Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT 2010

COUNTRY REPORT

JAMAICA

FRA2010/102
Rome, 2010

The Forest Resources Assessment Programme

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

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

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

The Global Forest Resources Assessment process is coordinated by the Forestry Department at FAO headquarters in Rome. The contact person for matters related to FRA 2010 is:

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1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2010 Categories and definitions

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

1.2 National data

1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
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)	H	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

1.2.2 Classification and definitions

Abreviation	National class	Definition
Forests land use		
BB	Bamboo	*Bambusa vulgaris* (bamboo brakes) on the lower shale hills (disturbed forest)
MG	Mangrove	Edaphic forest (areas with brackish water) composed of trees with stilt roots or pneumatopores, species indicators such as *Rhizophora mangle* (red mangrove)
PF	Closed broadleaf	Closed primary forest with broadleaf trees at least 5 m tall and crown interlocking, with minimal human disturbance
SF	Disturbed broadleaf	Disturbed broadleaf forest with trees at least 5 m tall and species-indicators of disturbance such as *Ceropia peltata* (trumpet tree)
SL	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)
SW	Swamp	Edaphic forest (soil waterlogging) with a single tree storey with species-indicators such as *Symphonia globulifera* (hog plum) and *Roystonea princeps* (royal palm)
WL	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)
Mixed Land Use		
BC	Bamboo and fields	>50% bamboo; >25% fields
BF	Bamboo and Disturbed broadleaf forest	>50% bamboo; > 25% Disturbed broadleaf forest
BS	Bauxite extraction and Disturbed broadleaf forest	>50% bauxite extraction; >25% Disturbed broadleaf forest
CS	Fields and Disturbed broadleaf forest	>50% fields; >25% Disturbed broadleaf forest
PP	Fields or Disturbed broadleaf forest and Pine plantation	>50% fields or Disturbed broadleaf forest; >25% Pine plantation
SC	Disturbed broadleaf forest and fields	>50% Disturbed broadleaf forest; >25% fields
Non-Forest land use		
BA	Buildings and other infrastructure	Buildings and other constructed features such as airstrips, quarries, etc.
BE	Bauxite extraction	Surface mining/bauxite
BR	Bare rock	Bare sand/rock
FC	Fields	Herbaceous crops, fallow, cultivated grass/legumes
HW	Herbaceous wetlands	Edaphic vegetation (soil waterlogging) with herbaceous plants
PC	Plantations	Tree crops, shrub crops like sugar cane, bananas, citrus and coconuts
WA	Water bodies	Lakes, rivers
SI	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 Calibration

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
$ha_c = ha_a + (ha_b - ha_a)/9$ ***** calibration factor
$ha_d = (ha_b + (ha_b - ha_a)/9 * 2)$ * calibration factor
$ha_e = (ha_b + (ha_b - ha_a)/9 * 7)$ * calibration factor
$ha_f = (ha_b + (ha_b - ha_a)/9 * 12)$ * 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 into FRA 2010 categories

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[1]			100%		100%	
Swamp		100%			100%	
Tall open dry		100%			100%	
Bamboo and Fields			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[2]		100%			100%	
Disturbed broadleaf and Fields			75%	25%	100%	
None-Forest land use				100%	100%	14.5%
Water	100%				100%	

OLWTC classification by expert knowledge

1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	344.6	340.9	339.2	337.1
Other wooded land	190.0	188.8	188.0	187.6
Other land	548.3	553.3	555.8	558.3
...of which with tree cover*	82.1	82.4	82.7	83.0
Inland water bodies	16.0	16.0	16.0	16.0
TOTAL	**1 099.0**	**1 099.0**	**1 099.0**	**1 099.0**

* Area of "Other land with tree cover" is included in the area reported under "Other land" and should therefore be excluded when calculating the total area for the country.

[1] Fails to satisfy height criterion for that of forest for FRA classification
[2] This class was classified as forest because of the pine and hardwood plantations making up its composition

1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	Fields/Disturbed broadleaf and pine is classified as forest because of the pine and hardwood plantations making up its composition	
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	
Other land		
Other land with tree cover	This category include plantations such as banana, citrus, coconut etc	
Inland water bodies		

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

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

2 Table T2 – Forest ownership and management rights

2.1 FRA 2010 Categories and definitions

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

2.2 National data

2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
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)	H	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

2.2.2 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 owned lands which do not assume any protected status

2.2.3 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

2.3 Analysis and processing of national data

2.3.1 Calibration

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

Calibration factor = (1099/1096) = 1.002371397

2.3.2 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	Total '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

Reclasification 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	% Unptotected
Forest	27.6	7.4	65.0

This percenges were applied to the total forest area for the years 1990, 2000 and 2005 presented in table number one, the results for forests are preseted below:

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

2.3.3 Reclassification into FRA 2010 categories

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 2010 class
Forest Reserve	Public ownwership
Other Protected	Other ownership
Unprotected	Private ownership

2.4 Data for Table T2

Table 2a - Forest ownership

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	95.1	94.1	93.6
Private ownership	224.0	221.6	220.5
...of which owned by individuals	n.a.	n.a.	n.a.
...of which owned by private business entities and institutions	n.a.	n.a.	n.a.
...of which owned by local communities	n.a.	n.a.	n.a.
...of which owned by indigenous / tribal communities	n.a.	n.a.	n.a.
Other types of ownership	25.6	25.2	25.1
TOTAL	**344.6**	**340.9**	**339.2**

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

Does ownership of trees coincide with ownership of the land on which they are situated?	x	Yes
		No
If **No** above, please describe below how the two differ:		

Table 2b - Holder of management rights of public forests

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public Administration	95.1	94.1	93.6
Individuals	0	0	0
Private corporations and institutions	0	0	0
Communities	0	0	0
Other	0	0	0
TOTAL	**95.1**	**94.1**	**93.6**

2.5 Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership		
Private ownership		
Other types of ownership	For this report, the category "Other ownership" may include both private and public lands. This is so because our national Cadastral Index, although in spatial format, has not yet address this problem	
Management rights		

Other general comments to the table

3 Table T3 – Forest designation and management

3.1 FRA 2010 Categories and definitions

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

3.2 National data

3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department. 2001. *National Forestry Management and Conservation Plan*. Jamaica	H	Forest values to society	1990 2000	
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)	H	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

3.2.2 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

3.2.3 Original data

The forest types used in the Forestry Inventory and presented in table number one T1, calibrated, estimated/forecasted areas in 1.3.2 of this report, have been designated a legal administrative function as presented in the next table:

National classes	FRA classes
Closed broadleaf	Conservation of biodiversity
Disturbed broadleaf	Protection of soil and water
Tall open dry	OWL multiple purpose
Riparian/Swamp	Conservation of biodiversity
Mangrove	Conservation of biodiversity
Disturbed broadleaf forest and Non-forest land use	Multiple purpose
Non-forest land use and Disturbed broadleaf forest	Multiple purpose
Short open dry	Multiple purpose
Fields/Disturbed broadleaf and pine plantation	Production
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 in 3.3.2 below for specific years.

3.3 Analysis and processing of national data

3.3.1 Calibration

Not necessary

3.3.2 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		14.5				162.9
Tall open dry					20.6	21.6
Riparian/Swamp			1.2			1.2
Mangrove			6.5			3.3
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**	**15.5**	**73.2**	**0.0**	**20.6**	**226.5**

* 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		14.3				160.4
Tall open dry					20.5	21.6
Riparian/Swamp			1.1			1.1
Mangrove			6.5			3.2
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**	**15.3**	**72.7**	**0.0**	**20.5**	**224.3**

* 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		14.2				159.1
Tall open dry					20.5	21.5
Riparian/Swamp			1.0			1.0
Mangrove			6.4			3.2
Caribbean pine plantation	4.3					
Other species plantation	3.9					
*Non-forest land use and disturbed broadleaf forest		1.00				15.2
Total Forest Function	**8.2**	**15.2**	**72.3**	**0.0**	**20.5**	**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 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			64.2			23.6
Disturbed broadleaf		13.8				158.2
Tall open dry					20.5	21.5
Riparian/Swamp			1.0			1.0
Mangrove			6.3			3.3
Caribbean pine plantation	3.1					
Other species plantation	4.1					
*Non-forest land use and disturbed broadleaf forest		1.0				15.4
Total Forest Function	**7.3**	**14.8**	**71.5**	**0.0**	**20.5**	**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

3.3.3 Reclassification into FRA 2010 categories

See section original data for details.

3.4 Data for Table T3

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	8.9	8.2	8.2	7.3
Protection of soil and water	15.5	15.3	15.2	14.8
Conservation of biodiversity	73.2	72.7	72.3	71.5
Social services	0	0	0	0
Multiple use	20.6	20.5	20.5	20.5
Other (please specify in comments below the table)	0	0	0	0
No / unknown	226.4	224.2	223.0	223.1
TOTAL	**344.6**	**340.9**	**339.2**	**337.1**

Table 3b – Special designation and management categories

3.4.1 Estimation and forecasting

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	120.6	119.3	118.7	118.0
Forest area within protected areas	120.6	119.3	118.7	118.0
Forest area under sustainable forest management	n.a.	n.a.	n.a.	n.a.
Forest area with management plan	n.a.	n.a.	n.a.	n.a.

Area of permanent forest estate = (%Protected + %Other protected) * Year estimates

3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production		
Protection of soil and water		
Conservation of biodiversity		
Social services		
Multiple use	Multiple purpose area is assumed to serve all four functions	
Other		

No / unknown designation		
Area of permanent forest estate	The areas used for Protection of soil and water and Conservation of biodiversity is considered as permanent forest estate	
Forest area within protected areas		
Forest area under sustainable forest management		
Forest area with management plan		

Other general comments to the table

4 Table T4 – Forest characteristics

4.1 FRA 2010 Categories and definitions

Term / category	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Introduced species	A species, subspecies or lower taxon, occurring 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).
Characteristics categories	
Primary forest	Naturally regenerated forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Other naturally regenerated forest	Naturally regenerated forest where there are clearly visible indications of human activities.
Other naturally regenerated forest of introduced species *(sub-category)*	Other naturally regenerated forest where the trees are predominantly of introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
Planted forest of introduced species *(sub-category)*	Planted forest, where the planted/seeded trees are predominantly of introduced species.
Special categories	
Rubber plantations	Forest area with rubber tree plantations.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
Bamboo	Area of forest and other wooded land with predominant bamboo vegetation.

4.2 National data

4.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
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)	H	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

4.2.2 Classification and definitions

National class	Definitions
Forests	
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

4.2.3 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**

4.3 Analysis and processing of national data

4.3.1 Calibration

Same as Table T1

4.3.2 Estimation and forecasting

Not necessary

4.3.3 Reclassification into FRA 2010 categories

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

4.4 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	88.9	88.3	88.0	87.7
Other naturally regenerated forest	246.9	244.4	243.0	242.0
...of which of introduced species	12.1	12.6	12.9	13.2
Planted forest	8.9	8.2	8.2	7.3
...of which of introduced species	8.8	8.1	7.7	7.3
TOTAL	**344.6**	**340.9**	**339.2**	**337.1**

Table 4b

FRA 2010 Categories	Area (1000 hectares)			
	1990	2000	2005	2010
Rubber plantations (Forest)	0	0	0	0
Mangroves (Forest and OWL)	9.8	9.7	9.6	9.6
Bamboo (Forest and OWL)	34.4	34.3	34.3	34.2

4.5 Comments to Table T4

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest	All of closed broadleaf forests.	
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.	
Planted forest	Only our plantations (Pine forest and hardwood plantations) are considered as Planted forests	
Rubber plantations	Not applicable	
Mangroves		
Bamboo		

Other general comments to the table

5 Table T5 – Forest establishment and reforestation

5.1 FRA 2010 Categories and definitions

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

5.2 National data

5.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department. Annual reports	M	Afforestation and reforestation	1988-2007	
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 7)	H	Interchange matrix of land use/ cover area in Jamaica	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

5.2.2 Classification and definitions

See 1.2.2

5.2.3 Original data

Agency	1990(Hectares)					2000 (Hectares)					2005 (Hectares)				
	1988	1989	1990	1991	1992	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Forestry Department	230	320	30	290	18	138	145	0	0	0	0	0	52	46	88
Projects	NA	NA	NA	NA	NA	38	100	150	124	89	3	47	43	6	NA
Private Planting	NA	NA	NA	NA	NA	83	125	125	105	105	105	222	138	122	165
Total	230	320	30	290	18	259	370	275	229	194	108	269	233	174	253

Plantation establishment by Forestry Department- funded by Government and other agencies and private planters

The figures on natural expansion of forests are based on trends as shown in matrix in (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 7))

5.3 Analysis and processing of national data

5.3.1 Calibration

Not necessary

5.3.2 Estimation and forecasting

Not necessary

Agency	1990 (Hectares)					2000 (Hectares)					2005 (Hectares)				
	1988	1989	1990	1991	1992	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Forestry Department	230	320	30	290	18	138	145	0	0	0	0	0	52	46	88
Projects	n.a	n.a	n.a	n.a	n.a	38	100	150	124	89	3	47	43	6	-
Private Planting	n.a	n.a	n.a	n.a	n.a	83	125	125	105	105	105	222	138	122	165
Total	230	320	30	290	18	259	370	275	229	194	108	269	233	174	253
5 year total			888					1327					1040		
5 year Average			178					265					208		

Average (178 ha) for 1990 = 5 year total 1989-1992 (888) / 5
Average (265 ha) for 2000 = 5 year total 1998-2002 (1327) / 5
Average (207 ha) for 2005 = 5 year total 2003-2007 (1037) / 5

5.3.3 Reclassification into FRA 2010 categories

	1990	2000	2005
Planting - Afforestation	10%	10%	10%
-Reforestation	90%	90%	90%
Sub Total %	100%	100%	100%
Natural expansion	62	62	62

Proportions afforestation / reforestation are based on expert opinion.

5.4 Data for Table T5

FRA 2010 Categories	Annual forest establishment (hectares/year)			...of which of introduced species [1)] (hectares/year)		
	1990	2000	2005	1990	2000	2005
Afforestation	18	27	21	18	27	21
Reforestation	160	239	187	160	239	187
...of which on areas previously planted	80	70	60	80	70	60
Natural expansion of forest	62	62	62	40	40	40

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

5.5 Comments to Table T5

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Afforestation		
Reforestation		
Natural expansion of forest		

Other general comments to the table

6 Table T6 – Growing stock

6.1 FRA 2010 Categories and definitions

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

6.2 National data

6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
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*	H	Area and Volume	2003	

6.2.2 Classification and definitions

Abreviation	National class	Definition
Forests land use		
BB	Bamboo	*Bambusa vulgaris* (bamboo brakes) on the lower shale hills (disturbed forest)
MG	Mangrove	Edaphic forest (areas with brackish water) composed of trees with stilt roots or pneumatopores, species indicators such as *Rhizophora mangle* (red mangrove)
PF	Closed broadleaf	Closed primary forest with broadleaf trees at least 5 m tall and crown interlocking, with minimal human disturbance
SF	Disturbed broadleaf	Disturbed broadleaf forest with trees at least 5 m tall and species-indicators of disturbance such as *Ceropia peltata* (trumpet tree)
SL	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)
SW	Swamp	Edaphic forest (soil waterlogging) with a single tree storey with species-indicators such as *Symphonia globulifera* (hog plum) and *Roystonea princeps* (royal palm)
WL	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)

Mixed Land Use		
BC	Bamboo and fields	>50% bamboo; >25% fields
BF	Bamboo and Disturbed broadleaf forest	>50% bamboo; > 25% Disturbed broadleaf forest
BS	Bauxite extraction and Disturbed broadleaf forest	>50% bauxite extraction; >25% Disturbed broadleaf forest
CS	Fields and Disturbed broadleaf forest	>50% fields; >25% Disturbed broadleaf forest
PP	Fields or Disturbed broadleaf forest and Pine plantation	>50% fields or Disturbed broadleaf forest; >25% Pine plantation
SC	Disturbed broadleaf forest and fields	>50% Disturbed broadleaf forest; >25% fields

6.2.3 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)

6.3 Analysis and processing of national data

6.3.1 Estimation and forecasting

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.

6.3.2 Reclassification into FRA 2010 categories

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

6.4 Data for Table T6

Table 6a – Growing stock

FRA 2010 category	**Volume (million cubic meters over bark)**							
	Forest				**Other wooded land**			
	1990	**2000**	**2005**	**2010**	**1990**	**2000**	**2005**	**2010**
Total growing stock	52.98	52.40	51.76	51.80	24.46	24.28	24.19	24.12
... of which coniferous	0.60	0.51	0.51	0.37	0.00	0.00	0.00	0.00
... of which broadleaved	52.38	51.89	51.25	51.43	24.46	24.28	24.19	24.12
Growing stock of commercial species	1.19	1.11	1.11	0.98	n.a	n.a	n.a	n.a

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

See appendix I

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

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

Table 6c – Specification of threshold values

Item	Value	Complementary information
Minimum diameter (cm) at breast height[3] 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	
Volume refers to "above ground" (AG) or "above stump" (AS)	AG	

6.5 Comments to Table T6

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total growing stock		
Growing stock of broadleaved / coniferous		
Growing stock of commercial species		
Growing stock composition		

Other general comments to the table

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

7 Table T7 – Biomass stock

7.1 FRA 2010 Categories and definitions

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

7.2 National data

7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
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*	H	Biomass stock	2003	
Davis, C., Evelyn, O.B., Simpson, L.A. and Smith, I.T., 2008. *Jamaica's Greenhouse Gas Emissions Inventory, 2000 – 2005, Final Report*	H	Biomass Stock	2000-2005	

7.2.2 Original data

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)

7.3 Analysis and processing of national data

7.3.1 Estimation and forecasting

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	7.1	100%		
Disturbed Broadleaf	165	177.3	42.65	2.16	2.20	5.01	2.64	12.0	100%		
Tall Open Dry	38	42.2	4.91	0.01	0.02	1.27	0.07	1.4	100%		
Short Open Dry	23	12.1	1.10			0.31		0.3		100%	
Riparian/Swamp	181	2.4	0.60		0.01	0.16		0.2	100%		
Mangrove	79	9.8	1.64		0.01	0.45		0.5	100%		
Caribbean Pine Plantations	119	5.0	1.02	0.20	0.01		0.02	0.2	100%		
Other Species Plantation	148	3.9	0.89	0.08	0.06		0.11	0.3	100%		
Forest Total		**341.60**	**75.99**	**5.87**	**2.99**	**7.40**	**5.63**	**21.90**			
Disturbed Broadleaf Forest & Non-Forest Land Use	94	167.1	22.83	0.71	0.91	2.50	2.22	6.3		100 %	
Non-Forest Land Use & Disturbed Broadleaf Forest	66	165.8	25.36	3.75	0.73	0.21	3.08	7.8	22.4%	77.6%	
Mixed Total		**332.9**	**48.20**	**4.46**	**1.64**	**2.71**	**5.30**	**14.1**			
Total		**674.5**	**124.19**	**10.34**	**4.63**	**10.11**	**10.93**	**36.0**			

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 6.3.2 estimating and forecasting

*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	**7.1**	100%		
Disturbed Broadleaf	165	174.7	42.03	2.13	2.16	4.94	2.60	**11.8**	100%		
Tall Open Dry	38	42.1	4.90	0.01	0.02	1.27	0.07	**1.4**	100%		
Short Open Dry	23	12.1	1.10			0.31		**0.3**		100%	
Riparian/Swamp	181	2.1	0.53		0.01	0.14		**0.1**	100%		
Mangrove	79	9.7	1.62		0.01	0.44		**0.5**	100%		
Caribbean Pine Plantations	119	4.3	0.34	0.07	0.00		0.01	**0.1**	100%		
Other Species Plantation	148	3.9	0.89	0.08	0.06		0.11	**0.3**	100%		
Forest Total		**337.20**	**74.42**	**5.69**	**2.95**	**7.30**	**5.56**	**21.49**			
Disturbed Broadleaf Forest & Non-Forest Land Use	94	166.2	22.71	0.70	0.90	2.48	2.21	**6.3**		100 %	
Non-Forest Land Use & Disturbed Broadleaf Forest	66	165.9	25.38	3.76	0.73	0.21	3.08	**7.8**	23.3%	76.7%	
Mixed Total		**332.1**	**48.09**	**4.46**	**1.63**	**2.70**	**5.29**	**14.1**			
Total		**669.3**	**122.51**	**10.15**	**4.58**	**10.00**	**10.85**	**35.6**			

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 6.3.2 estimating and forecasting

*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	**7.0**	100%		
Disturbed Broadleaf	165	173.3	41.69	2.11	2.15	4.90	2.58	**11.7**	100%		
Tall Open Dry	38	42.00	4.89	0.01	0.02	1.27	0.07	**1.4**	100%		
Short Open Dry	23	12.1	1.10			0.31		**0.3**		100%	
Riparian/Swamp	181	2.0	0.50		0.01	0.13		**0.1**	100%		
Mangrove	79	9.6	1.61		0.01	0.44		**0.4**	100%		
Caribbean Pine Plantations	119	4.3	0.34	0.07	0.00		0.01	**0.1**	100%		
Other Species Plantation	148	3.9	0.89	0.08	0.06		0.11	**0.3**	100%		
Forest Total		**335.20**	**73.95**	**5.66**	**2.93**	**7.25**	**5.53**	**21.36**			
Disturbed Broadleaf Forest & Non-Forest Land Use	94	165.7	22.64	0.70	0.90	2.47	2.20	**6.3**		100 %	
Non-Forest Land Use & Disturbed Broadleaf Forest	66	165.9	25.38	3.76	0.73	0.21	3.08	**7.8**	23.7%	76.3%	
Mixed Total		**331.6**	**48.0**	**4.5**	**1.6**	**2.7**	**5.3**	**14.1**			
Total		**666.8**	**121.97**	**10.12**	**4.56**	**9.93**	**10.81**	**70.8**			

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 6.3.2 estimating and forecasting

*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	22.86	3.38	0.68	0.20	2.76	**7.0**	100%		
Disturbed Broadleaf	165	172.0	41.38	2.09	2.13	4.86	2.56	**11.6**	100%		
Tall Open Dry	38	42.0	4.89	0.01	0.02	1.27	0.07	**1.4**	100%		
Short Open Dry	23	12.1	1.10			0.31		**0.3**		100%	
Riparian/Swamp	181	1.9	0.49		0.01	0.13		**0.1**	100%		
Mangrove	79	9.6	1.60		0.01	0.44		**0.4**	100%		
Caribbean Pine Plantations	119	3.1	0.25	0.05	0.00		0.01	**0.1**	100%		
Other Species Plantation	148	4.1	0.94	0.09	0.06		0.12	**0.3**	100%		
Forest Total		**332.6**	**73.51**	**5.62**	**2.91**	**7.20**	**5.50**	**21.24**			
Disturbed Broadleaf Forest & Non-Forest Land Use	94	165.3	22.59	0.70	0.90	2.47	2.20	**6.3**		100 %	
Non-Forest Land Use & Disturbed Broadleaf Forest	66	166.3	25.44	3.76	0.73	0.21	3.09	**7.8**	24.2%	75.8%	
Mixed Total		**331.6**	**48.03**	**4.47**	**1.63**	**2.68**	**5.29**	**9.6**			
Total		**664.2**	**121.54**	**10.08**	**4.54**	**9.89**	**10.79**	**66.1**			

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 6.3.2 estimating and forecasting

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

7.3.2 Reclassification into FRA 2010 categories

See above

7.4 Data for Table T7

FRA 2010 category	**Biomass (million metric tonnes oven-dry weight)**							
	Forest				**Other wooded land**			
	1990	**2000**	**2005**	**2010**	**1990**	**2000**	**2005**	**2010**
Above-ground biomass	79.94	79.26	78.87	78.57	43.62	43.28	43.11	42.97
Below-ground biomass	23.07	23.00	22.89	22.82	12.68	12.58	12.53	12.49
Dead wood	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	103.01	102.26	101.76	101.39	56.29	55.85	55.63	55.46

7.5 Comments to Table T7

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

Other general comments to the table
Tables were reclassified to match the reclassification percentages used in Table 6.3.3. Because of a change in reclassification the figures for Table T7 have been changed.

8 Table T8 – Carbon stock

8.1 FRA 2010 Categories and definitions

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

8.2 National data

8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
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*	H	Biomass stock	2003	
Davis, C., Evelyn, O.B., Simpson, L.A. and Smith, I.T., 2008. *Jamaica's Greenhouse Gas Emissions Inventory, 2000 – 2005, Final Report*	H	Carbon stock	2000-2005	Tables 4-9 and 4-13
FAO. Guidelines for Countries reporting to FRA 2010	M	Default tables		Appendix 5, Tables 5.5[2], 5.9[ix] and 5.10[x]

8.2.2 Original data

Table 8.2.3 (a) 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

Table 8.2.3 (b) 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

Table 8.2.3 (c) 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)

8.3 Analysis and processing of national data

8.3.1 Calibration

See calculations

8.3.2 Estimation and forecasting

Table 8.3.2 (a) Carbon stock calculation for above and below ground

	Biomass (million metric tonnes oven-dry weight)					Carbon stock (Million tonnes)			
	Forest								
FRA 2010 category	1990	2000	2005	2010	IPCC Default Value	1990	2000	2005	2010
Living biomass									
Above-ground biomass	79.94	79.26	78.87	78.57	0.47	37.57	37.25	37.07	36.93
Below-ground biomass	23.07	23.00	22.89	22.82	0.47	10.84	10.81	10.76	10.72
Sub-total: Carbon in living biomass						**48.41**	**48.06**	**47.83**	**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**	**26.07**

Carbon stock (for specific year) = Biomass total (for corresponding year)* IPCC Default Value
Biomass totals from Table T7
IPCC Default Value from Guidelines for Countries Reporting to FRA 2010, Table 5.2[2]

Table 8.3.2b 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**	**0.72**	**0.72**
Other wooded land									
Broadleaf Species	190.0	188.8	188.2	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

Table 8.3.2c Reclassification of original table in 8.2.3a into FRA classes

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
	OWL	9.6	0,89	0.00	0.00	10.50
Non-Forest Land use &						
Disturbed Broadleaf Forest						
	Total	**24.42**	**2.39**	**0.01**	**0.03**	**26.75**

Table 8.3.2d Adjusted Result of Reclassification 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**

Table 8.3.2e Reclassification of Table 8.2.3c

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
	OWL					
Non-Forest Land use &	OWL	124480	15889	29803	41411	37377
Disturbed Broadleaf Forest	Forest Land					
	Sub Total	**302238**	**29788**	**57274**	**118151**	**97025**

Table 8.3.2f Calculation of carbon by Ecological Zones and soil type using Tables Table 8.3.2d and Table 8.3.2e

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 (**Table 8.3.2d)** * (forest total for ecological zone / total forest) (**Table 8.3.2e)** * Default reference value for climatic region and soil type (**Table 8.2.3 c)** * 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

Table 8.3.2g Process repeated to produce results for subsequent years

Year	1990	2000	2005	2010
Forest				
Soil Carbon	**20.85**	**20.63**	**20.51**	**20.40**
Other wooded land				
Soil Carbon	**18.01**	**17.82**	**17.72**	**17.62**

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)

8.3.3 Reclassification into FRA 2010 categories

See above

8.4 Data for Table T8

Calculations are tabulated below

FRA 2010 Category	Carbon (Million metric tonnes)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Carbon in above-ground biomass	37.57	37.25	37.07	36.93	20.50	20.34	20.26	20.20
Carbon in below-ground biomass	10.84	10.81	10.76	10.72	5.96	5.91	5.89	5.87
Sub-total: Living biomass	**48.41**	**48.06**	**47.83**	**47.65**	**26.46**	**26.25**	**26.15**	**26.07**
Carbon in dead wood	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in litter	0.74	0.73	0.72	**0.72**	n.a.	n.a.	n.a.	n.a.
Sub-total: Dead wood and litter	**0.74**	**0.73**	**0.72**	0.72	n.a.	n.a.	n.a.	n.a.
Soil carbon	**20.85**	**20.63**	**20.51**	**20.40**	**18.01**	**17.82**	**17.72**	**17.62**
TOTAL	**n.a**	**n.a**	**n.a**	**n.a**	**n.a**	**n.a**	**n.a**	**n.a**

Soil depth (cm) used for soil carbon estimates	30 cm (default)

8.5 Comments to Table T8

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

Other general comments to the table
Some tables were incorrectly calculated previously and are corrected here. These changes are reflected in differences in the tables from previous.

9 Table T9 – Forest fires

Although some amount of data can be obtained as to the number of fire reported per year, the area, type and location (eg. forest/wooded land etc), is not fortcmming and as such is not considered for this report.

10 Table T10 – Other disturbances affecting forest health and vitality

10.1 FRA 2010 Categories and definitions

Term	Definition
Disturbance	Damage caused by any factor (biotic or abiotic) that adversely affects the vigour and productivity of the forest and which is not a direct result of human activities.
Invasive species	Species that are non-native to a particular ecosystem and whose introduction and spread cause, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health.
Category	**Definition**
Disturbance by insects	Disturbance caused by insect pests.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as bacteria, fungi, phytoplasma or virus.
Disturbance by other biotic agents	Disturbance caused by biotic agents other than insects or diseases, such as wildlife browsing, grazing, physical damage by animals, etc.
Disturbance caused by abiotic factors	Disturbances caused by abiotic factors, such as air pollution, snow, storm, drought, etc.

10.2 National data

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department, 2001. *National Forestry Management and Conservation Plan*. Jamaica	H	Existing plantations	2001	Online at www.forestry.gov.jm
Forestry Department, Regional Reports	M	Hurricane damage reports	2004	Estimates of damage done to plantations by hurricane Ivan in September 2004

10.2.2 Classification and definitions

Not needed as classes correspond with FRA classes

10.2.3 Original data

Year	Damage '000 ha
1988	6.10
2004	0.78

10.3 Analysis and processing of national data

10.3.1 Calibration

Year	Damage '000 ha
1988	6.12
2004	0.78

Damage acreages * calibration factor (1.002737226)

10.3.2 Estimation and forecasting

FRA request five years average, therefore the 6.1 thousand hectares and the 0.78 thousand hectares were divided by 5 for the reporting years of 1990 and 2005.

10.3.3 Reclassification into FRA 2010 categories

Not Needed

10.4 Data for Table T10

Table 10a – Disturbances

FRA 2010 category	Affected forest area (1000 hectares)		
	1990	2000	2005
Disturbance by insects	0	0	0
Disturbance by diseases	0	0	0
Disturbance by other biotic agents	0	0	0
Disturbance caused by abiotic factors	1.22	0	0.16
Total area affected by disturbances	**1.22**	0	0.16

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

The total area affected by disturbances is not necessarily the sum of the individual disturbances as these may be overlapping.

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

Description / name	Tree species or genera affected (scientific name)	Year(s) of latest outbreak	Area affected (1000 hectares)	If cyclic, approx. cycle (years)

Note: Area affected refers to the total area affected during the outbreak.

Table 10c – Area of forest affected by woody invasive species

Scientific name of woody invasive species	Forest area affected 2005 (1000 hectares)
Polygonum chinensel	8
Pittosporum undulatum	3
Leucaena leucocephala	6
Tecoma stans	2
Calliandra sp.	6
Total forest area affected by woody invasive species	20

Note: The total forest area affected by woody invasive species is not necessary the sum of the values above, as these may be overlapping.

10.5 Comments to Table T10

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Disturbance by insects		
Disturbance by diseases		
Disturbance by other biotic agents		
Disturbance caused by abiotic factors	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, 100 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.	
Major outbreaks		
Invasive species	Areas of invasive species overlaps which accounts for the total arrived at.	

Other general comments to the table

11 Table T11 – Wood removals and value of removals

11.1 FRA 2010 Categories and definitions

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

11.2 National data

11.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department, Jamaica. Various regional reports	M	Cubic meters	2000 & 2005	
Davis, C., Evelyn, O.B., Simpson, L.A. and Smith, I.T., 2008. *Jamaica's Greenhouse Gas Emissions Inventory, 2000 – 2005, Final Report*	H	Wood removal	2000-2005	Table 4-10

11.2.2 Classification and definitions

Not needed

11.2.3 Original data

Wood Removal - on Forest Reserves & Public Lands (m^3 u.b)						
	Year					
	2000	2001	2002	2003	2004	2005
Species	**Carib pine plantations**					
Public	134.6	171.3	301.1	203.4	1038.3	2021.8
Private	15.7	20	35.1	23.7	121.1	235.8
Sub-Total	**150.3**	**191.3**	**336.2**	**227.1**	**1159.4**	**2257.6**
Species	**Hardwoods- natural forest and plantations**					
Public	347.6	287.1	290.7	210.3	1619.3	182.0
Private	617.9	510.4	516.8	373.8	2878.8	323.6
Sub-Total	**965.5**	**797.5**	**807.5**	**584.1**	**4498.1**	**505.6**

Source: Draft Report Jamaica's Greenhouse Gas Emission Inventory, 2000 to 2005 (Table 4-10), extract

Wood Removal - on Forest Reserves & Public Lands (m^3 u.b)		
	Year	
	2006	2007
Species	**Carib pine plantations**	
Public	2985.9	838.1
Species	**Hardwoods- natural forest and plantations**	
Public	1019.6	115.9

Source: Forestry Department's reports

11.3 Analysis and processing of national data

11.3.1 Estimation and forecasting

For Wood removal

Combining tables

Wood Removal - on Forest Reserves & Public Lands (m^3 u.b)								
	Year							
	2000	2001	2002	2003	2004	2005	2006	2007
Species	**Carib pine plantations**							
Public	134.6	171.3	301.1	203.4	1038.3	2021.8	2985.9	838.1
Private	15.7	20	35.1	23.7	121.1	235.8	348.2	97.8
Sub-Total	**150.3**	**191.3**	**336.2**	**227.1**	**1159.4**	**2257.6**	**3334.1**	**935.9**
Species	**Hardwoods- natural forest and plantations**							
Public	347.6	287.1	290.7	210.3	1619.3	182.0	1019.6	159.1
Private	617.9	510.4	516.8	373.8	2878.8	323.6	1812.6	205.9
Sub-Total	**965.5**	**797.5**	**807.5**	**584.1**	**4498.1**	**505.6**	**2832.2**	**321.7**

Public values taken from Forest Department files

Private value is a calculated percentage of Public values as derived from original data for wood removal

*Private Pines is 11.66% of Public pines

*Private Hardwoods is 177.78% of Public Hardwoods

11.3.2 Calibration

Calibrated Wood Removal - on Forest Reserves & Public Lands (m^3 o.b)								
	Year							
	2000	2001	2002	2003	2004	2005	2006	2007
Species	**Carib pine plantations**							
Public	154.79	197.00	346.27	233.91	1194.05	2325.07	3433.81	963.82
Private	18.06	23.00	40.37	27.26	139.27	271.178	400.38	112.47
Sub-Total	**172.85**	**220.00**	**386.63**	**261.17**	**1333.31**	**2596.24**	**3834.19**	**1076.29**
Species	**Hardwoods- natural forest and plantations**							
Public	399.74	330.17	334.31	241.85	1862.20	209.30	1172.52	133.24
Private	710.59	586.86	594.32	429.15	3310.62	372.14	2084.50	236.77
Sub-Total	**1110.33**	**917.13**	**928.63**	**671.72**	**5172.82**	**581.44**	**3257.02**	**370.00**

Calibrated **m^3** o.b = **m^3** u.b *1.15 (Calibration Factor, Taken from Guidelines For Countries Reporting to FRA 2010, *T11 Wood removals and value of removals.*

11.3.3 Reclassification into FRA 2010 categories

For Industrial roundwood removal (o.b Figures)

Wood removal total for year 2000 = (totals for 2000+2001+2002) / 3

Wood removal total for year 2005 = (totals for 2003+2004+2005+2006+2007) / 5

For Woodfuel removal

n.a.

11.4 Data for Table T11

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990	2000	2005	1990	2000	2005
Total volume (1000 m^3 o.b.)	n.a.	1.24	3.83	n.a.	n.a.	n.a.
... of which from forest	n.a.	1.00	3.50	n.a.	n.a.	n.a.
Unit value (local currency / m^3 o.b.)	n.a.	3867.71	5336.32	n.a.	n.a.	n.a.
Total value (1000 local currency)	n.a.	4801.18	20442.578	n.a.	n.a.	n.a.

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

	1990	2000	2005
Name of local currency	Jamaican Dollar	Jamaican Dollar	Jamaican Dollar

11.5 Comments to Table T11

Variab-le / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total volume of industrial roundwood removals	The derived totals for industrial roundwood (hardwoods and pines) are used to calculate this table	
Total volume of woodfuel removals		
Unit value	The value of hardwoods and pines are used to calculate a single cost for reported year	
Total value	Unit value * total volume	

Other general comments to the table
The figures used are different from what is reported by FAOSTATS as is explained in Davis *et al.* 2008. Every effort will be made to correct this error in the next Joint Forest Sector Questionnaire.

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

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.

12.1 National data

12.1.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department 2001, *National Forestry Management and Conservation Plan***.** Jamaica	L	Minor forest products	2000	See comments Online at www.forestry.gov.jm

13 Table T13 – Employment

13.1 FRA 2010 Categories and definitions

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

13.2 National data

13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department's (FD) accounting records, and projects coordinator	H	Employment figures	2000	
Forest Industries Development Company's (FIDCO) *'Appraisal and financial statements April 89-March 1990'*	H	Manpower numbers	1989-1990	Statement VIII
Jamaica Conservation Development Trust (JCDT)	H	Employment figures	2000	

13.2.2 Original data

For year 1990

Employment		1990
Projects (Forestry Department)		3634

For year 2000

Employment		2000
Projects (FD)		1132

For year 2005

Employment		2005
Projects (Forestry Department)		1132

13.3 Analysis and processing of national data

13.3.1 Calibration

Not needed

13.3.2 Estimation and forecasting

For year 1990

Employment	1990	2000	2005	
Projects (Forestry Department)	3634	1132	1132	
Total	3634	1132	1132	

13.3.3 Reclassification into FRA 2010 categories

National Catigory	FRA Category
Projects	Primary production of goods
Staff	Provision of services

13.4 Data for Table T13

FRA 2010 Category	Full Time Employment (1000 person-years)		
	1990	2000	2005
Employment in primary production of goods	3.63	1.13	1.13
...of which paid employment	3.61	1.12	1.12
... of which self-employment	0.02	0.01	0.01
Employment in management of protected areas	0.01	0.01	0.01

13.5 Comments to Table T13

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Employment in primary production of goods		
Paid employment / self-employment	Expert opinion	
Employment in management of protected areas	This service is provided by the Jamaica Conservation Development Thrust (the delegated managers of the Blue and John Crow Mountain National Park) through its ranger services, which patroles the area.	

Other general comments to the table
The figures provided are for employment in state run projects on forest reserves and direct public sector employment in the forestry service and the Jamaica Conservation Development Thrust's (JCDT) rangers' services.

14 Table T14 – Policy and legal framework

14.1 FRA 2010 Categories and definitions

Term	Definition
Forest policy	A set of orientations and principles of actions adopted by public authorities in harmony with national socio-economic and environmental policies in a given country to guide future decisions in relation to the management, use and conservation of forest and tree resources for the benefit of society.
Forest policy statement	A document that describes the objectives, priorities and means for implementation of the forest policy.
National forest programme (nfp)	A generic expression that refers to a wide range of approaches towards forest policy formulation, planning and implementation at national and sub-national levels. The national forest programme provides a framework and guidance for country-driven forest sector development with participation of all stakeholders and in consistence with policies of other sectors and international policies.
Law (Act or Code) on forest	A set of rules enacted by the legislative authority of a country regulating the access, management, conservation and use of forest resources.

14.2 Data for Table T14

Indicate the existence of the following (2008)			
Forest policy statement with national scope		x	Yes
			No
If Yes above, provide:	Year of endorsement	2001	
	Reference to document	Forest Policy 2001	
National forest programme (nfp)		x	Yes
			No
If Yes above, provide:	Name of nfp in country	National Forestry Management and Conservation Plan	
	Starting year	2001	
	Current status		In formulation
		x	In implementation
		x	Under revision
			Process temporarily suspended
	Reference to document or web site	http://www.forestry.gov.jm/forestry_plan.htm	
Law (Act or Code) on forest with national scope		x	Yes, specific forest law exists
			Yes, but rules on forests are incorporated in other (broader) legislation
			No, forest issues are not regulated by national legislation
If Yes above, provide:	Year of enactment	1996	
	Year of latest amendment		
	Reference to document	The Forest Act, 1996; and Forest Regulations, 2001	

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

14.3 Comments to Table T14

Variable / category	Comments related to data, definitions, etc.
Forest policy statement with national scope	
National forest programme (nfp)	Currently under review and are in the process of preparing a 5 year strategic Forest Management Framework
Law (Act or Code) on forest with national scope	Drafting instructions prepared for amendments to Forest Act 1996
Sub-national forest policy statements	
Sub-national Laws (Acts or Codes) on forest	

Other general comments to the table

15 Table T15 – Institutional framework

15.1 FRA 2010 Categories and definitions

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

15.2 Data for Table T15

Table 15a – Institutions

FRA 2010 Category	2008	
Minister responsible for forest policy formulation : please provide full title	The Honourable Dr. Christopher Tufton, Minister of Agriculture	
Level of subordination of Head of Forestry within the Ministry	x	1st level subordination to Minister
		2nd level subordination to Minister
		3rd level subordination to Minister
		4th or lower level subordination to Minister
Other public forest agencies at national level	None	
Institution(s) responsible for forest law enforcement	Forestry Department Jamaica Constabulary Force - Island Special Constabulary Force	

Table 15b – Human resources

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	141	35	155	31	156	34
...of which with university degree or equivalent	12	33	20	25	20	30

Notes:
1. Includes human resources within public forest institutions at sub-national level
2. Excludes people employed in State-owned enterprises, education and research, as well as temporary / seasonal workers.

15.3 Comments to Table T15

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Minister responsible for forest policy formulation		
Level of subordination of Head of Forestry within the Ministry		
Other public forest agencies at national level		
Institution(s) responsible for forest law enforcement		
Human resources within public forest institutions		

Other general comments to the table

16 Table T16 – Education and research

16.1 FRA 2010 Categories and definitions

Term	Definition
Forest-related education	Post-secondary education programme with focus on forests and related subjects.
Doctor's degree (PhD)	University (or equivalent) education with a total duration of about 8 years.
Master's degree (MSc) or equivalent	University (or equivalent) education with a total duration of about five years.
Bachelor's degree (BSc) or equivalent	University (or equivalent) education with a duration of about three years.
Technician certificate or diploma	Qualification issued from a technical education institution consisting of 1 to 3 years post secondary education.
Publicly funded forest research centers	Research centers primarily implementing research programmes on forest matters. Funding is mainly public or channelled through public institutions.

16.2 National data

16.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department, Human Resource Division	H	Qualification	2000, 2005, 2008	

16.3 Data for Table T16

FRA 2010 Category	Graduation [1] of students in forest-related education					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Master's degree (MSc) or equivalent	0	0	0	0	0	0
Bachelor's degree (BSc) or equivalent	0	0	0	0	0	0
Forest technician certificate / diploma	0	0	0	0	0	0
FRA 2010 Category	**Professionals working in publicly funded forest research centres [2]**					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Doctor's degree (PhD)	0	0	0	0	0	0
Master's degree (MSc) or equivalent	0	0	0	0	0	0
Bachelor's degree (BSc) or equivalent	1	0	1	0	2	0

Notes:

1. Graduation refers to the number of students that have successfully completed a Bachelor's or higher degree or achieved a certificate or diploma as forest technician.
2. Covers degrees in all sciences, not only forestry.

16.4 Comments to Table T16

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Graduation of students in forest-related education	All forestry graduates are from ECIAF in Trinidad, UNB in Canada or other overseas universities.	
Professionals working in public forest research centres	Research Division within the Forestry Department	

Other general comments to the table

17 Table T17 – Public revenue collection and expenditure

17.1 FRA 2010 Categories and definitions

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

17.2 National data

17.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department, Accounts Department	H	Revenue (collection and expenditure)	2000 & 2005	

17.2.2 Classification and definitions

Not necessary

17.2.3 Original data

Year	2000	2005
Forest Revenue (Ja$'000)	2,657	1,402
Domestic Expenditure (Ja$'000)	78,995	120,736
External Funding (Ja$'000)	45,625	1,917

Source: Forestry Department, Accounts Department

17.3 Data for Table T17

Table 17a - Forest revenues

FRA 2010 Categories	Revenues (1000 local currency)	
	2000	2005
Forest revenue	2,657	1,402

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

FRA 2010 Categories	Domestic funding (1000 local currency)		External funding (1000 local currency)		Total (1000 local currency)	
	2000	2005	2000	2005	2000	2005
Operational expenditure	78,995	120,736	45,625	1,917	124,620	122,653
Transfer payments	0	0	0	0	0	0
Total public expenditure	78,995	120,736	45,625	1,917	124,620	122,653

If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.		Reforestation
		Afforestation
		Forest inventory and/or planning
		Conservation of forest biodiversity
		Protection of soil and water
		Forest stand improvement
		Establishment or maintenance of protected areas
		Other, specify below

17.4 Comments to Table T17

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest revenue		
Operational expenditure		
Transfer payments		

Other general comments to the table
Private forest declared as protected areas are elegeble for remission of property taxes, payable for the declared area.

Appendix I: 10 most important tree species by forest type

Forest Type	Species	SU	N	BA	RF	DE	DO	IVI
Closed broadleaf forest (PF)	Xylopia muricata	25	208	4.19	3.36	8.74	5.22	17.33
	Clethra occidentalis	21	174	5.39	2.83	7.31	6.72	16.85
	Eugenia spp.	40	169	3.38	5.38	7.10	4.22	16.70
	Nectandra spp.	33	143	3.65	4.44	6.01	4.55	14.99
	Alchornea latifolia	20	120	3.22	2.69	5.04	4.01	11.74
	Cupania glabra	12	78	2.74	1.62	3.28	3.41	8.30
	Oreopanax capitatus	20	72	2.02	2.69	3.02	2.52	8.23
	Cecropia peltata	22	68	1.72	2.96	2.86	2.14	7.96
	Ocotea martinicensis	16	64	1.90	2.15	2.69	2.37	7.21
	Manilkara excisa	10	19	3.76	1.35	0.80	4.69	6.83
	Subtotal	219	1115	31.97	29.48	46.83	39.85	116.15
	Remaining 124 species	524	1266	48.27	70.52	53.17	60.15	183.85
	Total	743	2381	80.24	100	100	100	300
Disturbed broadleaf forest (SF)	Cecropia peltata	82	337	9.04	3.71	5.79	4.66	14.15
	Nectandra spp.	70	289	8.25	3.16	4.96	4.25	12.38
	Brosimum alicastrum	41	157	12.17	1.85	2.70	6.28	10.82
	Eugenia spp.	68	235	4.51	3.07	4.03	2.33	9.43
	Alchornea latifolia	60	162	5.26	2.71	2.78	2.71	8.21
	Xylopia muricata	47	187	4.33	2.12	3.21	2.23	7.57
	Calophyllum calaba	37	131	7.06	1.67	2.25	3.64	7.56
	Oreopanax capitatus	57	157	4.24	2.58	2.70	2.18	7.46
	Amyris balsamifera	36	174	5.02	1.63	2.99	2.59	7.20
	Clethra occidentalis	24	150	5.36	1.08	2.58	2.76	6.42
	Subtotal	522	1979	65.24	23.59	33.97	33.63	91.19
	Remaining 217 species	1691	3846	128.74	76.41	66.03	66.37	208.81
	Total	2213	5825	193.99	100	100	100	300
Non-forest land use and Disturbed broadleaf forest (CS)	Syzygium jambos	2	29	0.87	3.57	18.47	16.56	38.60
	Artocarpus altilis	3	10	0.60	5.36	6.37	11.48	23.21
	Cedrela odorata	2	11	0.57	3.57	7.01	10.89	21.47
	Cecropia peltata	4	8	0.18	7.14	5.10	3.49	15.72
	Mangifera indica	2	3	0.51	3.57	1.91	9.69	15.18
	Spathodea campanulata	3	4	0.25	5.36	2.55	4.74	12.65
	Simarouba glauca	3	8	0.11	5.36	5.10	2.11	12.57
	Ocotea martinicensis	1	8	0.11	1.79	5.10	2.06	8.94
	Pimenta dioica	2	5	0.10	3.57	3.18	1.90	8.66
	Eugenia spp.	1	7	0.07	1.79	4.46	1.41	7.65
	Subtotal	23	93	3.39	41.07	59.24	64.34	164.64
	Remaining 31 species	33	64	1.88	58.93	40.76	35.66	135.36
	Total	56	157	5.27	100	100	100	300
Disturbed broadleaf forest and Non-forest land use (SC)	Syzygium jambos	10	63	1.43	4.98	12.02	8.94	25.93
	Mangifera indica	7	25	2.06	3.48	4.77	12.91	21.16
	Cecropia peltata	7	26	1.12	3.48	4.96	7.00	15.44
	Andira inermis	9	23	0.52	4.48	4.39	3.28	12.15
	Eugenia spp.	6	24	0.32	2.99	4.58	2.02	9.59
	Nectandra spp.	8	14	0.40	3.98	2.67	2.50	9.16
	Alchornea latifolia	6	14	0.52	2.99	2.67	3.28	8.94
	Spathodea campanulata	6	11	0.48	2.99	2.10	2.99	8.08
	Matayba apetala	7	16	0.24	3.48	3.05	1.50	8.04
	Adenanthera pavonina	2	23	0.42	1.00	4.39	2.63	8.01
	Subtotal	68	239	7.52	33.83	45.61	47.06	126.50
	Remaining 74 species	133	285	8.46	66.17	54.39	52.94	173.50
	Total	201	524	15.97	100	100	100	300

SU = Number of sample units in w hich species occurred; N = Number of individuals;
BA = Basal area (m^2); RF = Relative frequency; DE = Relative density;
DO = Relative dominance; IVI = Importance value index (RF + DE + DO).

Forest Type	Species	SU	N	BA	RF	DE	DO	IVI
Short open dry forest (SL)	Prosopis juliflora	6	29	0.39	13.64	25.22	13.08	51.93
	Melicoccus bijugatus	2	13	0.37	4.55	11.30	12.46	28.31
	Bursera simaruba	4	6	0.28	9.09	5.22	9.64	23.95
	Mangifera indica	2	4	0.43	4.55	3.48	14.49	22.51
	Guazuma ulmifofia	3	11	0.13	6.82	9.57	4.28	20.67
	Spondias mombin	1	1	0.31	2.27	0.87	10.58	13.72
	Cordia gerascanthus	2	5	0.09	4.55	4.35	3.10	12.00
	Tabebuia heterophylla	1	5	0.13	2.27	4.35	4.41	11.03
	Peltophorum linnaei	1	4	0.11	2.27	3.48	3.58	9.33
	Coccoloba spp.	2	3	0.06	4.55	2.61	1.97	9.13
	Subtotal	24	81	2.29	54.55	70.43	77.61	202.59
	Remaining 18 species	20	34	0.66	45.45	29.57	22.39	97.41
	Total	44	115	2.95	100	100	100	300
Tall open dry forest (WL)	Bursera simaruba	52	136	4.25	13.13	13.88	19.09	46.10
	Metopium brownii	33	124	3.31	8.33	12.65	14.85	35.84
	Tabebuia heterophylla	17	84	2.10	4.29	8.57	9.45	22.31
	Haematoxylum campechianum	17	70	1.58	4.29	7.14	7.10	18.53
	Piscidia piscipula	21	60	1.13	5.30	6.12	5.05	16.48
	Thrinax parviflora	26	65	0.65	6.57	6.63	2.91	16.10
	Coccoloba spp.	18	45	0.95	4.55	4.59	4.24	13.38
	Neea nigricans	15	27	0.93	3.79	2.76	4.16	10.70
	Pouteria multiflora	8	24	0.61	2.02	2.45	2.76	7.22
	Eugenia maleolens	6	22	0.31	1.52	2.24	1.41	5.17
	Subtotal	213	657	15.81	53.79	67.04	71.00	191.83
	Remaining 77 species	183	323	6.46	46.21	32.96	29.00	108.17
	Total	396	980	22.27	100	100	100	300
Mangrove forest (MG)	Rhizophora mangle	22	294	9.78	40.74	49.41	60.26	150.42
	Avicennia germinans	14	122	2.75	25.93	20.50	16.94	63.37
	Laguncularia racemosa	10	123	2.55	18.52	20.67	15.69	54.88
	Conocarpus erectus	3	22	0.26	5.56	3.70	1.61	10.86
	Casuarina equisetifolia	1	20	0.50	1.85	3.36	3.07	8.28
	Terminalia catappa	2	11	0.30	3.70	1.85	1.84	7.39
	Ficus spp.	1	2	0.09	1.85	0.34	0.53	2.72
	Unknown / Unidentified	1	1	0.01	1.85	0.17	0.06	2.08
	Subtotal	54	595	16.24	100	100	100	300
	Remaining 0 species	0	0	0	0	0	0	0
	Total	54	595	16.236	100	100	100	300
Riparian / Swamp forest (SW)	Roystonea princeps	18	191	11.13	7.29	19.31	27.95	54.55
	Haematoxylum campechianum	18	161	4.03	7.29	16.28	10.13	33.70
	Guazuma ulmifofia	13	71	2.27	5.26	7.18	5.71	18.15
	Ficus spp.	11	27	3.90	4.45	2.73	9.79	16.97
	Ehretia tinifolia	4	83	1.24	1.62	8.39	3.10	13.12
	Samanea saman	8	18	2.91	3.24	1.82	7.31	12.37
	Nectandra spp.	7	56	1.26	2.83	5.66	3.15	11.65
	Piscidia piscipula	8	35	0.68	3.24	3.54	1.71	8.49
	Andira inermis	9	19	0.45	3.64	1.92	1.12	6.68
	Zanthoxylum martinicensis	7	22	0.63	2.83	2.22	1.58	6.64
	Subtotal	103	683	28.50	41.70	69.06	71.56	182.32
	Remaining 66 species	144	306	11.33	58.30	30.94	28.44	117.68
	Total	247	989	39.83	100	100	100	300

SU = Number of sample units in which species occurred; N = Number of individuals;
BA = Basal area (m^2); RF = Relative frequency; DE = Relative density;
DO = Relative dominance; IVI = Importance value index (RF + DE + DO).

Forest Type	Species	SU	N	BA	RF	DE	DO	IVI
Other species plantation (HP)	Hibiscus elatus	16	232	9.35	9.41	28.82	32.38	70.61
	Swietenia macrophylla	10	154	6.23	5.88	19.13	21.57	46.58
	Eucalyptus saligna	6	83	3.83	3.53	10.31	13.28	27.12
	Pinus caribaea	9	64	1.60	5.29	7.95	5.55	18.80
	Eucalyptus robusta	5	55	1.78	2.94	6.83	6.15	15.93
	Nectandra spp.	8	25	0.62	4.71	3.11	2.16	9.97
	Terminalia latifolia	8	20	0.51	4.71	2.48	1.76	8.95
	Cecropia peltata	7	12	0.38	4.12	1.49	1.33	6.94
	Oreopanax capitatus	6	8	0.12	3.53	0.99	0.41	4.93
	Alchornea latifolia	5	7	0.18	2.94	0.87	0.64	4.45
	Subtotal	80	660	24.61	47.06	81.99	85.23	214.28
	Remaining 53 species	90	145	4.26	52.94	18.01	14.77	85.72
	Total	170	805	28.88	100	100	100	300
Caribbean pine plantation (PP)	Pinus caribaea	99	2194	98.46	27.65	75.09	85.58	188.32
	Cecropia peltata	35	131	3.36	9.78	4.48	2.92	17.18
	Miconia spp.	23	67	0.77	6.42	2.29	0.67	9.39
	Nectandra spp.	15	62	1.03	4.19	2.12	0.90	7.21
	Alchornea latifolia	15	42	0.90	4.19	1.44	0.78	6.41
	Hibiscus elatus	11	34	0.93	3.07	1.16	0.81	5.04
	Brunellia comocladiifolia	10	44	0.69	2.79	1.51	0.60	4.90
	Clethra occidentalis	10	26	0.53	2.79	0.89	0.46	4.15
	Eucalyptus saligna	5	28	1.36	1.40	0.96	1.18	3.54
	Eugenia spp.	8	12	0.32	2.23	0.41	0.28	2.92
	Subtotal	231	2640	108.34	64.53	90.35	94.17	249.05
	Remaining 50 species	127	282	6.70	35.47	9.65	5.83	50.95
	Total	358	2922	115.04	100	100	100	300

SU = Number of sample units in which species occurred; N = Number of individuals;
BA = Basal area (m^2); RF = Relative frequency; DE = Relative density;
DO = Relative dominance; IVI = Importance value index (RF + DE + DO).