



Food and Agriculture
Organization of the
United Nations

Global Forest Resources Assessment 2020

Report

Trinidad and Tobago

Rome, 2020



FAO has been monitoring the world's forests at 5 to 10 year intervals since 1946. The Global Forest Resources Assessments (FRA) are now produced every five years in an attempt to provide a consistent approach to describing the world's forests and how they are changing. The FRA is a country-driven process and the assessments are based on reports prepared by officially nominated National Correspondents. If a report is not available, the FRA Secretariat prepares a desk study using earlier reports, existing information and/or remote sensing based analysis.

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Introduction

Report preparation and contact persons

The present report was prepared by the following person(s)

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Introductory text

Trinidad and Tobago has a total land area of 482,600ha, of which 232,093ha is forest area and 56,000ha is private land. Forestry has been practiced in Trinidad and Tobago since the eighteenth century, when in 1765 the first forest reserve in the Western Hemisphere, the Main Ridge of Tobago, was created by the Young Commission through its setting aside of two thousand, four hundred and seventy five (2,475) acres of land for the “protection of the rains”.

The first forestry unit was created in 1901 through the formation of the Crown Lands Department. The unit evolved into a separate governmental agency in 1918 called the Forest Department, and later in 1960, became the Forestry Division. The first official Forest Policy was formulated in 1942 at which time Trinidad and Tobago was a British colony. Its function was to enable the forestry department to manage the forest of the Colony in the best interest of the Crown government, whilst serving the development needs of the community.

The Role and Functions of the Trinidad and Tobago's Forestry Division is to effectively manage the forests and its resources utilising internationally accepted best practices, to ensure all international and governmental objectives are realized, and the benefits to all stakeholders are maximized and sustained. The Division has stewardship over 192,000 hectares of forest, distributed within 35 forest reserves, 11 game sanctuaries and other State Lands. In order to achieve these objectives the division is engaged in several activities.

One of the major approaches is that of Law Enforcement. Forests are protected directly and indirectly by several laws and regulations that enable protection of our forests resources. The following are the acts that forests is protected under.

- Forests Act, Chapter 66:01 and Amendments, Act 23/99
- Sawmills Act Chapter 66:02 and Amendments, Act 24/99
- Conservation of Wildlife Act Chapter 67:01
- Agricultural Fires Act Chapter 63:02
- Litter Act Chapter 30:52
- Environment Management Act.
- State Lands Act Chapter 51:01 - Squatting activities
- Fisheries Act - Turtles
- Pounds Act Chapter 67:03 - Animals grazing in forest reserves

Sale of Forest Produce is also a major role of the Forestry Division, thereby exercising control over extraction of trees, plans, herbs, fruits, orchids, bromeliads and a range of minor forests produce. These products are sold to registered licensees and members of the public with officers in charge of ranges conducting the sales on the behalf of the Conservator of Forests. Sale of these are done on open ranges of State Lands and Forests Reserves as well as plantations of teak, pine and other mixed hardwoods. Revenues are calculated and collected on behalf of the State (Government of the Republic of Trinidad and Tobago) Sales of state game licences and other related permits are also sold to the necessary clientele.

Reforestation of denuded State Lands and Forests Reserves is another major function of the Forestry Division to achieve major objectives. Denuded areas are created through illegal squatting, fire damage and quarrying activities. Reforestation of clear-felled coupes as they reach rotation age are also important in enabling sustained yields of timber resources.

Although our forests are protected from fire damage under the Forests Act and the Agricultural Fires Act, accidents and wilful breaches of these acts threaten to decimate our resources. In this regard the Forestry Division is proactive in establishment of firebreaks, and daily inspections to deter and manage fires that have devastating impacts.

Research and inventory is an integral aspect of Forests Management for improvement of species diversity, determination of commercial viability of lesser known species, reduction in damage due to diseases and pests; improvement in management and harvesting cycles and enhancement of protection in areas with fragile ecosystems.

New plantations have been established in the South East Conservancy with a view to increasing the availability of Planation Forests Products to the sawmilling and downstream industries. Outreach and support was made available to farmers engaged in Private Forestry. Empowerment and mobilization of local communities in co-management projects were facilitated.

In order to fulfil International mandates to improve and enhance biodiversity, special attempts were made to locate threatened and depleted species of flora and fauna with a view to improve in habitat, encouragement of natural regeneration and rebuilding of population levels. Establishment of arboretums and similar sites were done to enable in-situ and ex-situ conservation.

There is an establishment correlation between proper Forest Management and water quality and supply. In this regard, Forest Management is geared towards soil and water conservation and reduction in downstream negative impacts. Roads, buildings and other infrastructure are important support for Forest management and it is a role and function handled internally by the Forestry Division. A fleet of vehicles and equipment also facilitate the varied functions of policing, firefighting,

reforestation and important in fleet management.

The Forestry Division is also involved in the facilitation and monitoring of sawmills and downstream industries and is responsible for examination and inspections of new sawmills and furniture shops, monitoring to ensure compliance with various acts and regulations, exercise of health and safety and conservation of the environment. Inspections also attempts to encourage and guide optimal use of forests products and minimize wastage.

Forest officers are ex- officio affiliated to enforcement of several other Acts such as the Litter Act, State Lands Act, Fisheries Act, Quarries Act, the Pounds Act and regulations under the Environmental Management Act. The Forestry Division provides its required support to the other agencies charged with those responsibilities.

The Government of the Republic of Trinidad and Tobago is signatory to various international agreements and conventions and manages several site that are internationally acclaimed as environmentally sensitive Areas. Management of our forests, focuses on ensuring these obligations are met.

1 Forest extent, characteristics and changes

1a Extent of forest and other wooded land

National data

Data sources

1970	References	Forest Resources Inventory and Management Section of the Forestry Division: Inventory of the Indigenous Forests of Trinidad & Tobago
	Methods used	National Forest Inventory
	Additional comments	Inventory of all public forests using Aerial photography from 1969 and ground truth in 1979

1994	References	Internal Records Drawing Office Forestry Division
	Methods used	Other (specify in comments)
	Additional comments	Aerial photography of forest reserves.

2007	References	Detailed maps of tropical forest types are within reach: Forest tree communities for Trinidad and Tobago mapped with multiseason Landsat and multiseason fine-resolution imagery E.H. Helmer, ^{1†} , Thomas S. Ruzyckib, Jay Bennerb, Shannon M. Voggeserb, Barbara P. Scobiec,Courtenay Parkc,1, David W. Fanningd, Seepersad RamnarinecaInternational Institute of Tropical Forestry, USDA Forest Service, Río Piedras, PR 00926, United StatesbCenter for Environmental Management of Military Lands, Colorado State University, Fort Collins, CO 80523, United StatescTrinidad and Tobago Forestry Division, Long Circular Road, St. Joseph, Trinidad and TobagodFanning Software Consulting, 1645 Sheely Drive, Fort Collins, CO 80526, United States
	Methods used	Full-cover forest/vegetation maps
	Additional comments	Forest Ecology and Management 279 (2012) 147-166

Classifications and definitions

1970	National class	Definition
	Evergreen Seasonal forest	This is also termed moist forest and is found at slightly higher (100-300 m) or more sheltered locations. It comprises mainly broad-leaved evergreen trees with some foliage reduction in the dry season. Imagine the semi-evergreen seasonal forest just described but with scattered, emergent trees like sandbox (Hura crepitans), silk cotton (Ceiba pentandra) and cabbage palm (Roystonea oleracea). Some species in this community are also found in rainforest.
	Semi evergreen seasonal forests	This is also termed moist forest and is found at slightly higher (100-300 m) or more sheltered locations. This is a two storied forest with an upper closed canopy at 20 m high and a lower tree layer at about half that height. The upper trees are mainly evergreens like Spanish oak (Inga laurina) and beefwood (Pisonia fragrans) but a minority (< 1/3) may shed their leaves in the dry season, e.g. locust (Hymenaea coubaril). The lower layer is evergreen (e.g. balata - Manilkara bidentata) with the macaw palm (Aiphanes minima) in this layer. A shrub layer with members of the coffee and guava families is present but there are few herbs and epiphytes. The canopy has many woody vines or lianas.
	Deciduous seasonal forests*	

		This is also termed dry forest and is found in low-lying areas. It has an upper open canopy at 20 m high and a lower closed shrub/tree layer. The upper trees are mainly deciduous, shedding their leaves in the dry season, e.g. Whitewood (<i>Tabebuia</i> spp.) and birchgum (<i>Bursera simaruba</i>). The lower shrubby layer can be quite dense and includes thorny species like bread 'n cheese (<i>Pithecellobium unguis-cati</i>) and ink berry (<i>Randia aculeata</i>). There are lianas but few if any epiphytes. What remains of this forest is often heavily impacted.
	Dry evergreen forests	Is the littoral woodlands. It is situated near the sea exposed to the sea-blast. Structure varies greatly with exposure an amount of gale damage from low recumbent scrub to high forest or pure palm forest. Trees are evergreen and have thickly cutinized mesophyllous leaves and windswept crowns which present only a narrow edge to the wind. Flora is limited.
	Seasonal montane forests	Sub-tropical temperatures. Evaporation ability of the air high on clear days due to exposure. Frequent mist. Abundant precipitation but available moisture seasonally low due to excessive soil drainage. A close tree canopy at 60 to 80 ft. somewhat open below. Deciduous trees present. Tremendously luxuriant lianas and epiphytes with abundant moss. Dense herbaceous ground layer, rare palms and tree ferns. Trees are often strongly buttressed.
	Montane forests**	Includes lower montane rainforest, montante rain forest, Elfin woodlands.
	Secondary Forests	Secondary forest is rainforest that has been disturbed in some way, naturally or unnaturally. Secondary forest can be created in a number of ways, from degraded forest recovering from selective logging, to areas cleared by slash and burn agriculture that have been reclaimed by forest. Generally, secondary forest is characterized (depending on its level of degradation) by a less developed canopy structure, smaller trees, and less diversity. Due to the lack of a full canopy, more light will reach the floor, supporting vigorous ground vegetation.
	Swamp forests	Due to low relief the area is shallowly and more or less perpetually inundated with fresh water varying from few inches to 3 ft. deep. A close and even tree canopy about 60 ft with no lower stratification. Trees developed enormous sinous and spreading plank buttresses. 100 per cent evergreen leaves compound, mesophyllous and leathery. Very limited flora.
	Bamboo	Clumps and stands of pure bamboo stand
	Teak and pine plantations	Pure stands of teak plantations and pure stands of pine plantations
	Other plantations	Plantation of other local species
	Other areas within forest	
	Private forests	

1994	National class	Definition
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	Semi evergreen seasonal forests	This is also termed moist forest and is found at slightly higher (100-300 m) or more sheltered locations. This is a two storied forest with an upper closed canopy at 20 m high and a lower tree layer at about half that height. The upper trees are mainly evergreens like Spanish oak (<i>Inga laurina</i>) and beefwood (<i>Pisonia fragrans</i>) but a minority (< 1/3) may shed their leaves in the dry season, e.g. locust (<i>Hymenaea coubaril</i>). The lower layer is evergreen (e.g. balata - <i>Manilkara bidentata</i>) with the macaw palm (<i>Aiphanes minima</i>) in this layer. A shrub layer with members of the coffee and guava families is present but there are few herbs and epiphytes. The canopy has many woody vines or lianas.
	Deciduous seasonal forests*	

		This is also termed dry forest and is found in low-lying areas. It has an upper open canopy at 20 m high and a lower closed shrub/tree layer. The upper trees are mainly deciduous, shedding their leaves in the dry season, e.g. Whitewood (<i>Tabebuia</i> spp.) and birchgum (<i>Bursera simaruba</i>). The lower shrubby layer can be quite dense and includes thorny species like bread 'n cheese (<i>Pithecellobium unguis-cati</i>) and ink berry (<i>Randia aculeata</i>). There are lianas but few if any epiphytes. What remains of this forest is often heavily impacted.
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	Seasonal montane forests	Sub-tropical temperatures. Evaporation ability of the air high on clear days due to exposure. Frequent mist. Abundant precipitation but available moisture seasonally low due to excessive soil drainage. A close tree canopy at 60 to 80 ft. somewhat open below. Deciduous trees present. Tremendously luxuriant lianas and epiphytes with abundant moss. Dense herbaceous ground layer, rare palms and tree ferns. Trees are often strongly buttressed.
	Montane forests**	Includes lower montane rainforest, montante rain forest, Elfin woodlands.
	Secondary Forests	Secondary forest is rainforest that has been disturbed in some way, naturally or unnaturally. Secondary forest can be created in a number of ways, from degraded forest recovering from selective logging, to areas cleared by slash and burn agriculture that have been reclaimed by forest. Generally, secondary forest is characterized (depending on its level of degradation) by a less developed canopy structure, smaller trees, and less diversity. Due to the lack of a full canopy, more light will reach the floor, supporting vigorous ground vegetation.
	Swamp forests	Due to low relief the area is shallowly and more or less perpetually inundated with fresh water varying from few inches to 3 ft. deep. A close and even tree canopy about 60 ft with no lower stratification. Trees developed enormous sinous and spreading plank buttresses. 100 per cent evergreen leaves compound, mesophyllous and leathery. Very limited flora.
	Bamboo	Clumps and stands of pure bamboo stand
	Teak and pine plantations	Pure stands of teak plantations and pure stands of pine plantations
	Other plantations	Plantation of other local species
	Other areas within forests	
	Private forests	

2007	National class	Definition
	Trinidad Dry evergreen forest–littoral woodland and forest	Is the littoral woodlands. It is situated near the sea exposed to the sea-blast. Structure varies greatly with exposure an amount of gale damage from low recumbent scrub to high forest or pure palm forest. Trees are evergreen and have thickly cutinized mesophyllous leaves and windswept crowns which present only a narrow edge to the wind. Flora is limited.
	Trinidad Deciduous to semi-evergreen seasonal forest	

	<p>This is also termed dry forest and is found in low-lying areas. It has an upper open canopy at 20 m high and a lower closed shrub/tree layer. The upper trees are mainly deciduous, shedding their leaves in the dry season, e.g. Whitewood (<i>Tabebuia</i> spp.) and birchgum (<i>Bursera simaruba</i>). The lower shrubby layer can be quite dense and includes thorny species like bread 'n cheese (<i>Pithecellobium unguis-cati</i>) and ink berry (<i>Randia aculeata</i>). There are lianas but few if any epiphytes. What remains of this forest is often heavily impacted.</p>
Trinidad Semi-evergreen seasonal forest	<p>< 1/3) may shed their leaves in the dry season, e.g. locust (<i>Hymenaea coubaril</i>). The lower layer is evergreen (e.g. balata - <i>Manilkara bidentata</i>) with the macaw palm (<i>Aiphanes minima</i>) in this layer. A shrub layer with members of the coffee and guava families is present but there are few herbs and epiphytes. The canopy has many woody vines or lianas. " /> This is also termed moist forest and is found at slightly higher (100-300 m) or more sheltered locations. This is a two storied forest with an upper closed canopy at 20 m high and a lower tree layer at about half that height. The upper trees are mainly evergreens like Spanish oak (<i>Inga laurina</i>) and beefwood (<i>Pisonia fragrans</i>) but a minority (< 1/3) may shed their leaves in the dry season, e.g. locust (<i>Hymenaea coubaril</i>). The lower layer is evergreen (e.g. balata - <i>Manilkara bidentata</i>) with the macaw palm (<i>Aiphanes minima</i>) in this layer. A shrub layer with members of the coffee and guava families is present but there are few herbs and epiphytes. The canopy has many woody vines or lianas.</p>
Trinidad Evergreen seasonal forest	<p>This is also termed moist forest and is found at slightly higher (100-300 m) or more sheltered locations. It comprises mainly broad-leaved evergreen trees with some foliage reduction in the dry season. Imagine the semi-evergreen seasonal forest just described but with scattered, emergent trees like sandbox (<i>Hura crepitans</i>), silk cotton (<i>Ceiba pentandra</i>) and cabbage palm (<i>Roystonea oleracea</i>). Some species in this community are also found in rainforest.</p>
Trinidad Montane rain forest	<p>Canopy at 60 ft. much wind damage. Lowered stratum 20 40 ft and under storey of free ferns and small palms Lianas very abundant. Epiphytes tremendously luxuriant. Only small stemmed palms but abundant and several species of large tree-fern. 100 percent evergreen leaves simple, mesophyllous, leathery with epiphyllous. Dense herbaceous ground vegetation. Tree flora extremely poor.</p>
Trinidad Forested wetland	<p>Due to low relief the area is shallowly and more or less perpetually inundated with fresh water varying from few inches to 3 ft. deep. A close and even tree canopy about 60 ft with no lower stratification. Trees developed enormous sinous and spreading plank buttresses. 100 per cent evergreen leaves compound, mesophyllous and leathery. Very limited flora.</p>
Trinidad Young secondary forest	

		Secondary forest is rainforest that has been disturbed in some way, naturally or unnaturally. Secondary forest can be created in a number of ways, from degraded forest recovering from selective logging, to areas cleared by slash and burn agriculture that have been reclaimed by forest. Generally, secondary forest is characterized (depending on its level of degradation) by a less developed canopy structure, smaller trees, and less diversity. Due to the lack of a full canopy, more light will reach the floor, supporting vigorous ground vegetation.
	Trinidad Tree plantations	Pure stands of teak plantations and pure stands of pine plantations
	Trinidad Emergent and wet savanna	Emergent / wet savanna
	Trinidad Recently active agriculture, pasture (excluding wetlands agriculture)	
	Tobago Dry evergreen, deciduous and semi-evergreen forests	Combination of Dry evergreen, deciduous and semi-evergreen forests as listed above
	Tobago Rain forest	This area receives the greatest amount of rainfall, the greatest exposure to wind and the lowest temperatures, making it an Evergreen Forest.
	Tobago Young Secondary Forests	Secondary forest is rainforest that has been disturbed in some way, naturally or unnaturally. Secondary forest can be created in a number of ways, from degraded forest recovering from selective logging, to areas cleared by slash and burn agriculture that have been reclaimed by forest. Generally, secondary forest is characterized (depending on its level of degradation) by a less developed canopy structure, smaller trees, and less diversity. Due to the lack of a full canopy, more light will reach the floor, supporting vigorous ground vegetation.
	Tobago Forested Wetlands	Mangroves and other woody wetlands
	Tobago Active woody agriculture	

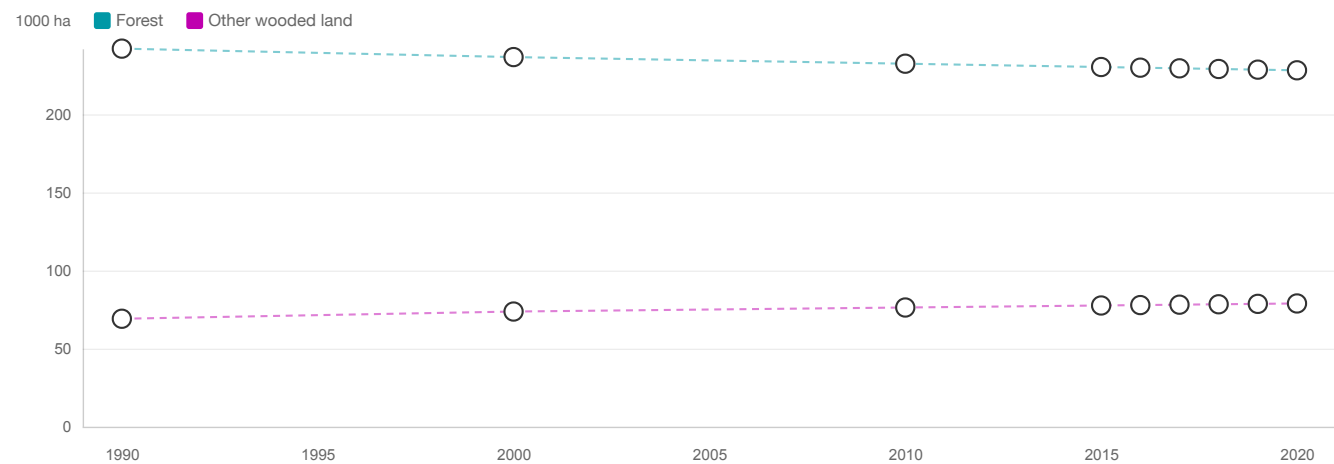
Original data and reclassification

1970	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Evergreen Seasonal forest	98.18	100.00 %	0.00 %	0.00 %
	Semi evergreen seasonal forests	13.93	100.00 %	0.00 %	0.00 %
	Deciduous seasonal forests*	3.62	100.00 %	0.00 %	0.00 %
	Dry evergreen forests	0.50	100.00 %	0.00 %	0.00 %
	Seasonal montane forests	0.93	100.00 %	0.00 %	0.00 %

	Montane forests**	21.62	100.00 %	0.00 %	0.00 %
	Secondary Forests	22.65	100.00 %	0.00 %	0.00 %
	Swamp forests	16.79	100.00 %	0.00 %	0.00 %
	Bamboo	0.53	100.00 %	0.00 %	0.00 %
	Teak and pine plantations	16.31	100.00 %	0.00 %	0.00 %
	Other plantations	5.31	100.00 %	0.00 %	0.00 %
	Other areas within forest	53.73	0.00 %	100.00 %	0.00 %
	Private forests	56.00	100.00 %	0.00 %	0.00 %
	Total	310.10	256.37	53.73	0.00

1994	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Evergreen Seasonal forest	88.72	100.00 %	0.00 %	0.00 %
	Semi evergreen seasonal forests	12.59	100.00 %	0.00 %	0.00 %
	Deciduous seasonal forests*	3.27	100.00 %	0.00 %	0.00 %
	Dry evergreen forests	0.45	100.00 %	0.00 %	0.00 %
	Seasonal montane forests	0.84	100.00 %	0.00 %	0.00 %
	Montane forests**	19.54	100.00 %	0.00 %	0.00 %
	Secondary Forests	20.47	100.00 %	0.00 %	0.00 %
	Swamp forests	15.17	100.00 %	0.00 %	0.00 %
	Bamboo	0.53	100.00 %	0.00 %	0.00 %
	Teak and pine plantations	16.31	100.00 %	0.00 %	0.00 %
	Other plantations	5.31	100.00 %	0.00 %	0.00 %
	Other areas within forests	72.21	0.00 %	100.00 %	0.00 %
	Private forests	56.00	100.00 %	0.00 %	0.00 %
	Total	311.41	239.20	72.21	0.00

	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
2007	Trinidad Dry evergreen forest–littoral woodland and forest	0.82	0.00 %	100.00 %	0.00 %
	Trinidad Deciduous to semi-evergreen seasonal forest	9.61	100.00 %	0.00 %	0.00 %
	Trinidad Semi-evergreen seasonal forest	24.33	100.00 %	0.00 %	0.00 %
	Trinidad Evergreen seasonal forest	125.02	50.00 %	20.00 %	30.00 %
	Trinidad Montane rain forest	34.76	100.00 %	0.00 %	0.00 %
	Trinidad Forested wetland	12.33	100.00 %	0.00 %	0.00 %
	Trinidad Young secondary forest	124.28	50.00 %	30.00 %	20.00 %
	Trinidad Tree plantations	11.24	100.00 %	0.00 %	0.00 %
	Trinidad Emergent and wet savanna	11.06	0.00 %	100.00 %	0.00 %
	Trinidad Recently active agriculture, pasture (excluding wetlands agriculture)	83.93	0.00 %	0.00 %	100.00 %
	Tobago Dry evergreen, deciduous and semi-evergreen forests	5.78	50.00 %	20.00 %	30.00 %
	Tobago Rain forest	10.35	100.00 %	0.00 %	0.00 %
	Tobago Young Secondary Forests	7.04	50.00 %	0.00 %	50.00 %
	Tobago Forested Wetlands	0.23	0.00 %	100.00 %	0.00 %
	Tobago Active woody agriculture	0.07	0.00 %	0.00 %	100.00 %
	Total	460.85	233.68	75.55	151.62



FRA categories	Area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Forest (a)	242.06	236.65	232.41	230.29	229.87	229.45	229.03	228.61	228.19
Other wooded land (a)	69.13	73.75	76.33	77.62	77.88	78.14	78.40	78.66	78.92
Other land (c-a-b)	201.81	202.60	204.26	205.09	205.25	205.41	205.57	205.73	205.89
Total land area (c)	513.00	513.00	513.00	513.00	513.00	513.00	513.00	513.00	513.00

The FAOSTAT land area figure for the year 2015 is used for all reference years

Climatic domain	% of forest area 2015	Override value
Boreal	0.00	
Temperate	0.00	
Sub-tropical	0.00	
Tropical	100.00	

Comments

Forest area for 1990 is slightly different from what previously reported to FRA 2015 because of rounding. Forest area for 2000, 2010 and 2015 differs from what reported in FRA 2015 because estimates for these years have been calculated using linear estimation of the 1994 and 2007 datasets.

1b Forest characteristics

National Data

Data sources + type of data source eg NFI, etc

Data on Planted forest are expert estimates.

National classification and definitions

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Original data

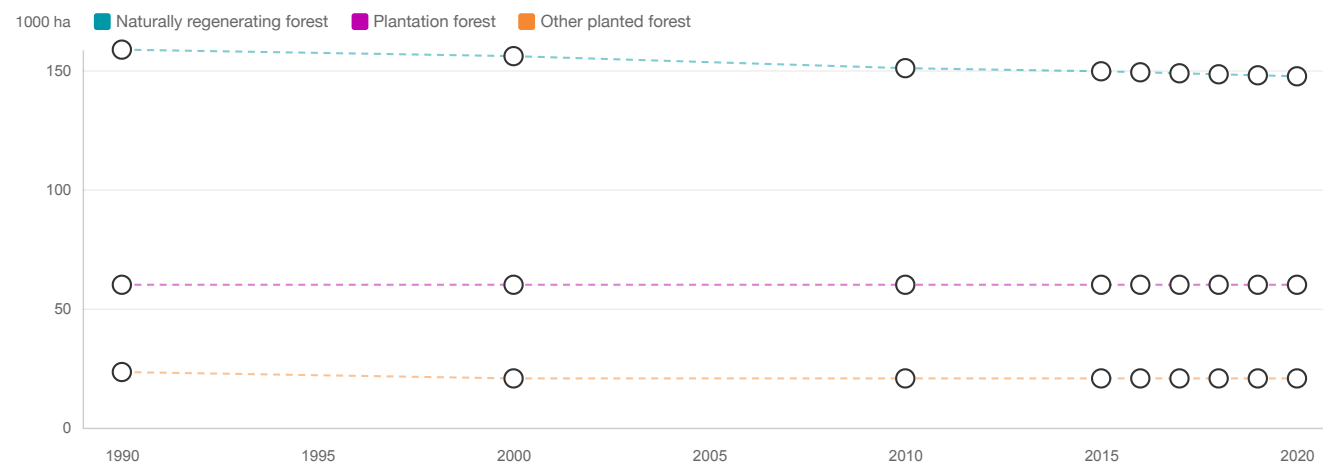
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Analysis and processing of national data

Estimation and forecasting

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Reclassification into FRA 2020 categories



FRA categories	Forest area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest (a)	158.68	155.95	150.90	149.59	149.17	148.75	148.33	147.91	147.49
Planted forest (b)	83.38	80.70	80.70	80.70	80.70	80.70	80.70	80.70	80.70
Plantation forest	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
...of which introduced species	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
Other planted forest	23.38	20.70	20.70	20.70	20.70	20.70	20.70	20.70	20.70
Total (a+b)	242.06	236.65	231.60	230.29	229.87	229.45	229.03	228.61	228.19
Total forest area	242.06	236.65	232.41	230.29	229.87	229.45	229.03	228.61	228.19

Comments

1c Primary forest and special forest categories

National Data

Data sources + type of data source eg NFI, etc

Forest Resources Inventory and Management Section of the Forestry Division: Inventory of the Indigenous Forests of Trinidad & Tobago 1970

Internal Records Drawing Office Forestry Division 1994

Detailed maps of tropical forest types are within reach: Forest tree communities for Trinidad and Tobago mapped with multiseason Landsat and multiseason fine-resolution imagery
E.H. Helmer,¹ Thomas S. Ruzyczkib, Jay Bennerb, Shannon M. Voggesserb, Barbara P. Scobiec,Courtenay Parkc,1, David W. Fanningd, Seepersad RamnarinecInternational Institute of Tropical Forestry, USDA Forest Service, Río Piedras, PR 00926, United StatesbCenter for Environmental Management of Military Lands, Colorado State University, Fort Collins, CO 80523, United StatescTrinidad and Tobago Forestry Division, Long Circular Road, St. Joseph, Trinidad and TobagodFanning Software Consulting, 1645 Sheely Drive, Fort Collins, CO 80526, United States 2007

National classification and definitions

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Original data

A total of 5,372 ha of mangroves was reported in the 1980 inventory. Since then there has been a reduction in mangroves but there are no up to date figures to substantiate my expert opinion. In the absence of new information I have assumed constant area.

Analysis and processing of national data

Estimation and forecasting

Primary forests are considered to be all forests (42,986 ha) above the 152m contour along with the wildlife Sanctuaries (19004 ha) and nature reserves (458 ha) which equals 62,448 ha. No reduction in area has been assumed over the periods since these are totally protected.

Constant area is assumed for the mangrove since there is a no net loss policy for mangroves but some areas have been destroyed since 1980.

Reclassification into FRA 2020 categories

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FRA categories	Area (1000 ha)				
	1990	2000	2010	2015	2020
Primary forest	62.40	62.40	62.40	62.40	62.40
Temporarily unstocked and/or recently regenerated	0.00	0.00	0.00	0.00	0.00
Bamboos	0.05	0.05	0.05	0.05	0.05
Mangroves	5.37	5.37	5.37	5.37	5.37
Rubber wood	0.00	0.00	0.00	0.00	0.00

Comments

1d Annual forest expansion, deforestation and net change

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Area (1000 ha/year)			
	1990-2000	2000-2010	2010-2015	2015-2020
Forest expansion (a)				
...of which afforestation				
...of which natural expansion				
Deforestation (b)				
Forest area net change (a-b)	-0.54	-0.42	-0.42	-0.42

Comments

1e Annual reforestation

National Data

Data sources + type of data source eg NFI, etc

No data avialable

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Area (1000 ha/year)			
	1990-2000	2000-2010	2010-2015	2015-2020
Reforestation				

Comments

1f Other land with tree cover

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

no data available

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Area (1000 ha)				
	1990	2000	2010	2015	2020
Palms (a)					
Tree orchards (b)					
Agroforestry (c)					
Trees in urban settings (d)					
Other (specify in comments) (e)					
Total (a+b+c+d+e)	–	–	–	–	–
Other land area	201.81	202.60	204.26	205.09	205.89

Comments

2 Forest growing stock, biomass and carbon

2a Growing stock

National Data

Data sources + type of data source eg NFI, etc

Forest Resource Inventory and Management Section Inventory of the indigenous Forests of Trinidad and Tobago 1980. Government of Trinidad and Tobago

National classification and definitions

-

Original data

National classes	Growing stock m3	Area ha
Evergreen Seasonal Forest	11890046	98180
Semi-evergreen seasonal forest	1264731	13928
Deciduous Seasonal Forests	244261.4	3617
Dry evergreen forests	44922.15	495
Seasonal montane forests	121333.3	926
Montane forests	2831396	21619
Swamp forests	900519.1	16789
Secondary forests	1717516	22650
teak plantations	3297876	16308
Other plantations	318360	5306
pine plantations	-	-
Bamboo	10560	528
Other areas within forests (OWL)	1305148	53729
Private forests	2800000	56000
Plant tot	3616236	21614
Nat Forest total	21825284.95	234732
OWL total	1305148	53729

Analysis and processing of national data

Estimation and forecasting

Estimated growing stock per hectare of Naturally regenerating forest 93 m3/ha, estimated growing stock per hectare of planted forest 167 m3/ha, estimated growing stock of other wooded land 25 m3/ha. The growing stock per hectare is assumed to be constant throughout the reporting period.

Reclassification into FRA 2020 categories

-

FRA categories	Growing stock m³/ha (over bark)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest	93.00	93.00	93.00	93.00	93.00	93.00	93.00	93.00	93.00
Planted forest	167.00	167.00	167.00	167.00	167.00	167.00	167.00	167.00	167.00
...of which plantation forest									
...of which other planted forest									
Forest	118.48	118.23	118.37	118.94	118.98	119.02	119.07	119.15	119.20
Other wooded land	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00

FRA categories	Total growing stock (million m³ over bark)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest	14.76	14.50	14.03	13.91	13.87	13.83	13.79	13.76	13.72
Planted forest	13.92	13.48	13.48	13.48	13.48	13.48	13.48	13.48	13.48
...of which plantation forest									
...of which other planted forest									
Forest	28.68	27.98	27.51	27.39	27.35	27.31	27.27	27.24	27.20
Other wooded land	1.73	1.84	1.91	1.94	1.95	1.95	1.96	1.97	1.97

Comments

2b Growing stock composition

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Scientific name	Common name	Growing stock in forest (million m³ over bark)				
			1990	2000	2010	2015	2020
Native tree species							
#1 Ranked in terms of volume	Mora excelsor	Mora	3.46	3.31			
#2 Ranked in terms of volume	Spondias mombin	Hog plum	1.12	1.07			
#3 Ranked in terms of volume	Pentaclethra macroloba	Fineleaf	0.96	0.92			
#4 Ranked in terms of volume	Sterculia caribaea	Mahoe	0.92	0.99			
#5 Ranked in terms of volume	Carapa guianensis	Crappo	0.85	0.92			
#6 Ranked in terms of volume	Eschweilera subglandulosa	Guatecare	0.84	0.80			
#7 Ranked in terms of volume	Pachira insignis Wild	Chataigne	0.79	0.76			
#8 Ranked in terms of volume	Bucida buceras	Bois gris	0.51	0.49			
#9 Ranked in terms of volume							
#10 Ranked in terms of volume							
Remaining native tree species			15.93	15.31			
Total volume of native tree species			25.38	24.57	–	–	–
Introduced tree species							
#1 Ranked in terms of volume	Tectona grandis	Teak	2.03	2.17			
#2 Ranked in terms of volume	Pinus caribaea	Pine	1.27	1.24			
#3 Ranked in terms of volume							

FRA categories	Scientific name	Common name	Growing stock in forest (million m³ over bark)				
			1990	2000	2010	2015	2020
Native tree species							
#4 Ranked in terms of volume							
#5 Ranked in terms of volume							
Remaining introduced tree species							
Total volume of introduced tree species			3.30	3.41	–	–	–
Total growing stock			28.68	27.98	–	–	–

Comments

2c Biomass stock

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Forest biomass (tonnes/ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Above-ground biomass	91.45	91.93	90.89	90.62	90.53	90.44	90.35	90.26	90.17
Below-ground biomass	23.41	23.53	23.27	23.20	23.17	23.15	23.13	23.11	23.08
Dead wood									

Comments

2d Carbon stock

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Forest carbon (tonnes/ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Carbon in above-ground biomass	42.98	43.21	42.72	42.59	42.55	42.51	42.46	42.42	42.38
Carbon in below-ground biomass	11.00	11.06	10.94	10.90	10.89	10.88	10.87	10.86	10.85
Carbon in dead wood									
Carbon in litter									
Soil carbon									

Soil depth (cm) used for soil carbon estimates	
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Comments

3 Forest designation and management

3a Designated management objective

National Data

Data sources + type of data source eg NFI, etc

Internal Documents Drawing Office Forestry Division 1990

National classification and definitions

-

Original data

National data	1990 Area(ha)	FRA classification
Watersheds	8334	Protection of soil and water
Nature reserves	458	Conservation of biological diversity
Wildlife Sanctuaries	19004	Conservation of biological diversity
National Parks	5002	Social Services
Production forests	75,875	Production
Protective forests	42,986	Protection of soil and water
Total reserve and unproclaimed reserve	143,324.7	

Analysis and processing of national data

Estimation and forecasting

In 2005 a further 3000 hectares was managed as national parks. The area managed for production, protection of soil and water, conservation of biological diversity are considered fixed for the period . The rest of the area is considered to be multiple purpose.

Reclassification into FRA 2020 categories

-

Primary designated management objective

FRA 2020 categories	Forest area (1000 ha)				
	1990	2000	2010	2015	2020
Production (a)	75.90	75.90	75.90	75.90	75.90
Protection of soil and water (b)	51.30	51.30	51.30	51.30	51.30
Conservation of biodiversity (c)	19.50	19.50	19.50	19.50	19.50
Social Services (d)	5.00	5.00	8.00	8.00	8.00
Multiple use (e)	90.36	84.95	77.71	75.59	73.49
Other (specify in comments) (f)	0.00	0.00	0.00	0.00	0.00
None/unknown (g)	0.00	0.00	0.00	0.00	0.00
Total forest area	242.06	236.65	232.41	230.29	228.19

Total area with designated management objective

FRA 2020 categories	Forest area (1000 ha)				
	1990	2000	2010	2015	2020
Production					
Protection of soil and water					
Conservation of biodiversity					
Social Services					
Other (specify in comments)					

Comments

3b Forest area within protected areas and forest area with long-term management plans

National Data

Data sources + type of data source eg NFI, etc

Internal Documents Drawing Office Forestry Division 1990

National classification and definitions

-

Original data

Original data	1990 Area(ha)	FRA classification
Nature reserves	458	Conservation of biological diversity
Wildlife Sanctuaries	19004	Conservation of biological diversity

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Forest area within protected areas	19.50	19.50	19.50	19.50	19.50	19.50	19.50	19.50	19.50
Forest area with long-term forest management plan									
...of which in protected areas									

Comments

4 Forest ownership and management rights

4a Forest ownership

National Data

Data sources + type of data source eg NFI, etc

Forest Resources Inventory and Management Section of the Forestry Division: Inventory of the Indigenous Forests of Trinidad & Tobago 1970

National classification and definitions

-

Original data

Private forest 56 000 ha

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Forest area (1000 ha)			
	1990	2000	2010	2015
Private ownership (a)	56.00	56.00	56.00	56.00
...of which owned by individuals				
...of which owned by private business entities and institutions				
...of which owned by local, tribal and indigenous communities				
Public ownership (b)	186.06	180.65	176.41	174.29
Unknown/other (specify in comments) (c)	0.00	0.00	0.00	0.00
Total forest area	242.06	236.65	232.41	230.29

Comments

4b Holder of management rights of public forests

National Data

Data sources + type of data source eg NFI, etc

Forest Resources Inventory and Management Section of the Forestry Division: Inventory of the Indigenous Forests of Trinidad & Tobago 1970

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Forest area (1000 ha)			
	1990	2000	2010	2015
Public Administration (a)	186.06	180.65	176.41	174.29
Individuals (b)	0.00	0.00	0.00	0.00
Private business entities and institutions (c)	0.00	0.00	0.00	0.00
Local, tribal and indigenous communities (d)	0.00	0.00	0.00	0.00
Unknown/other (specify in comments) (e)	0.00	0.00	0.00	0.00
Total public ownership	186.06	180.65	176.41	174.29

Comments

5 Forest disturbances

5a Disturbances

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Area (1000 ha)																	
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Insects (a)																		
Diseases (b)																		
Severe weather events (c)																		
Other (specify in comments) (d)																		
Total (a+b+c+d)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Total forest area	236.65	–	–	–	–	–	–	233.68	–	–	232.41	–	–	–	–	230.29	229.87	229.45

Comments

5b Area affected by fire

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Area (1000 ha)																	
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total land area affected by fire	0.90	4.20	0.20	4.70	1.40	1.90	1.30	3.60	1.30	0.50	12.50	0.10	0.20	2.80	2.40	3.40	4.20	4.70
...of which on forest	0.76	3.00	0.03	3.70	1.10	1.00	0.80	1.90	0.60	0.35	8.70	0.01	0.07	0.89	1.30	1.50	1.60	3.10

Comments

5c Degraded forest

Does your country monitor area of degraded forest		No
If "yes"	What is the national definition of "Degraded forest"?	
	Describe the monitoring process and results	

Comments

6 Forest policy and legislation

6a Policies, Legislation and national platform for stakeholder participation in forest policy

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

Indicate the existence of	Boolean (Yes/No)	
	National	Sub-national
Policies supporting SFM	Yes	No
Legislations and regulations supporting SFM	Yes	No
Platform that promotes or allows for stakeholder participation in forest policy development	Yes	No
Traceability system(s) for wood products	No	No

Comments

6b Area of permanent forest estate

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

FRA 2020 categories	Forest area (1000 ha)					
	Applicable?	1990	2000	2010	2015	2020
Area of permanent forest estate	Yes					75.90

Comments

The 2020 figure is a rough estimate from the forest resources and inventory management of the Forestry Division.

7 Employment, education and NWFP

7a Employment in forestry and logging

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

FRA 2020 categories	Full-time equivalents (1000 FTE)											
	1990			2000			2010			2015		
	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male
Employment in forestry and logging												
...of which silviculture and other forestry activities												
...of which logging												
...of which gathering of non wood forest products												
...of which support services to forestry												

Comments

7b Graduation of students in forest-related education

National Data

Data sources + type of data source eg NFI, etc

Technician certificate / diploma - information from 2007 to 2017 from the University of Trinidad and Tobago (ECIAF) Campus, Diploma in Forestry.

National classification and definitions

-

Original data

-

FRA 2020 categories	Number of graduated students											
	1990			2000			2010			2015		
	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male
Doctoral degree												
Master's degree												
Bachelor's degree												
Technician certificate / diploma				56.00	26.00	30.00	76.00	31.00	45.00	17.00	7.00	10.00
Total												

Comments

Technician certificate / diploma - information from 2007 to 2017 from the University of Trinidad and Tobago (ECIAF) Campus, Diploma in Forestry.

7c Non wood forest products removals and value 2015

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

	Name of NWFP product	Key species	Quantity	Unit	Value (1000 local currency)	NWFP category
#1	Bamboo Stems		1 605	Stems		5 Raw material for utensils handicrafts construction
#2	Tirite Palm		38	Persons		5 Raw material for utensils handicrafts construction
#3	Carat Leaves		74 900	Per Hundred		5 Raw material for utensils handicrafts construction
#4	Cashebo Leaves		52			5 Raw material for utensils handicrafts construction
#5	Alligator/Lizard					12 Wild meat
#6	Armadillo					12 Wild meat
#7	Lappe					12 Wild meat
#8	Deer					12 Wild meat
#9						
#10						
All other plant products						
All other animal products						
Total					—	

Name of currency	TTD
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Comments

8 Sustainable Development Goal 15

8a Sustainable Development Goal 15

SDG Indicator 15.1.1 Forest area as proportion of total land area 2015

Indicator	Percent							
	2000	2010	2015	2016	2017	2018	2019	2020
Forest area as proportion of total land area 2015	46.13	45.30	44.89	44.81	44.73	44.65	44.56	44.48

Name of agency responsible	Forestry Division, Trinidad and Tobago
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SDG Indicator 15.2.1 Progress towards sustainable forest management

Sub-Indicator 1	Percent						
	2000-2010	2010-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Forest area annual net change rate	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18

Name of agency responsible	Forestry Division, Trinidad and Tobago
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Sub-Indicator 2	Forest biomass (tonnes/ha)							
	2000	2010	2015	2016	2017	2018	2019	2020
Above-ground biomass stock in forest	91.93	90.89	90.62	90.53	90.44	90.35	90.26	90.17

Name of agency responsible	
----------------------------	--

Sub-Indicator 3	Percent (2015 forest area baseline)							
	2000	2010	2015	2016	2017	2018	2019	2020
Proportion of forest area located within legally established protected areas	8.47	8.47	8.47	8.47	8.47	8.47	8.47	8.47

Name of agency responsible	
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Sub-Indicator 4	Percent (2015 forest area baseline)							
	2000	2010	2015	2016	2017	2018	2019	2020
Proportion of forest area under long-term forest management plan	–	–	–	–	–	–	–	–

Name of agency responsible	
----------------------------	--

Sub-Indicator 5	Forest area (1000 ha)							
	2000	2010	2015	2016	2017	2018	2019	2020
Forest area under independently verified forest management certification schemes	0.00	0.00	0.00	0.00	0.00	0.00	–	–