	**2010**
Living biomass									
Above-ground biomass	79.94	79.26	78.87	78.54	0.47	37.57	37.25	37.07	36.92
Below-ground biomass	23.11	23.05	22.94	22.84	0.47	10.86	10.83	10.78	10.74
Sub-total: Carbon in living biomass						**48.44**	**48.08**	**47.85**	**47.65**
	Other wooded land								
Living biomass									
Above-ground biomass	43.62	43.28	43.11	42.97	0.47	20.50	20.34	20.26	20.20
Below-ground biomass	12.68	12.58	12.53	12.49	0.47	5.96	5.91	5.89	5.87
Sub-total: Carbon in living biomass						**26.46**	**26.25**	**26.15**	**26.06**

Carbon stock (for specific year) = Biomass total (for corresponding year)* IPCC Default Value

Biomass totals results from reclassification of biomass tables for repoprting years

IPCC Default Value from Guidelines for Countries Reporting to FRA 2010, Table 5.2 [2]

Carbon stock calculation for litter

Species	Hectares ('000)				IPCC Default Value	Carbon Stock **(Million tonnes)**			
	1990	2000	2050	2010		1990	2000	2050	2010
Forest									
Broadleaf Species	339.6	336.6	334.9	333.9	2.1	0.71	0.71	0.70	0.70
Pines	5.0	4.3	4.3	3.1	5.2	0.03	0.02	0.02	0.02
Sub-total: Carbon in litter						**0.74**	**0.73**	**0.73**	**0.72**
Other wooded land									
Broadleaf Species	190.0	188.8	188.0	187.6	**0.47**	n.a.	n.a.	n.a.	n.a.
Sub-total: Carbon in litter						n.a.	n.a.	n.a.	n.a.

Carbon stock (for specific year) = (Hectare (for corresponding year)* IPCC Default Value)/ 1000

Hectare totals from Table T1

IPCC Default Value from Guidelines for Countries Reporting to FRA 2010, Table 5.9 [ix]

Carbon stock calculation for Soils

Area (%) of Land by Land use and IPCC Soil Classes						
National class	**FRA 2010 Inventory Classes**	**High Activity Clay**	**Low Activity Clay**	**Sandy Soils**	**Wetland Soil**	**Grand Total**
Forest Land Use						
Closed broadleaf	Forest Land	7.82	0.22	0.00	0.00	8.04
Disturbed broadleaf	Forest Land	14.92	0.93	0.00	0.00	15.94
Tall open dry	Forest Land	3.72	0.12	0.00	0.00	3.84

Swamp	Forest Land	0.05	0.14	0.01	0.00	0.2
Mangrove	Forest Land	0.88	0.00	0.01	0.00	0.89
Pine plantation	Forest Land	0.28	0.11	0.00	0.00	0.39
Other species plantation	Forest Land	0.27	0.09	0.00	0.00	0.36
Non-Forest Land use &						
Disturbed Broadleaf Forest	Forest Land	4.21	0.39	0.00	0.00	4.41
Total		**32.14**	**2.01**	**0.02**	**0.00**	**34.05**
Mixed						
Short open dry	OWL	1.03	0.09	0.00	0.00	1.11
Disturbed Broadleaf &	OWL	10.27	1.06	0.01	0.02	11.35
Non-Forest Land	OWL	3.42	0.35	0.00	0.01	3.78
Non-Forest Land use &	OWL	9.6	0,89	0.00	0.00	10.50
Disturbed Broadleaf Forest						
Total		**24.42**	**2.39**	**0.01**	**0.03**	**26.75**

Adjusted Result using Area (Ha) instead of Percentages (%)

Area (ha) of Land by Land use and IPCC Soil Classes						
National class	**GHG Inventory Classes**	**High Activity Clay**	**Low Activity Clay**	**Sandy Soils**	**Wetland Soil**	**Grand Total**

Forest Land Use						
Closed broadleaf	Forest Land	85712	2411	0	0	88123
Disturbed broadleaf	Forest Land	163914	10217	0	0	174131
Tall open dry	Forest Land	40657	1311	0	0	41968
Swamp	Forest Land	555	1555	111	0	2222
Mangrove	Forest Land	9608	0	109	0	9717
Pine plantation	Forest Land	2971	1167	0	0	4138
Other species plantation	Forest Land	2925	975	0	0	3900
Non-Forest Land use &	75% OWL					
Disturbed Broadleaf Forest	25% Forest Land	37854	3507	0	0	41361
Sub Total		**344196**	**21144**	**220**	**0**	**365560**
OWL						
Short open dry	OWL	11089	969	0	0	12058
Disturbed Broadleaf	OWL					
Non-Forest Land	OWL	148830	15432	109	328	165700
Non-Forest Land use &	75%OWL	113919	10561	0	0	124480

Disturbed Broadleaf Forest	25% Forest Land							
Sub Total			**274838**	**26962**	**109**	**328**		**302238**

Reclassification of forest class into ecological zones

Area (ha) of Jamaica by Holdridge life (ecological) zone			**Inventory Classes sub-categories**			
National class	**FRA 2010 Inventory Classes**	Total area (ha)	Tropical rain forest	Tropical moist deciduous forest	Tropical dry forest	Tropical mountain systems
Forest Land Use						
Closed broadleaf	Forest Land	88123	35183	10851	2740	39348
Disturbed broadleaf	Forest Land	174131	23815	37361	73083	39873
Tall open dry	Forest Land	41968	219	874	38799	2077
Swamp	Forest Land	2222	0	106	2117	0
Mangrove	Forest Land	9717	0	221	9497	0
Pine plantation	Forest Land	4138	3502	212	0	424
Other species plantation	Forest Land	3900	1003	1114	0	1783
Non-Forest Land use &	**OWL**					
Disturbed Broadleaf Forest	Forest Land	41361	5280	9903	13760	12419
Sub Total		**365560**	**69002**	**60642**	**139996**	**95924**
Mixed						

Short open dry	OWL	12058	0	0	12058	0
Disturbed Broadleaf &						
Non-Forest Land Use	OWL	165700	13899	27471	64682	59648
Non-Forest Land use &	OWL					
	OWL	124480	15889	29803	41411	37377
Disturbed Broadleaf Forest	Forest Land					
Sub Total		**302238**	**29788**	**57274**	**118151**	**97025**

Calculation of carbon by Ecological Zones and soil type

Year 1998

	Forest land					**Other wooded land**				
Ecological Zones	**High Activity Clay**	**Low Activity Clay**	**Sandy Soils**	**Wetland Soil**	**Grand Total**	**High Activity Clay**	**Low Activity Clay**	**Sandy Soils**	**Wetland Soil**	**Grand Total**
Tropical, dry	**5.02**	**0.28**	0.00	0.00	**5.31**	**4.09**	**0.37**	0.00	**0.01**	**4.47**
Tropical, moist	**3.72**	**0.17**	0.00	0.00	**3.89**	**3.39**	**0.24**	0.00	**0.01**	**3.64**
Tropical, wet	**2.87**	**0.24**	0.00	0.00	**3.11**	**1.19**	**0.16**	0.00	**0.00**	**1.36**
Tropical, montane	**7.97**	**0.35**	0.00	0.00	**8.32**	**7.78**	**0.55**	0.00	**0.01**	**8.34**
Total	**19.57**	**1.04**	0.01	0.00	**20.62**	**16.46**	**1.32**	**0.00**	**0.03**	**17.81**

Amount of carbon in soil = (Total area (Ha) of soil type * (forest total for ecological zone / total forest) * Default reference value for climatic region and soil type * calibration factor (**Table 1.3.1**) / 1000000

*Process is repeated for all regions by soil type and climatic zones

*Duplicate processes of forest calculations for other wooded land

Process repeated to produce results for subsequent years

Year	1990	2000	2005	2010	2015
Forest					
Soil Carbon	**21.37**	**21.14**	**21.02**	**20.90**	20.78
Other wooded land					
Soil Carbon	**15.76**	**15.66**	**15.60**	**15.56**	15.51

For Forest - Soil carbon for result year = 1998 total * (year forest total /1998 forest total)

For Other wooded land - Soil carbon for result year = 1998 total * (year OWL total /1998 OWL total)

3.3.3 Reclassification

Volume for Year 1990

Name	Volume (‘000 M^3)	**Forest %**	Other wooded land %	Other land %	Total %	Commercial growing stock %	Result of reclassification		
							Forest	Other Wooded land	Other land
Closed Broadleaf	17209.4	100			100		172094		
Disturbed Broadleaf	29336.0	100			100		29336.0		
Tall Open Dry	1593.1	100			100		1593.1		
Short Open Dry	276.5		100		100			276.5	

Riparian/ Swamp	432.0	100			100		432.0		
Mangrove	771.5	100			100		771.5		
Caribbean Pine Plantations	597.2	100			100	100	597.2		
Other Species Plantation	576.5	100			100	100	576.5		
Disturbed Broadleaf Forest & Non-Forest Land Use	15642.8		100		100			15642.8	
Non-Forest Land Use & Disturbed Broadleaf Forest*	11008.4	22.4	77.6		100		2465.9	**8542.5**	
Total							**52981.5**	**24461.8**	

* From Non-forest Land Use and Disturbed Broadleaf Forest, the classes Bamboo, and Bamboo and disturbed broadleaf are reclassified as forest and the others remain as wooded lands.

NB. Bold figures are transferred to reporting table

For year 2000

Name	Volume ('000 M^3)	**Forest %**	Other wooded land %	Other land %	Total %	Commercial growing stock %	Result of reclassification		
							Forest	Other Wooded land	Other land
Closed Broadleaf	17101.5	100			100		17101.5		

Disturbed Broadleaf	28902.5	100			100		28902.5		
Tall Open Dry	1588.9	100			100		1588.9		
Short Open Dry	276.5		100		100			276.5	
Riparian/ Swamp	391.7	100			100		391.7		
Mangrove	762.7	100			100		762.7		
Caribbean Pine Plantations	513.6	100			100	100	513.6		
Other Species Plantation	576.5	100			100	100	576.5		
Disturbed Broadleaf Forest & Non-Forest Land Use	15559.4		100		100			15559.4	
Non-Forest Land Use & Disturbed Broadleaf Forest*	2566.5	23.3	76.7		100		2566.5	8448.6	
Total							**52403.9**	**24284.4**	

* From Non-forest Land Use and Disturbed Broadleaf Forest, the classes Bamboo, and Bamboo and disturbed broadleaf are reclassified as forest and the others remain as wooded lands.

NB. Bold figures are transferred to reporting table

For year 2005

Name	Volume ('000 M^3)	**Forest %**	Other wooded land %	Other land %	Total %	Commercial growing stock %	Result of reclassification		
							Forest	Other Wooded land	Other land
Closed Broadleaf	17043.9	100			100		17043.9		
Disturbed Broadleaf	28674.2	100			100		28674.2		
Tall Open Dry	1586.8	100			100		1586.8		
Short Open Dry	275.8		100		100			275.8	
Riparian/ Swamp	0.4	100			100		0.4		
Mangrove	754.8	100			100		754.8		
Caribbean Pine Plantations	513.6	100			100	100	513.6		
Other Species Plantation	576.5	100			100	100	576.5		
Disturbed Broadleaf Forest & Non-Forest Land Use	15511.1		100		100			15511.1	
Non-Forest Land Use & Disturbed Broadleaf Forest*	11015.4	23.7	76.3		100		2610.7	8404.8	
Total							**51760.7**	**24191.7**	

* From Non-forest Land Use and Disturbed Broadleaf Forest, the classes Bamboo, and Bamboo and disturbed broadleaf are reclassified as forest and the others remain as wooded lands.

NB. Bold figures are transferred to reporting table

For year 2010

Name	Volume ('000 M^3)	**Forest %**	Other wooded land %	Other land %	Total %	Commercial growing stock %	**Result of reclassification**		
							Forest	Other Wooded land	Other land
Closed Broadleaf	16993.7	100			100		16993.7		
Disturbed Broadleaf	28460.2	100			100		28460.2		
Tall Open Dry	1584.7	100			100		1584.7		
Short Open Dry	276.5		100		100			276.5	
Riparian/ Swamp	351.3	100			100		351.3		
Mangrove	754.0	100			100		754.0		
Caribbean Pine Plantations	372.0	100			100	100	372.0		
Other Species Plantation	611.8	100			100	100	611.8		
Disturbed Broadleaf Forest & Non-Forest Land Use	15476.0		100		100			15476.0	

Non-Forest Land Use & Disturbed Broadleaf Forest*	11038.0	24.2	75.8		100		2671.2	8366.8	
Total							**51798.8**	**24119.2**	

* From Non-forest Land Use and Disturbed Broadleaf Forest, the classes Bamboo, and Bamboo and disturbed broadleaf are reclassified as forest and the others remain as wooded lands.

NB. Bold figures are transferred to reporting table

3.4 Data

Table 3a

Category		Growing stock volume (million m ^{3} over bark)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
CFRQ	Total growing stock	52.99	52.41	52.15	51.8	51.52	24.46	24.29	24.21	24.12	24.02
CFRQ	... of which coniferous	0.6	0.51	0.51	0.37	0.31	0	0	0	0	0
CFRQ	... of which broadleaved	52.39	51.9	51.64	51.43	51.21	24.46	24.29	24.21	24.12	24.02

Table 3b

Category/Species name			Growing stock in forest (million cubic meters)			
Rank	Scientific name	Common name	1990	2000	2005	2010
1 st	Syzygium jambos	Rose Apple	2.54	2.52	2.5	2.49
2 nd	Mangifera indica	Mango	2.33	2.31	2.29	2.28
3 rd	Cecropia peltata	Trumpet Tree	2.23	2.2	2.19	2.18
4 th	Nectandra spp.	Sweetwood	1.64	1.62	1.62	1.61

5 th	Brosimum alicastrum	Breadnut	1.48	1.47	1.46	1.45
6 th	Calophyllum calaba	Santa Maria	1.22	1.21	1.2	1.19
7 th	Hibiscus elatus	Blue Mahoe	1.22	1.21	1.2	1.19
8 th	Lauraceae spp.	Sweetwoods	1.17	1.15	1.15	1.14
9 th	Sideroxylon spp.	Bullets	1.17	1.15	1.15	1.14
10 th	Cedrela odorata	Cedar	1.11	1.1	1.1	1.09
Remaining			36.88	36.48	36.3	36.05
TOTAL			52.99	52.42	52.16	51.81

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)	10 cm	All species
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	7 cm	7cm for Pinus species and crown point for other species
Minimum diameter (cm) of branches included in growing stock (W)	7 cm	N/A
Volume refers to above ground (AG) or above stump (AS)	AG	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^3 per hectare and year)				
		Forest				
		1990	2000	2005	2010	2015
CFRQ	Net annual increment	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which coniferous	N/A	N/A	N/A	N/A	N/A
CFRQ	... 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
CFRQ	Above ground biomass	79.94	79.26	78.87	78.54	78.21	43.62	43.28	43.11	42.97	42.8
CFRQ	Below ground biomass	23.07	23	22.89	22.81	22.74	12.68	12.58	12.53	12.49	12.43
CFRQ	Dead wood	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL		103.01	102.26	101.76	101.35	100.95	56.30	55.86	55.64	55.46	55.23

Table 3e

Category		Carbon (Million metric tonnes)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
CFRQ	Carbon in above ground biomass	37.57	37.25	37.07	36.93	36.76	20.5	20.34	20.26	20.2	20.12
CFRQ	Carbon in below ground biomass	10.84	10.81	10.76	10.72	10.69	5.96	5.91	5.89	5.87	5.84
CFRQ	*Subtotal Living biomass*	48.41	48.06	47.83	47.65	47.45	26.46	26.25	26.15	26.07	35.96
CFRQ	Carbon in dead wood	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	Carbon in litter	0.74	0.73	0.72	0.72	0.71	N/A	N/A	N/A	N/A	N/A
CFRQ	*Subtotal Dead wood and litter*	0.74	0.73	0.72	0.72	0.71	N/A	N/A	N/A	N/A	N/A
CFRQ	Soil carbon	21.37	21.14	21.02	20.9	20.78	15.76	15.66	15.6	15.56	15.51
TOTAL		70.52	69.93	69.57	69.27	68.94	42.22	41.91	41.75	41.63	41.47

Tiers

Variable/category	Tier for status	Tier for trend

Total growing stock	Tier 2	Tier 2
Net annual increment	N/A	N/A
Above ground biomass	Tier 2	Tier 2
Below ground biomass	Tier 2	Tier 2
Dead wood	N/A	N/A
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	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other
• Carbon in above ground biomass • Carbon in below ground biomass • Carbon in dead wood and litter • Soil carbon	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	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

3.5 Comments on growing stock biomass and carbon

Category	Comments related to data definitions etc	Comments on the reported trend
Total growing stock	N/A	Growing stock for OWL include short open dry areas which are classified as forest areas nationally, These areas are reclassified from forest to OWL because they do not satisfy FAO's height criterion for forest class. OWL also include areas which are not classified nationally as forest but may fit FAO's criteria for forest classification but have been used as OWL for this report.
Growing stock of broadleaved coniferous	N/A	N/A
Growing stock composition	N/A	N/A
Net annual increment	The latest calculations to determine NAI was done outside the reporting years and could not be used for this report	No available relevant data
Above-ground biomass	Tables were reclassified to match the reclassification percentages used for growing stock data. Because of a change in reclassification the figures for biomass have been changed.	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
Tables were reclassified to match the reclassification percentages used in Growing stock data. Because of a change in reclassification the figures for Biomass which were reported earlier have been altered. Other tables have also shown alterations in calculations.

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	Forestry Department. 2001. National Forest Management and Conservation Plan. Jamaica	Forest values to society	1990 2000	N/A
2	Camirand R. and Evelyn O.B., 2003. Forestry Department-Trees for Tomorrow Project. 2004. National Forest Inventory Report 2003, Main Report and Appendices 1 to V (Table 21)	Area (%) of Jamaica by protection status	1990 and 2000	The same percentages can be applied for the reporting years as data used are those used for the creation of Table T1. Online at www.forestry.gov.jm
3	FAO external dada	Table 4c	N/A	Wood removal
4	N/A	N/A	N/A	N/A

4.2.2 Classification and definitions

National class	Definition
Legal/Administrative function	A function prescribed by law or by administrative decree for a particular site
Not legal/administrative function	Function performed although not prescribed by law or administrative decree
N/A	N/A
N/A	N/A

4.2.3 Original data

The forest types used in the Forestry Inventory and presented in question number one, calibrated, estimated/ forecasted areas in 1.3.2 of this report, have been designated a legal administrative function as presented in the next table:

Primary function of national class

National classes	FRA classes	FRA Primary function	% of Class as Primary function
Closed broadleaf	100% Forest	Conservation of biodiversity	73.7
Disturbed broadleaf	100% Forest	Protection of soil and water	10.0
Tall open dry	100% Forest	Multiple purpose	48.4
Riparian/Swamp	100% Forest	Conservation of biodiversity	55.0
Mangrove	100% Forest	Conservation of biodiversity	68.4
Disturbed broadleaf forest and Non-forest land use	OWL	Multiple purpose	
Non-forest land use and Disturbed broadleaf forest (1)	33% Forest	Multiple purpose	6.6
Short open dry	OWL	OWL, Multiple purpose	

Fields/Disturbed broadleaf and pine plantation (2)	100% Forest	Production	100.0
Not legal/ administrative designated		No or unknown function	

Note: Fields/Disturbed broadleaf and pine plantation consists of Carib pine plantation and Other species plantation

This gives the results of primary function as presented below for specific years.

4.3 Analysis and processing of national data

4.3.1 Adjustment

Not needed

4.3.2 Estimation and forecasting

Total forest area used is the one reported in table number 1. The areas serving for functions are based classifications and on expert opinion.

Primary Function - for year 1990 (000 hectares)

Primary Function	**Legal/Administrative Designated Function**					
Sub-Class	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple purposes	No or unknown function
Closed broadleaf			65.5			23.4
Disturbed broadleaf		17.7				159.6
Tall open dry					20.4	21.8
Riparian/ Swamp			1.3			1.1
Mangrove			6.7			3.1
Caribbean pine plantation	5.0					0.0
Other species plantation	3.9					0.0
*Non-forest land use and disturbed broadleaf forest		1.00				14.2
Total Forest Function	**8.9**	18.7	73.5	0.0	**20.4**	223.1

* The area of Non-forest land use and disturbed broadleaf forest classified as forest consists of Bamboo, and Bamboo and disturbed broadleaf from Table T1 (estimation and forecasting)

Figures in bold are transferred to reporting table T3 for corresponding year

Primary Function - for year 2000

Primary Function	**Legal/Administrative Designated Function**

Sub-Class	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple purposes	No or unknown function
Closed broadleaf			65.1			23.2
Disturbed broadleaf		17.5				157.2
Tall open dry					20.4	21.7
Riparian/ Swamp			1.2			1.0
Mangrove			6.6			3.1
Caribbean pine plantation	4.3					
Other species plantation	3.9					
*Non-forest land use and disturbed broadleaf forest		1.00				14.8
Total Forest Function	**8.2**	18.5	72.9	0. **0**	**20.4**	221.0

***** The area of Non-forest land use and disturbed broadleaf forest classified as forest consists of Bamboo, and Bamboo and disturbed broadleaf from Table T1 (estimation and forecasting)

Figures in bold are transferred to reporting table T3 for corresponding year

Primary Function - for year 2005

Primary Function	**Legal/Administrative Designated Function**

Sub-Class	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple purposes	No or unknown function
Closed broadleaf			64.9			23.1
Disturbed broadleaf		17.3				156
Tall open dry					20.3	21.7
Riparian/ Swamp			1.1			0.9
Mangrove			6.6			3.0
Caribbean pine plantation	4.3					
Other species plantation	3.9					
*Non-forest land use and disturbed broadleaf forest		1.1				15.0
Total Forest Function	**8.2**	18.4	72.5	0.0	**20.3**	223.0

* The area of Non-forest land use and disturbed broadleaf forest classified as forest consists of Bamboo, and Bamboo and disturbed broadleaf from Table T1 (estimation and forecasting)

Figures in bold are transferred to reporting table T3 for corresponding year

Primary Function - for year 2010

Primary Function	**Legal/Administrative Designated Function**

Sub-Class	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple purposes	No or unknown function
Closed broadleaf			64.7			23.1
Disturbed broadleaf		17.2				154.8
Tall open dry					20.3	21.7
Riparian/ Swamp			1.1			0.9
Mangrove			6.6			3.0
Caribbean pine plantation	3.1					
Other species plantation	4.1					
*Non-forest land use and disturbed broadleaf forest		1.1				15.5
Total Forest Function	**7.3**	18.3	72.3	0.0	**20.3**	218.9

* The area of Non-forest land use and disturbed broadleaf forest classified as forest consists of Bamboo, and Bamboo and disturbed broadleaf from Table T1 (estimation and forecasting)

Figures in bold are transferred to reporting table T3 for corresponding year

Primary function for year 2015

Primary Function	**Legal/Administrative Designated Function**					No or unknown function
Sub-Class	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple purposes	

Closed broadleaf			65.5			23.0
Disturbed broadleaf		17.1				153.6
Tall open dry					20.3	21.6
Riparian/ Swamp			1.0			0.8
Mangrove			6.5			3.0
Caribbean pine plantation	2.6					0.0
Other species plantation	4.2					0.0
*Non-forest land use and disturbed broadleaf forest		1.1				15.8
Total Forest Function	**6.9**	18.2	72.0	0.0	**20.3**	217.9

4.3.3 Reclassification

Not needed

4.4 Data

Table 4a

Categories	Forest area (000 hectares)				
	1990	2000	2005	2010	2015

CFRQ	Production forest	8.9	8.2	8.2	7.3	6.9
CFRQ	Multiple use forest	20.4	20.4	20.3	20.3	20.3

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	Jamaican dollar

Category
Plant products / raw material
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
Animal products / raw material
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^3 u.b.)	
	Total wood removals	...of which woodfuel
1990	1055	853
1991	917	750
1992	695.5	500
1993	630.4	450
1994	675	400
1995	577.1	300
1996	770.01	491.81
1997	803.52	524.22
1998	828.59	547.29
1999	855.82	572.42
2000	882.11	598.71
2001	874.83	591.43
2002	867.63	584.23

2003	860.52	577.12
2004	853.5	570.1
2005	842.16	563.16
2006	838.49	559.49
2007	833.8	555.8
2008	830.2	552.2
2009	826.63	548.63
2010	700.05	545.05
2011	693.02	541.02

Tiers

Category	Tier for status	Tier for reported trend
Production forest	Tier 2	Tier 2
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	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

4.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Production forest	All our plantation forest are used as production forest	N/A
Multiple use forest	Multiple purpose area is assumed to serve all four functions	N/A
Total wood removals	The reported figures are roundwood removals given as external data extracted from FAOSTATS	N/A
Commercial value of NWFP	Data not available	N/A

Other general comments to the table

Plant material collected from the forest is used for a variety of purposes. The principal source of materials for making hats, bags, table-mats, etc., is Jippi jappa (Carludovica palmata). Bamboo (Banbusa vulgaris) and thatch (Thrinax parviflora) are used most often for temporary construction. Strips from the Rose Apple (Eugenia jambos) are used to make baskets and hampers. Wicker is widely used in furniture making. The bark from the bastard cabbage tree (Andira inermisis) used to make rope to bundle agricultural produce and for lashing poles together in temporary construction. Fern (Cyathea sp.)root is collected for the horticultural sector for use as a growing medium, particularly in orchid production. Mahogany (Swietenia mahogani) bark is still collected for use as a dye. Bamboo is used for craft purposes and Christmas trees (Cupressus lusitanica),) are sold commercially at Christmas time. Many other trees and forest plants are used medicinally: for example, Chainy root (Similax balbisiana) is used in the making of restorative tonics, chewsticks (Gouania lupuloides) are collected for cleaning teeth, nettle is steeped to make a drink rich in mineral salts and vitamins, and the extract of bitterwood (Picramnia antidesma) bark is used as a liver tonic, for fevers and for eliminating round worm. How much of these materials are removed from the forest is not known nor is there current information with respect to their relative social and economic importance. A survey (with quantity data) of the utilisation of minor forest products would provide valuable information for use in assessing forest management options.

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 *(sub-category)*	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 *(sub-category)*	Forest area primarily designated or managed for coastal stabilization.
...of which desertification control *(sub-category)*	Forest area primarily designated or managed for desertification control.
...of which avalanche control *(sub-category)*	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 *(sub-category)*	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 *(sub-category)*	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 *(sub-category)*	Forest area designated or managed for public recreation.
...of which carbon storage or sequestration *(sub-category)*	Forest area designated or managed for carbon storage or sequestration.
...of which spiritual or cultural services *(sub-category)*	Forest area designated or managed for spiritual or cultural services.
...of which other *(sub-category)*	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	Forestry Department. 2001. National Forest Management and Conservation Plan. Jamaica	Strategy 6: Forest Protection	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

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

5.3 Analysis and processing of national data

5.3.1 Adjustment

Not necessary

5.3.2 Estimation and forecasting

Not necessary

5.3.3 Reclassification

Not necessary

5.4 Data

Table 5a

Categories	Forest area (1000 hectares)				
	1990	2000	2005	2010	2015

CFRQ	Protection of soil and water	344.6	340.9	339.2	337.1	335.2
CFRQ	... of which production of clean water	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which coastal stabilization	9.8	9.7	9.6	9.6	9.5
CFRQ	... of which desertification control	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which avalanche control	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which erosion, flood protection or reducing flood risk	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which other (please specify in comments below the table)	N/A	N/A	N/A	N/A	N/A

Other
N/A

Table 5b

Categories	Forest area (1000 hectares)				
	1990	2000	2005	2010	2015
Ecosystem services, cultural or spiritual values	344.6	340.9	339.2	337.1	335.2
...of which public recreation	45	45	45	45	45
...of which carbon storage or sequestration	N/A	N/A	N/A	N/A	N/A
...of which spiritual or cultural services	0.52	0.52	0.52	0.52	0.52
...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 2	Tier 2
Ecosystem services, cultural or spiritual values	Tier 2	Tier 2

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	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other
• Cultural or spiritual values • Public recreation • Spiritual or cultural services • Other	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	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

5.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Protection of soil and water	All the forest are used for this purpose	N/A
Production of clean water	An estimated 70% of forest total	N/A
Coastal stabilization	All the mangrove forest are used for this purpose	N/A
Desertification control	Not applicable	Not applicable
Avalanche control	Not applicable	Not applicable
Erosion, flood protection or reducing flood risk	All our forest plays a critical roll in this function	N/A
Other protective functions	No data available	N/A
Ecosystem services, cultural or spiritual values	Total forest area is use for ecosystem services	N/A

Public recreation	The Blue and John Crow Mountains National Park, sections of forest reserves and other sections of the forest soon to be declared Forest Management Areas are used periodically for public recreation	N/A
Carbon storage or sequestration	No data available	N/A
Spiritual or cultural services	Forest in possession of the Jamaican Maroons are used for this purpose. Actual acreage is unknown at this time and acreage reported is an expert opinion.	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	Forestry Department. 2001. National Forest Management and Conservation Plan. Jamaica	Forest values to society	1990 2000	N/A
2	Camirand R. and Evelyn O.B., 2003. Forestry Department-Trees for Tomorrow Project. 2004. National Forest Inventory Report 2003, Main Report and Appendices 1 to V (Table 21)	Area (%) of Jamaica by protection status	1990 and 2000	The same percentages can be applied for the reporting years as data used are those used for the creation of Table T1. Online at www.forestry.gov.jm
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
Legal/Administrative function	A function prescribed by law or by administrative decree for a particular site
Not legal/administrative function	Function performed although not prescribed by law or administrative decree
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

Not needed

6.3.2 Estimation and forecasting

See 4.3.2

6.3.3 Reclassification

6.4 Data

Table 6

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
CFRQ	Conservation of biodiversity	73.2	72.7	72.3	72.3	72
CFRQ	Forest area within protected areas	120.6	119.3	118.7	118.6	118.6

Tiers

Category	Tier for status	Tier for reported trend
Conservation of biodiversity	Tier 3	Tier 2
Forest area within protected areas	Tier 2	Tier 2

Tier criteria

Category	Tier for status	Tier for reported trend

• Conservation of biodiversity • Forests within protected areas	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	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

6.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Conservation of biodiversity	The majority of the Closed broadleaf, Mangrove and Riparian forests serves this purpose	Similar percentages of the forest types are reported on for the reporting years
Forest area within protected areas	Protected areas consists of Forest Reserves, Forest Management Areas, National Parks and other protected areas	The forests cover within the protected areas have seen less reduction due to better management practices, effective policing and effectiveness of the forest policies and regulations

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	FRA 2010, Table 10c	Area affected by woody invasive species	2005	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

FRA 2010, Table 10c

7.3 Analysis and processing of national data

7.3.1 Adjustment

Not Necessary

7.3.2 Estimation and forecasting

Not Needed

7.3.3 Reclassification

Not Necessary

7.4 Data

Table 7

Scientific name of woody invasive species	Forest area affected (000 ha)	
	2005	2010
Polygonum chinensel	8	N/A
Pittosporum undulatum	3	N/A
Leucaena leucocephala	6	N/A
Tecoma stans	2	N/A
Calliandra sp.	6	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	25	N/A

Tiers

Category	Tier for status	Tier for reported trend
Invasive species	Tier 1	Tier 1

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	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

7.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Invasive species	Areas of invasive species overlaps which accounts for the total arrived at.	The total forest area affected by woody invasive species is unknown as no effective area assessment has been done for invasive species. The total forest area affected by woody invasive species for 2005 was an estimated expert opinion and the total s not necessary the sum of the values above, as these may be overlapping.

Other general comments to the table
Although the presence of various invasive species is detected, determination of actual acreages of species have not been done and an estimate of the acreage will not be attempted at this time although eradication of these invasive species have been attempted

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	Forestry Department, Regional Reports	Hurricane damage reports	2004	Estimates of damage done to plantations by hurricane Ivan in September 2004
2	Jamaica Fire Brigade	Number of fires	2008-2012	Number of fires recorded annuanny
3	All-Island Jamaica sugar Cane Farmer's Association	Sugar cane area harvested	2003-2012	Sugar cane area burnt for harvesting
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

8.2.3a Hurricane damage

Year	Damage '000 ha
1988	6.10
2004	0.78

8.2.3b Area affected by fire

FRA 2010 category	2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires
Forest area affected by fire					**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**						
Bush Fire (JFB data) Uncontrolled												6.6		9.8		6.2		7.1		7.5
Farm (JFB data) Uncontrolled												0.3		0.4		0.3		0.3		0.3
Total uncontrolled fire	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**6.9**	**0.0**	**10.2**	**0.0**	**6.5**	**0.0**	**7.4**	**0.0**	**7.9**
Total sugar area reaped	30.6		30.6		27.6		30.0		30.8		29.9	6.9	26.3	10.2	27.6	6.5	27.9	7.4		7.9
Total sugar area burnt	**29.1**		**29.1**		**26.2**		**28.5**		**29.3**		**28.4**		**25.0**		**26.2**		**26.5**			

Total land area burnt	**29.1**	**0.0**	**29.1**	**0.0**	**26.5**	**0.0**	**28.5**	**0.0**	**29.3**	**0.0**	**28.4**	**6.9**	**25.0**	**10.2**	**26.2**	**6.5**	**26.5**	**7.4**	**0.0**	**7.9**

8.3 Analysis and processing of national data

8.3.1 Adjustment

8.3.1a Hurricane damage

Year	Damage '000 ha
1988	6.12
2004	0.78

8.2.3a * calibration factor (1.002737226)

8.3.1b Area affected by fire

FRA 2010 category	2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires	000 hectares	000 number of fires
Forest area affected by fire					**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**						
Bush Fire (JFB data) Uncontrolled												6.6		9.8		6.2		7.1		7.5
Farm (JFB data) Uncontrolled												0.3		0.4		0.3		0.3		0.3
Total uncontrolled fire	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**6.9**	**0.0**	**10.2**	**0.0**	**6.5**	**0.0**	**7.4**	**0.0**	**7.9**

Total sugar area reaped	30.7		30.7		27.6		30.0		30.9		30.0	6.9	26.4	10.2	27.7	6.5	28.0	7.4		7.9
Total sugar area burnt	**29.1**		**29.1**		**26.3**		**28.5**		**29.3**		**28.5**		**25.0**		**26.3**		**26.6**			
Total land area burnt	**29.1**	**0.0**	**29.1**	**0.0**	**26.6**	**0.0**	**28.5**	**0.0**	**29.3**	**0.0**	**28.5**	**6.9**	**25.1**	**10.2**	**26.3**	**6.5**	**26.6**	**7.4**	**0.0**	**7.9**

8.2.3b * calibration factor (1.002371379)

8.3.2 Estimation and forecasting

Not Necessary

8.3.3 Reclassification

Not Needed

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	#
CFRQ	Total land area burned	29.1	N/A	29.1	N/A	26.6	N/A	28.5	N/A	29.3	N/A
CFRQ	... of which forest area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Category		**2008**		**2009**		**2010**		**2011**		**2012**	
		000 ha	**#**	**000 ha**	**#**	**000 ha**	**#**	**000 ha**	**#**	**000 ha**	**#**
CFRQ	Total land area burned	28.5	N/A	25.1	10.2	26.3	6.5	26.6	7.4	N/A	7.9

CFRQ	... of which forest area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 8b

Outbreak category	Description/name	Year(s) of latest outbreak	Area damaged (000 hectares)
Severe weather event	Hurricane Gilbert	1988	6.12
Severe weather event	Hurricane Ivan	2004	0.78
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

Outbreak category
1 Insects
2 Diseases
3 Severe weather events

Tiers

Category	Tier for status	Tier for trend
Area affected by fire	Tier 3	Tier 1
• Insects • Diseases • Severe weather events	Tier 3	Tier 3

Tier criteria

Category	Tier for status	Tier for reported trend

Burned area	**Tier 3** : National fire monitoring routines **Tier 2** : Remote sensing surveys **Tier 1** : Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other
• Insects • Diseases • Severe weather events	**Tier 3** : Systematic survey (e.g. via inventory or aerial damage assessment) **Tier 2** : Management records **Tier 1** : Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

8.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Burned area	Sugar cane plantations accounts for most of the area burnt annually, over 95% of the areas harvested are burnt before harvesting. Forest area burnt is minimal in acreage	Unable to give accurate area affected by fire as the Jamaica Fire Brigade (JFB) accounts for fire by number of fires reported on and type of fire reported (Farm and Bush fire). No acreage is given for fires by the JFB.
Insects	No Data	N/A
Diseases	No Data	N/A
Severe weather events	In the year 1990, two years after Hurricane Gilbert passed over the island, an inventory was carried out on its effects on Jamaica's forests. The hurricane destroyed 6, 200 hectares of pine and hardwood plantations. Damages to the hardwoods were minimal in comparison to the pines. Assessment on the natural forests showed that damage was mainly to the crown cover. No inventory was carried on the wooded lands to determine the extent of the hurricane damage. In 2004 Hurricane Ivan destroyed approximately 779 hectares of forest plantations.	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	N/A

Tiers

Category	Tier for reported trend
Reduction in canopy cover	N/A

Tier criteria

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

Comments

Category	Comments related to data definitions etc
Reduction in canopy cover	No available data

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	The Forest Act, 1996	N/A	N/A	N/A
2	Forest Regulations, 2001	N/A	N/A	N/A
3	Forest Policy, 2001	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

See Data source (10.2.1)

10.3 Data

Table 10

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

10.4 Comments

Variable / category	Comments related to data definitions etc
Policies supporting sustainable forest management	The Forest Policy of 2001 is currently being reviewed. A draft document has been submitted to Cabinet for use as a Green paper.
Legislation and regulations supporting sustainable forest management	On the completion of the Policy, the intention is to amend the Forest Act, 1996; and Forest Regulations, 2001. Drafting Instructions are being developed.

Other general comments

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	Forest Policy, 2001	N/A	N/A
2	National Forest Management and Conservation Plan, 2001	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	A draft Forest Policy has been submitted to Cabinet for approval. This policy will allow for greater participation of the forestry stakeholders. Public participation through public consultations and stakeholders meetings were encouraged and feedbacks incorporated into the policy. The Local Forest Management Committees (LFMC's) of which there are 13 established at present, are major participants in the stakeholders meetings and at public consultations.

Other general comments

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 *(sub-category)*	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	Forestry Department. 2001. National Forestry Management and Conservation Plan. Jamaica	Forest values to society	1990 2000	N/A
2	Camirand R. and Evelyn O.B., 2003. Forestry Department-Trees for Tomorrow Project. 2004. National Forest Inventory Report 2003, Main Report and Appendices 1 to V (Table 21)	Area (%) of Jamaica by protection status	1990 and 2000	The same percentages can be applied for the reporting years as data used are those used for the creation of Table T1. Online at www.forestry.gov.jm
3	Table 6	Protected forest areas	N/A	N/A
4	N/A	N/A	N/A	N/A

12.2.2 Classification and definitions

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

N/A	N/A

12.2.3 Original data

The areas used for Protection of soil and water and Conservation of biodiversity is considered as permanent forest estate (see 4.2.3 and 4.3.2)

Table 6: Forest area within protected areas

12.3 Analysis and processing of national data

12.3.1 Adjustment

Not necessary

12.3.2 Estimation and forecasting

Not necessary

12.3.3 Reclassification

12.4 Data

Table 12

Categories		Forest area 2010 (000 ha)
CFRQ	Forest area intended to be in permanent forest land use	118.6
CFRQ	... of which permanent forest estate	88

Tiers

Category	Tier for status
Forest area intended to be in permanent forest land use	Tier 3

Permanent forest estate	Tier 3

Tier Criteria

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

12.5 Comments

Category	Comments related to data definitions etc
Forest area intended to be in permanent forest land use	Forest areas in protected areas
Permanent forest estate	Forest areas on forest reserves and forest management areas

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	Forestry Department's annual reports	N/A	2011-2012	Reports are generated at the close of each financial year; report compared against stated the Department's and National targets.
2	Department's submission to the State of the Environment Report	N/A	2012	This is compiled annually – (Calendar Year)
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	30	2012		yes	yes	yes		
Other field assessments	100	1998		yes			yes	yes
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	yes
2 Periodic national state of the forest report	yes
3 Other (please document)	yes
4 None	

Other type of forest reporting
Annual FAO - Forest Sector Questionnaire (Wood removal, Production and Trade (Import & Export)

13.4 Comments

Category	Comments
Forest area monitored under a national forest monitoring framework	Land use assessment and deforestation rate which is assessed and identified every ten years. This activity is currently being carried out with 2011-2012 satellite images.
Periodic national state of the forest report	This is measured under the government of Jamaica national outcomes for sustainability management – currently the Agency reports based on the number of hectares planted and established in addition to the total number of trees harvested annually based on the annual sustainable cut. Areas such as public education campaigns, participation in exhibits serve to heighten awareness of the importance of forests to the general society.
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 *(sub-category)*	Forest management plan mainly focused on production
...of which for conservation *(sub-category)*	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	Local Forest Management Plans and The Blue and John Crow Mountain National Park Management Plan, Jamaica	N/A	2011-2016	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	70.39
... of which for production	7.66
... of which for conservation	62.76

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

Percent of area under forest management plan that is monitored annually	0.2206

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

14.4 Comments

Category	Comments
Forest area with management plan	Five years management plans have been approved for several forest reserves and forest management area along with the Blue and John Crow Mountains National Park. These forest reserves are public reserves with the exception of the Croydon Forest Reserve and the Tulloch Forest Management Area which are privately owned. Monitoring are ongoing and reporting are forthcoming.
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	**Tier 3** : Government (national or sub-national) documentation of stakeholder inputs **Tier 2** : Government (national or subnational) requirement but stakeholder inputs not documented **Tier 1** : Other

15.2 Comments

Category	Comments
Type of stakeholder inputs	Stakeholders, including Local Forest Management Committees (LFMC's) who are directly and indirectly affected by the management of the forest are consulted for input into the plan as well as its implementation. Inputs however are not always documented as some take the form of open discussions. Comments from within the government sector may be documented as requested from the Forestry Department.
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
CFRQ	FSC	0	0	0	0	0	0	0
CFRQ	PEFC	0	0	0	0	0	0	0
CFRQ	Other	0	0	0	0	0	0	0
		2007	2008	2009	2010	2011	2012	
CFRQ	FSC	0	0	0	0	0	0	
CFRQ	PEFC	0	0	0	0	0	0	
CFRQ	Other	0	0	0	0	0	0	

Table 16b

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

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

Tier criteria

Category	Tier for status
International 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
Domestic 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
International forest management certification	N/A
Domestic 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	Not applicable
Domestic forest management certification	Not applicable

Other general comments

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: • Goods : roundwood; sawnwood; biomass; woodbased panels; pulp and paper and non-wood forest products. • Services : 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.
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	Forestry Department, Accounts Department	H	Revenue (collection and expenditure)	2000, 2005 & 2010
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

17.3 Data

Table 17

Category	Revenues / expenditures (000 local currency)		
	2000	2005	2010
Forest revenue	2657	1402	3665
Public expenditure on forestry	124620	122653	267997

	2000	2005	2010
Name of Local Currency	Ja$	N/A	N/A

17.4 Comments

Category	Comments related to data definitions etc
Forest revenue	Revenue was collected from sale of products such as lumber, seedlings, books, GIS produced maps and surveying works, various licencing fees and other forestry produced goods.
Public expenditure on forestry	During the 2010 financial year, The Forestry Department was in the transitional stage of moving from central government to Executive Agency status and having the approved structure implemented. A new Eastern Zonal Office was also commissioned at this time
Other general comments	N/A

Other general comments

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 *(sub-category)*	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 *(sub-category)*	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 *(sub-category)*	Forest owned by individuals and families.
...of which private business entities and institutions *(sub-category)*	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 *(sub-category)*	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	Camirand R. and Evelyn O.B., 2003. Forestry Department-Trees for Tomorrow Project. 2004. National Forest Inventory Report 2003, Main Report and Appendices 1 to V (Table 21)	Area (%) of Jamaica by protection status	1989 and 1998	The same percentages can be applied for the reporting years as data used are those used for the creation of Table T1. Online at www.forestry.gov.jm
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

18.2.2 Classification and definitions

National class	Definition
Forest Reserve	Any crown or private land so declared under the Forest Act
Other Protected	Government lands other than Forest Reserves and private lands so declared.
Unprotected	Privately and government owned lands which do not assume any protection status
N/A	N/A

18.2.3 Original data

Area (%) of Jamaica by forest land class and protection status

sub-Class	Forest Reserve	Other Protected	Unprotected	Grand Total
Closed broadleaf	5.8	0.1	2.1	8.0
Disturbed broadleaf	1.1	0.2	14.6	15.9
Tall open dry	0.6	1.3	2.0	3.9
Short open dry	0.1	0.4	0.6	1.1

Riparian/Swamp	0.0	0.1	0.1	0.2
Mangrove	0.1	0.5	0.3	0.9
Caribbean pine plantation *	0.3	0.0	0.1	0.4
Other species plantation *	0.3	0.0	0.1	0.4
Forest total	**8.3**	**2.6**	**19.9**	**30.8**
Disturbed broadleaf forest and Non-forest land use **	0.7	0.3	14.1	15.1
Non-forest land use and disturbed broadleaf forest ***	0.8	0.4	13.9	15.1
Mixed total	**1.5**	**0.7**	**28.0**	**30.2**
Grand forest and Mixed Total	**9.8**	**3.3**	**47.9**	**61.0**

Source: National Forest Inventory Report 2003, Main Report and Appendices 1 to V

* Caribbean pine plantation and Other species plantation = Fields/disturbed broadleaf and pine plantation from Table T1

** Disturbed broadleaf forest and Non-forest land use = Disturbed broadleaf forest and fields from Table T1

*** Non-forest land use and disturbed broadleaf forest = bamboo, bamboo and fields, bamboo and disturbed broadleaf, bauxite and disturbed broadleaf, and fields and disturbed broadleaf from Table T1

18.3 Analysis and processing of national data

18.3.1 Adjustment

Source	Total land area (1000 hectares)

National data	**1096.4**
FAOSTAT	**1099**

Calibration factor = (1099/1096) = 1.002371397

18.3.2 Estimation and forecasting

Forest Reserve ha = Forest Reserve % * 1099.0 (country total area)

Other Protected ha = Other Protected % * 1099.0 (country total area)

Unprotected ha = Unprotected % * 1099.0 (country total area)

Table 2.3.2

National class	**Forest Reserve** **'000 ha**	**Other Protected** **'000 ha**	**Unprotected** **'000 ha**	**Tota** l **'000 ha**
Closed broadleaf	63.7	1.1	23.1	8.0
Disturbed broadleaf	12.1	2.2	160.5	15.9
Tall open dry	6.6	14.3	22.0	3.9
Swamp	0.0	1.1	1.1	0.2
Mangrove	1.1	5.5	3.3	0.9
Caribbean pine plantations	3.3	0.0	1.1	0.4
Other species plantation	3.3	0.0	1.1	0.4
Total forest	**90.1**	**24.2**	**212.2**	**326.5**
Disturbed broad lead and Non forest land use	7.7	3.3	155.0	166.0
Non forest land use and disturbed broadleaf	8.8	4.4	152.8	166.0

Short open dry	1.1	4.4	6.6	12.1
	17.6	**12.1**	3.4.4	344.1

Reclassification on forest and other wooded land was done. See details in section 2.4.

Percentages for Forest reserve, Other protected and Unprotected were estimated as follow:

FRA Classes	% Forest reserve	% Other protected	% Unprotected
Forest	27.6	7.4	65.0

These percentages were applied to the total forest area for the years 1990, 2000 and 2005 presented in question number 1, the results for forests are presented below:

Forest	**1990**	**2000**	**2005**
Forest Reserve	95.1	94.1	93.6
Other protected	25.6	25.2	25.1
Unprotected	224.0	221.6	220.5
Total	**344.7**	**340.9**	**339.2**

18.3.3 Reclassification

Sub-Class	**Forest**
Closed broadleaf	100%
Disturbed broadleaf	100%

Tall open dry	100%
Swamp	100%
Mangrove	100%
Caribbean pine plantations	100%
Other species plantation	100%
Disturbed broad lead and Non forest land use	
Non forest land use and disturbed broadleaf*	9%
Short open dry	

* Non-forest land use and disturbed broadleaf forest = **bamboo, bamboo** and fields, bamboo and disturbed broadleaf, bauxite and disturbed broadleaf, and fields and disturbed broadleaf from Table T1, the bamboo area is considered forest.

National class	**FRA 2015 class**
Forest Reserve	Public ownwership
Other Protected	Unknown ownership
Unprotected	Private ownership

18.4 Data

Table 18a

Categories		**Forest area (1000 hectares)**			
		1990	**2000**	**2005**	**2010**
CFRQ	Public ownership	95.1	94.1	93.6	93
CFRQ	... of which owned by the state at national scale	95	94	93.5	92.9
CFRQ	... of which owned by the state at the sub-national government scale	0.1	0.1	0.1	0.1

CFRQ	Private ownership	224	221.6	220.5	219.1
CFRQ	... of which owned by individuals	N/A	N/A	N/A	120
CFRQ	... of which owned by private business entities and institutions	N/A	N/A	N/A	98.5
CFRQ	... of which owned by local, tribal and indigenous communities	0.5	0.5	0.5	0.5
CFRQ	Unknown ownership	25.6	25.2	25.1	24.9
TOTAL		344.70	340.90	339.20	337.00

Tiers

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

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	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

Table 18b - Holder of management rights of public forests

Categories	Forest area (000 hectares)			
	1990	2000	2005	2010
Public Administration	95.1	94.1	93.6	93
Individuals	0	0	0	0
Private companies	0	0	0	0
Communities	0	0	0	0
Other	0	0	0	0

TOTAL	95.10	94.10	93.60	93.00

Category	Tier for reported trend	Tier for status
Public Administration	Tier 2	Tier 2
Individuals	Tier 1	Tier 2
Private companies	Tier 1	Tier 2
Communities	Tier 1	Tier 2
Other	Tier 1	Tier 2

18.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Public ownership	Calculated as a percentage of national classes. Sub categories are given as an expert opinion	N/A
Private ownership	Calculated as a percentage of national classes. Sub categories are given as an expert opinion	Estimates for the sub-category were only done for 2010 as this was assisted by the national cadastral index
Unknown ownership	For this report, the category "Other ownership" may include both private and public lands.	N/A
Management rights	Local Forest Management Committees have been given management rights for some forest areas, but these assignments have taken place outside of the reporting years, (since 2013) .	N/A

Other general comments to the table
N/A

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	Forestry Department 173 Constant Spring Road Kingston 8 Jamaica	Employment records	1990, 2000, 2005, 2010	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

19.2.2 Classification and definitions

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

19.2.3 Original data

2012 Employment record (FTE)

Employment	2010

Forestry Department's operations	
New planting	120
Plantation maintenance	50
Nursery operations	30
FD staff	217
Sub-Total	**417**
Other operations	
Logging operations	10
Other	15
Sub-Total	**25**
Total	**442**

19.3 Data

Table 19

Category		Employment (000 years FTE)			
		1990	2000	2005	2010
CFRQ	Employment in forestry	3.63	1.13	1.13	0.442
CFRQ	... of which female	N/A	N/A	N/A	0.15

19.4 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Employment in forestry	FD staff and Nursery operations are actual figures obtained from the Forestry Department's HR Department and nursery operations personnel. Planting and maintenance figures are estimated based on the amount of area planted and maintained for the reporting year 2010. The figures reported for the previous years were actual persons worked and not FTE. Figures for other operations (logging and Other) are estimates. Other include persons involve in NWFP, firewood and other wood removal.	Figures for 1990, 2000 and 2005 are reported as actual persons worked and not FTE. An attempt to determine the FTE for these years will not be attempted at this time.

Other general comments to the table
N/A

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)	589.9	Jamaican dollar	2010

20.3 Comments

Category	Comments
Gross value added from forestry (at basic prices)	Data provide by FAO from UNdata

Other general comments

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	National Works Agency, Stanley Consultants	Shapefiles of Road corridors	N/A	N/A
2	JAMALCo	Proposed mining activities in North Manchester	N/A	N/A
3	Forestry Department	Forest Areas	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	333.3	329.5

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	To try and contain the deforestation rate at .1% p/a and then retain the forest cover at 30% of the island. This will be done through greater participation of private planters and a no net loss policy. This no net loss policy requires large companies, due to their man made activities, to replant the area of forest removed in another location.
Forests earmarked for conversion	A total of 302 ha. of forest have been earmarked for conversion due to road construction by 2030. At least another 50 ha. is due for conversion due to bauxite activities by 2020, Other forest areas will be converted before 2030 but acreage is uncertain..

Other general comments