



Food and Agriculture
Organization of the
United Nations

Global Forest Resources Assessment 2020

Report

Guyana

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

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Introductory text

Introductory text

Guyana as a developing nation has invested its resources in the protection and management of its natural resources, which covers 18.47 million ha. The forest resources of Guyana has multiple land uses, the main ones being timber production. Other land uses include non-timber harvesting, agriculture, ecotourism, research, conservation and as biodiversity reserves. These uses occur on both State and Amerindian Land with those on State Land being administered by the GFC while those on Amerindian Land are administered by local communities often with the help of GFC.

Over the last two decades diligent work has been done to improve the reporting on forest resources to include forest cover change, deforestation, degradation and carbon stock. This has been achieved through the MRVS under the REDD+ strategy. The MRVS baseline study therefore reassessed the 2001 vegetation mapping and produced a 'Simplified National Vegetation Map at 1:1m. The information and data that was used to compile this report were obtained from:

1. Guyana REDD+ Monitoring Reporting & Verification System (MRVS) Interim Measures Report

Year 6 (1 January 2015 to 31 December 2016)

2. Forest Sector Information Report, Guyana, (for 2015 – December 2016)

3. Guyana National Land Use Plan – June 2013

4. Guyana Forestry Commission, Forest Resources Information Unit

5. Hydro Metrological Office – presentation in 2013

6. Mangrove Rehabilitation and Restoration Project – Progress report, 2011, and

7. Guyana Green State Development Strategy – March 2013

Through this process there have been many challenges still being addressed to continually improve on the reporting of forest resources in Guyana.

1 Forest extent, characteristics and changes

1a Extent of forest and other wooded land

National Data

Data sources + type of data source eg NFI, etc

| | | |
|--|------|---|
| Guyana REDD+ Monitoring Reporting & Verification System (MRVS) Interim Measures Report year 6 (1 January 2015 to 31 December 2016) | 2016 | Forest cover, deforestation, degradation , carbon storage |
| Guyana REDD+ Monitoring Reporting & Verification System (MRVS) Interim Measures Report year 5 (2014) | 2014 | Forest cover, deforestation, degradation , carbon storage |
| | | |
| | | |
| Guyana REDD+ Monitoring Reporting & Verification System (MRVS) Interim Measures Report year 2 (01 October 2010 – 31 December 2011) | 2011 | Forest cover, deforestation, degradation , carbon storage |
| Guyana REDD+ Monitoring Reporting & Verification System (MRVS) Interim Measures Report year 1 (2009-2010) | 2010 | Forest cover, deforestation, degradation , carbon storage |
| Guyana National Land Use Plan | 2013 | Forest cover, deforestation, degradation , carbon storage |

National classification and definitions

| National class | Definition |
|----------------|---|
| | |
| Forest Land | Land classified as forest follows the definition as outlined in the Marrakech Accords (UNFCCC, 2001), Guyana has elected to classify land as forest if it meets the following criteria: Tree cover of minimum 30%, At a minimum height of 5 m, Over a minimum area of 1 ha. Includes Mixed forest, Montane and Steep forest, Wallaba/Dakama/Muri scrub , Swamp and Marsh forest and Mangrove forest. evergreen forest. |
| Mixed Forest | This unit is the most common type of forest occurring in Guyana. It occurs in lowlands (10-400m) with high rainfall. The evergreen units occur in the north-west areas of Regions 1 and 7 commonly known as ‘Rainforest’ as well in the Pakaraimas (on the border with Venezuela) and the uplands on the border with Brazil. In the southern areas of Region 9 they are mainly deciduous and occur at the border of the Rupunini savannas to the South – East, and have a high abundance of endemic and |
| | |

| | |
|---------------------------|---|
| | commercial timber species. |
| Montane and Steep Forest | Montane forest units in Guyana are associated with high rainfall tolerant species (ombrophilous) and slopes in the uplands (500-2,000m). They occur mainly in the southern regions, the Kanuku Mountains, the Pakaraima Mountains and the upper Mazaruni valley. |
| Swamps and Marsh Forest | In permanently flooded, flat plains in the present coastal zone a low swamp forest is found. Characteristic species are Symphonia globulifera, Tabebuia insignis/fluviatilis, Pterocarpus officinalis and Euterpe oleracea. Species that can become locally dominant in this forest type in Guyana are Pentaclethra macroloba, Vatairea guianensis, Pterocarpus officinalis and Virola surinamensis. Manicaria saccifera is commonly found as a narrow belt along rivers. More inland the duration of flooding is less pronounced and forest composition is slightly different. Common species here are Symphonia globulifera, Virola surinamensis, Iryanthera spp., Pterocarpus officinalis, Mora excelsa, Pachira aquatica, Manicaria saccifera and Euterpe oleracea. |
| Wallaba/Dakama/Muri scrub | In areas where fires are very regular or in flood-prone areas Dakama forest degrades into Muri-scrub, dominated by Humiria balsamifera. Other common species in this scrub are Swartzia bannia, Clusia fockeana, Licania incana, Bombax flaviflorum, Ocotea schomburgkiana, Trattinickia burserifolia, Ternstroemia punctata and Byrsonima crassifolia |

Original data

link: <https://www.forestry.gov.gy/wp-content/uploads/2018/05/MRVS-Summary-Report-Year-6.pdf>

Changes in Guyana's Forested Area

6.1 Year 6 Analysis

For Year 6 the total area of deforestation over the 24-month period is calculated at 18 416 ha. From an annual perspective, this is 9 208 ha annually. This is a decrease of some 2 767 ha when compared to Year 5.

The total change and change expressed as a percentage of forest remaining is provided in Table 6-1.

Table 6-1: Area Deforested 1990 to 2016

| Period | Years | Image Resolution | Forest Area ('000 ha) | Change ('000 ha) | Annualised Change Rate (%) |
|-------------------------------|-------|------------------|-----------------------|------------------|----------------------------|
| Initial forest area 1990 | | 30 m | 18 473.39 | | |
| Benchmark (Sept 2009) | 19.75 | 30 m | 18 398.48 | 74.92 | 0.021 |
| Year 1 (Sept 2010) | 1 | 30 m | 18 388.19 | 10.28 | 0.056 |
| Year 2 (Oct 2010 to Dec 2011) | 1.25 | 30 m & 5 m | 18 378.30 | 9.88 | 0.054 |
| Year 3 (Jan 2012 to Dec 2012) | 1 | 5 m | *18 487.88 | 14.65 | 0.079 |
| Year 4 (Jan 2013 to Dec 2013) | 1 | 5 m | 18 475.14 | 12.73 | 0.068 |
| Year 5 (Jan 2014 to Dec 2014) | 1 | 5 m | 18 470.57 | 11.98 | 0.065 |
| Year 6 (Jan 2015 to Dec 2016) | 2 | 10 m & 30 m | 18 452.16 | 18.42 | 0.050 |

*A new start forest area is used from year 2 to year 4 as the analyses were undertaken using 5m resolution imagery and a 5m resolution updated non-forest basemap.

Based on these data, the net forest loss was estimated as follows:

| Period | ha/year |
|-----------|---------|
| 1990-2009 | 3793 |
| 2009-2010 | 10280 |
| 2010-2011 | 9880 |
| 2011-2012 | 14650 |
| 2012-2013 | 12730 |
| 2013-2014 | 11980 |
| 2014-2020 | 9205 |

2016 Data set

Table 2-1: Updated Land Classes

| 2016 Land Classes | Forest | Non-Forest | | | | | |
|---|----------------|------------|----------|-------------|----------|------------|-------|
| | (area '000 ha) | | | | | | |
| | | Grasslands | Cropland | Settlements | Wetlands | Other land | total |
| State Forest Area | 10979 | 1233 | 132 | 35 | 150 | 37 | 12566 |
| Titled Amerindian lands *(including newly titled lands) | 2865 | 322 | 34 | 9 | 39 | 10 | 3280 |
| State Lands | 3610 | 406 | 43 | 11 | 49 | 12 | 4132 |
| Protected Areas* | 998 | 112 | 12 | 3 | 14 | 3 | 1142 |
| Total Area | 18452 | 2073 | 222 | 58 | 252 | 62 | 21119 |

Analysis and processing of national data

Estimation and forecasting

The national data for 2016 was used as a starting point, and by applying the annual rates of forest loss for the different periods, the forest area for the FRA reporting years was estimated.

Reclassification into FRA 2020 categories

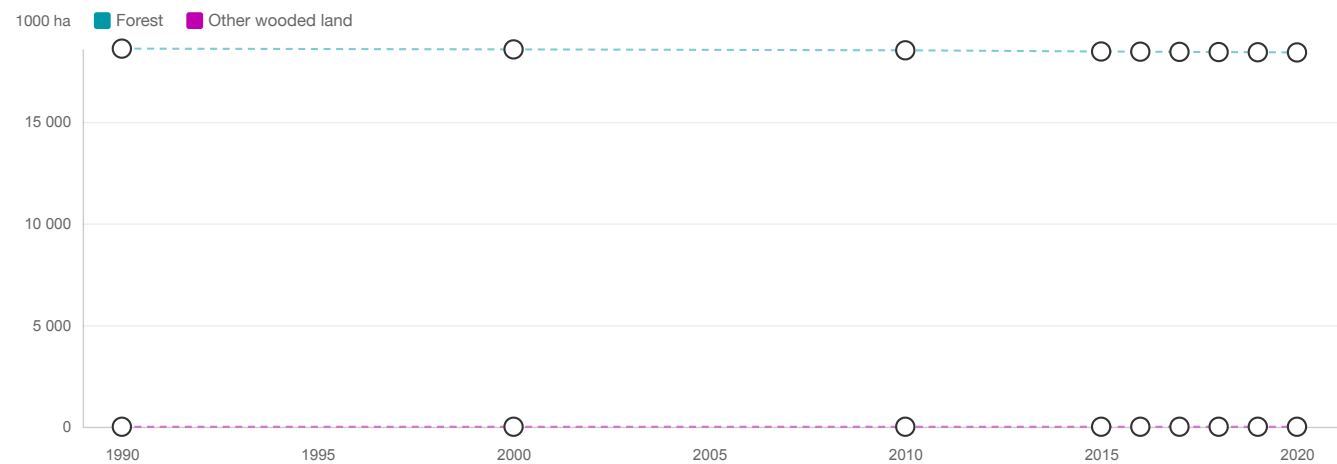
Land classified as forest by GFC continues to follows the definition from the Marrakech Accords (UNFCCC, 2001). Under this agreement forest is defined as: a minimum area of land of 0.05-1.0 hectares (ha) with tree crown cover (or equivalent stocking level) of more than 10-30% with trees with the potential to reach a minimum height of 2-5 m at maturity in situ. In accordance with the Marrakech Accords, Guyana has elected to classify land as forest if it meets the following criteria: Tree cover of minimum 30%, At a minimum height of 5 m and Over a minimum area of 1 ha.

2009 classification

| National classes | FRA classes |
|---|-------------------|
| Cultivated, settlement and deforested areas | other land |
| Tropical High Forest | forest |
| Mangrove Forest | forest |
| Savannah > 30% forest cover | forest |
| Grassland and Shrubland | other wooded land |

For FRA 2020

| National classes | FRA classes |
|-----------------------------------|-------------------|
| Cropland, settlement, other lands | other land |
| Tropical High Forest | forest |
| Mangrove Forest | forest |
| Savannah > 30% forest cover | forest |
| Grassland and wetlands | other wooded land |



| FRA categories | Area (1000 ha) | | | | | | | | |
|-----------------------|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 1990 | 2000 | 2010 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| Forest (a) | 18 602.15 | 18 564.22 | 18 519.81 | 18 461.36 | 18 452.16 | 18 442.95 | 18 433.75 | 18 424.54 | 18 415.34 |
| Other wooded land (a) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Other land (c-a-b) | 1 082.85 | 1 120.78 | 1 165.19 | 1 223.64 | 1 232.84 | 1 242.05 | 1 251.25 | 1 260.46 | 1 269.66 |
| Total land area (c) | 19 685.00 | 19 685.00 | 19 685.00 | 19 685.00 | 19 685.00 | 19 685.00 | 19 685.00 | 19 685.00 | 19 685.00 |

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

It may have been noted that there are differences in the reporting for 1990-2010 and 2010 – 2015 this is due to more informed data and improved satellite imagery used to assess forest areas for those periods that was not previously available and does not constitute an actual decrease or increase respectively for the time periods identified.

1b Forest characteristics

National Data

Data sources + type of data source eg NFI, etc

| References to sources of information | Year(s) | Additional comments |
|--|---------|---|
| Guyana REDD+ Monitoring Reporting & Verification System (MRVS) Interim Measures Report year 6 (1 January 2015 to 31 December 2016) | 2016 | Forest cover, deforestation, degradation , carbon storage |

National classification and definitions

| Class | IPCC Landcover Class | Guyana Landcover Description |
|-------------|----------------------|------------------------------------|
| Forest Land | Forest Land | Mixed forest |
| | | Wallaba/Dakama/Muri forest |
| | | Swamp/Marsh forest |
| | | Montane forest |
| | | Mangrove forest |
| | | Savannah Forest |
| | | Shifting Agriculture systems |
| Non-forest | Cropland | Cropland |
| | Grassland | Tropical unmanaged grassland |
| | | Tropical unmanaged shrubland |
| | Wetlands | Open Water |
| | | Herbaceous unmanaged wetland |
| | Settlements | Human Settlement areas and roading |
| | | Pre-1990 Mining Area |
| | Other land | Bare exposed rock outcrops |
| | | Bareland |

Original data

Same as data used as in 1a

Analysis and processing of national data

Estimation and forecasting

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Reclassification into FRA 2020 categories

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| FRA categories | Forest area (1000 ha) | | | | | | | | |
|-----------------------------------|-----------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | 1990 | 2000 | 2010 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| Naturally regenerating forest (a) | 18 602.15 | 18 564.22 | 18 519.81 | 18 461.36 | 18 452.16 | 18 442.95 | 18 433.75 | 18 424.54 | 18 415.34 |
| Planted forest (b) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Plantation forest | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ...of which introduced species | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Other planted forest | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total (a+b) | 18 602.15 | 18 564.22 | 18 519.81 | 18 461.36 | 18 452.16 | 18 442.95 | 18 433.75 | 18 424.54 | 18 415.34 |
| Total forest area | 18 602.15 | 18 564.22 | 18 519.81 | 18 461.36 | 18 452.16 | 18 442.95 | 18 433.75 | 18 424.54 | 18 415.34 |

Comments

There are some other planted forests under the reclamation projects administered through the Ministry of Natural resources (Guyana Geology and Mines Commission) in mined out areas where Acacia species are planted. However, the area is small and the size in hectares is unknown at this time for reporting.

1c Primary forest and special forest categories

National Data

Data sources + type of data source eg NFI, etc

| | | |
|---|----------|-------------------------------|
| reference to source of information | year (s) | additional information |
| GFC 2015. <i>Forest Sector Information Report</i> | 2015 | <i>forest land allocation</i> |
| GFC 2016. <i>Forest Sector Information Report</i> | 2016 | <i>forest land allocation</i> |
| Guyana REDD+ Monitoring | 2015 | land classification |
| Reporting & Verification | | |
| System (MRVS) Interim | | |
| Measures Report year 5 (2014) | | |

National classification and definitions

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Original data

Forest Sector Information report 2015 . pg 28 . available at: <https://www.forestry.gov.gy/wp-content/uploads/2016/08/Forest-Sector-Information-Report-January-to-December-2015.docx.pdf>

Table 2: Forestry Land Allocation Table

| CLASSIFICATIONS | COUNT | Area(Hectares) | % Total Allocation | % State Forest |
|--|-------|----------------|-----------------------|-------------------|
| PRODUCTION LANDS | | | | |
| State Forest Authorizations and CFMA | 573 | 2,026,545 | 29.8 | 16.1 |
| State Exploratory Permits (SFEP) | 4 | 326,670 | 4.8 | 2.6 |
| Wood Cutting Leases (WCL) | 1 | 21,268 | 0.3 | 0.2 |
| Timber Sale Agreements (TSA) | 26 | 4,427,726 | 65.1 | 35.2 |
| Total Production Area Allocated by GFC | 604 | 6,802,209 | 100 | 54.1 |
| PERMANENT RESEARCH AND RESERVES | | | | |
| GFC Forest Reserves | 11 | 17,797 | | |
| Total Forest Allocated (Management by GFC) | | 6,820,006 | | |
| Unallocated State Forest Estate | | 5,773,994 | | |
| Total State Forest Estate | | 12,594,000 | | |
| PROTECTED AREAS | | | | |
| Iwokrama | 1 | 371,681 | | |
| Kaieteur National Park | 1 | 61,091 | | |
| Other Protected Areas (Shell Beach and Kanuku Mountains) | 2 | 730,300 | | |

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

2015 Data set

Table 2-1: Updated Land Classes

| 2014 Land Classes | Forest | Non-Forest | | | | | |
|---|----------------|------------|----------|-------------|----------|------------|-------|
| | (area '000 ha) | | | | | | |
| | | Grasslands | Cropland | Settlements | Wetlands | Other land | total |
| State Forest Area | 12249 | 196 | 8 | 7 | 129 | 5 | 12594 |
| Titled Amerindian lands *(including newly titled lands) | 2582 | 695 | 3 | 9 | 22 | 4 | 3316 |
| State Lands | 2560 | 993 | 332 | 44 | 100 | 44 | 4073 |
| Protected Areas* | 1091 | 26 | <1 | <1 | 21 | <1 | 1139 |
| Total Area | 18483 | 1910 | 343 | 60 | 273 | 54 | 21122 |

Analysis and processing of national data

Estimation and forecasting

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Reclassification into FRA 2020 categories

| National classes | FRA classes |
|---|-----------------|
| Unallocated state forest that has not been allocated for logging within a given year. | Primary forest |
| Forest reserves | Primary forests |
| Protected areas | Primary forests |

| FRA categories | Area (1000 ha) | | | | |
|---|----------------|----------|----------|----------|----------|
| | 1990 | 2000 | 2010 | 2015 | 2020 |
| Primary forest | 9 477.00 | 9 477.00 | 9 477.00 | 9 477.00 | 9 477.00 |
| Temporarily unstocked and/or recently regenerated | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Bamboos | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mangroves | 81.00 | 81.00 | 81.00 | 275.88 | 275.88 |
| Rubber wood | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Comments

The Increase in Magroves is due to an ongoing magrove restoration project and from improved mapping ability and satellite imagery. data source is the GFC mapping unit

1d Annual forest expansion, deforestation and net change

National Data

Data sources + type of data source eg NFI, etc

data source is the same as 1a

National classification and definitions

classification is the same as in 1a and 1b

Original data

MRVS reoprt year 6. Annex 6 page 3

same as data used for table 1a.

Report cna be accessed at: <http://www.forestry.gov.gy/wp-content/uploads/2018/05/MRVS-Interim-Measures-Report-Year-6-Version-3.pdf>

Table 4.1 land transition matrix year six (2015- 2016)

| FROM: 2015 (Year 4) TO: 2016 (Year 5) | Forest land | Cropland (managed) | Grassland (unmanaged) | Wetlands (unmanaged) | Settlements | Other land | |
|--|-------------|--------------------|-----------------------|----------------------|-------------|------------|------------------|
| | | | | | | | Final area at Y6 |
| | (kha) | | | | | | |
| Forest land (HPfC MA) ⁽²⁾ | 6,533.1 | 0.27 | NO | NO | 0.04 | 0.14 | 6,534 |
| Forest land (HPfC LA) ⁽²⁾ | 5,154.3 | 0.11 | NO | NO | 0.04 | 0.23 | 5,155 |
| Forest land (MPfC MA) ⁽²⁾ | 2,166.9 | 0.01 | NO | NO | NO | 0.05 | 2,167 |
| Forest land (MPfC LA) ⁽²⁾ | 3,526.5 | 0.07 | NO | NO | 0.10 | 0.08 | 3,527 |
| Forest land (LPfC MA) ⁽²⁾ | 115.8 | 0.001 | NO | NO | NO | 0.02 | 116 |
| Forest land (LPfC LA) ⁽²⁾ | 954.3 | 0.03 | NO | NO | 0.02 | 0.03 | 954 |
| Cropland (managed) ⁽⁴⁾ | 0.76 | 219.80 | NE | NE | NE | NE | 222 |
| Grassland (unmanaged) ⁽⁵⁾ | NO | NE | 2058.7 | NE | NE | NE | 2,073 |
| Wetland (unmanaged) ⁽⁶⁾ | NO | NE | NE | 250.4 | NE | NE | 252 |
| Settlements ⁽⁷⁾ | 1.94 | NE | NE | NE | 57.5 | NE | 58 |
| Other land ⁽⁸⁾ | 15.71 | NE | NE | NE | NE | 61.15 | 62 |
| Final area at Y5 (Initial at Y6) | 18,470.6 | 220.3 | 2058.7 | 250.4 | 57.7 | 61.7 | 21,119 |
| Net change ⁽⁹⁾ | -18.42 | 1.53 | 14.31 | 1.74 | 0.40 | 0.43 | 0.00 |

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) | 0.00 | 0.00 | 0.00 | 0.00 |
| ...of which afforestation | 0.00 | 0.00 | 0.00 | 0.00 |
| ...of which natural expansion | 0.00 | 0.00 | 0.00 | 0.00 |
| Deforestation (b) | 3.79 | 4.44 | 11.69 | 9.20 |
| Forest area net change (a-b) | -3.79 | -4.44 | -11.69 | -9.20 |

Comments

It may have been noted that there are differences in the reporting for 1990-2010 and 2010 – 2015 this is due to the average annual rate of forest loss between the FRA reporting years was reported as deforestation, as forest expansion is insignificant

1e Annual reforestation

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

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

Comments

It should be noted that old abandoned mined out areas have been selected for a pilot project to reforest but the area size and the extent of work done is not known at this time

1f Other land with tree cover

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) | | | | |
|------------------------------------|----------------|----------|----------|----------|----------|
| | 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 | 1 082.85 | 1 120.78 | 1 165.19 | 1 223.64 | 1 269.66 |

Comments

For the categories of trees found in other land with trees, there are palms, orchards and trees in urban settings however the area covered is unknown at this time

2 Forest growing stock, biomass and carbon

2a Growing stock

National Data

Data sources + type of data source eg NFI, etc

| References to sources of information | Year(s) | Additional comments |
|--|---------|---------------------|
| Establishing a Reference level for REDD+ in Guyana | 2012 | Brown et al |
| Hans Ter steege | | |
| | | |

National classification and definitions

| Category | Definition |
|--------------------------------|--|
| Growing stock | Volume over bark of all living trees with a minimum diameter of 10 cm at breast height (or above buttress if these are higher). Includes the stem from ground level up to a top diameter of 0 cm, excluding branches. |
| Net Annual Increment (NAI) | Average annual volume of gross increment over the given reference period less that of natural losses on all trees, measured to minimum diameters as defined for "Growing stock". |
| Above-ground biomass | All living biomass above the soil including stem stump branches bark seeds and foliage. |
| Below-ground biomass | All biomass of live roots. Fine roots of less than 2 mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter |
| Dead wood | All non-living woody biomass not contained in the litter either standing lying on the ground or in the soil. Dead wood includes wood lying on the surface dead roots and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country. |
| Carbon in above-ground | Biomass Carbon in all living biomass above the soil including stem stump branches bark seeds and foliage. |
| Carbon in below-ground Biomass | Carbon in all biomass of live roots. Fine roots of less than 2 mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter. |
| Carbon in dead wood | Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country. |
| Carbon in litter | Carbon in all non-living biomass with a diameter less than the minimum diameter for dead wood (e.g. 10 cm) lying dead in various states of decomposition above the mineral or organic soil. |
| Soil carbon | Organic carbon in mineral and organic soils (including peat) to a soil depth of 30 cm. |

Original data

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Analysis and processing of national data

Estimation and forecasting

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Reclassification into FRA 2020 categories

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| FRA categories | Growing stock m³/ha (over bark) | | | | | | | | |
|----------------------------------|---------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 1990 | 2000 | 2010 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| Naturally regenerating forest | 383.81 | 383.81 | 383.81 | 383.81 | 383.81 | 383.81 | 383.81 | 383.81 | 383.81 |
| Planted forest | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ...of which plantation forest | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ...of which other planted forest | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Forest | 383.81 | 383.81 | 383.81 | 383.81 | 383.81 | 383.81 | 383.81 | 383.81 | 383.81 |
| Other wooded land | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| FRA categories | Total growing stock (million m³ over bark) | | | | | | | | |
|----------------------------------|--|----------|----------|----------|----------|----------|----------|----------|----------|
| | 1990 | 2000 | 2010 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| Naturally regenerating forest | 7 139.69 | 7 125.13 | 7 108.09 | 7 085.65 | 7 082.12 | 7 078.59 | 7 075.06 | 7 071.52 | 7 067.99 |
| Planted forest | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ...of which plantation forest | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ...of which other planted forest | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Forest | 7 139.69 | 7 125.13 | 7 108.09 | 7 085.65 | 7 082.12 | 7 078.59 | 7 075.06 | 7 071.52 | 7 067.99 |
| Other wooded land | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Comments

Historically we dont have planted forests for the purpose of future logging, but in 2015 there is a reclamation project that is underway to reclaim mined out areas. however, data on growing stock is not available at this time

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 | Chlorocardium rodiei | Greenheart | | | | | |
| #2 Ranked in terms of volume | Peltogyne spp. | Purpleheart | | | | | |
| #3 Ranked in terms of volume | Carapa spp. | Crabwood | | | | | |
| #4 Ranked in terms of volume | Catostemma spp. | Baromalli | | | | | |
| #5 Ranked in terms of volume | Hymenaea spp. | Locust | | | | | |
| #6 Ranked in terms of volume | Eperua spp. | Wallaba | | | | | |
| #7 Ranked in terms of volume | Aspidosperma album | Shibadan | | | | | |
| #8 Ranked in terms of volume | Loxopterygium sagotii | Hububalli | | | | | |
| #9 Ranked in terms of volume | Goupia glabra | Kabukalli | | | | | |
| #10 Ranked in terms of volume | Mora excelsa | Mora | | | | | |
| Remaining native tree species | | | | | | | |
| Total volume of native tree species | | | — | — | — | — | — |
| Introduced tree species | | | | | | | |
| #1 Ranked in terms of volume | | | | | | | |
| #2 Ranked in terms of volume | | | | | | | |
| #3 Ranked in terms of volume | | | | | | | |
| #4 Ranked in terms of volume | | | | | | | |
| #5 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 | | | | | | | |
| Remaining introduced tree species | | | | | | | |
| Total volume of introduced tree species | | – | – | – | – | – | |
| Total growing stock | | – | – | – | – | – | |

Comments

the area designated as "other" in the table for "primary designated management objective" is the forested area designated under:

titled Amerindian land - 2,582,000 ha

State land - 2,560, 000 ha

totaling 5,142,000 ha of which we are unable at this time to state what the specific management objecitves are for this area identified.

also the area size reported for forests at the national level for 2015 is 18,483,000 ha

with respect to information and volume data on introduced species this is not available at this time

2c Biomass stock

National Data

Data sources + type of data source eg NFI, etc

| References to sources of information | Year(s) | Additional comments | |
|---|-----------|------------------------------------|--|
| Establishing a Reference level for REDD+ program (2014) in Guyana | 2012 | Brown et al. Table 7 page 27 | |
| Guyana MRVS interim Measures Report – year 6 (2018) | 2015/2016 | page 36 , table 7-2 | |
| | | | |

| References to sources of information | Year(s) | Additional comments | |
|--|---------|--|--|
| Forest Carbon Monitoring System: Emission Factors and their Uncertainties, Version 2 | 2014 | Katherine Goslee, Sandra Brown, and Felipe Casarim | |

National classification and definitions

refer to definitions as provided in 2a

Original data

Converting aboveground biomass to carbon

Aboveground biomass is estimated in units of kg per plot and is converted to kg ha⁻¹ as:

AGB_{KG/HA} = AGB_{KG} * SF

Where:

AGB_{KG/HA} = above ground biomass (kg ha⁻¹)

AGB_{KG} = above ground biomass (kg)

SF = scaling factor (ha)

Finally, biomass in kg ha⁻¹ is converted to t C ha⁻¹ :

AGC = (AGB_{KG/HA} * 10³) * 0.47

Where:

AGC = above ground biomass (t C/ha)

AGB KG/HA= above ground biomass (kg/ha)

103 = conversion factor for kilograms to tonnes

0.47 = proportion of biomass that is carbon (IPCC 2006 GL)

The Reference Level report provides the following data on carbon stocks by four different strata, and for each fraction the area weighted average was calculated.:

| | Carbon stocks (tonnes C /ha) | | | | WEIGHTED |
|--|------------------------------|---------|------|------|----------|
| | HPfC-MA | HPfC-LA | MPfC | LPfC | AVERAGE |
| | | | | | |

| | | | | | |
|-------------------------------------|-----------|-----------|-----------|-----------|-------------------|
| Aboveground biomass (tree+saplings) | 197.8 | 271.7 | 234.6 | 234.6 | 234.51 |
| Belowground biomass (tree) | 45.5 | 62.9 | 54.3 | 54.3 | 54.23 |
| Dead Wood | 13.1 | 10.8 | 7.9 | 7.9 | 9.34 |
| Litter | 3.3 | 5.6 | 3.2 | 3.2 | 3.64 |
| Soil carbon | 99.3 | 80.3 | 96.5 | 96.5 | 94.16 |
| Area (hectares) | 3,165,731 | 3,096,270 | 5,228,621 | 6,134,588 | 17,625,210 |

Aboveground biomass, below-ground biomass and dead wood was then estimated by dividing the carbon stocks by 0.47, resulting in the following:

| | |
|----------------------|-------------|
| | <u>t/ha</u> |
| Above-ground biomass | 498.96 |
| Below-ground biomass | 115.38 |
| Dead wood | 19.87 |

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 | 498.96 | 498.96 | 498.96 | 498.96 | 498.96 | 498.96 | 498.96 | 498.96 | 498.96 |
| Below-ground biomass | 115.38 | 115.38 | 115.38 | 115.38 | 115.38 | 115.38 | 115.38 | 115.38 | 115.38 |
| Dead wood | 19.87 | 19.87 | 19.87 | 19.87 | 19.87 | 19.87 | 19.87 | 19.87 | 19.87 |

Comments

the reference level information is used to inform this table and this is based on methodology developed for guyana (based on IPCC guidelines). Guyana uses a stratification map that was developed by the GFC and a carbon map that is divided into 3 strata (high , medium and low potential for change) and for areas that are less and more accessable alwing for an average to be used for the calculation presented.

2d Carbon stock

National Data

Data sources + type of data source eg NFI, etc

| | |
|---|--|
| The Reference Level for Guyana’s REDD+ Program (2014), Table 7 page 27 | |
| Guyana MRVS Interim Measures Report - year 6 (2018) - pp. 36, Table 7-2 | |

National classification and definitions

Refer to 2a for definitions

Original data

Carbon stocks in the selected pools in guyana’s forests in the high (HPfC) and medium (MPfC) potential for change forests. MA= more accessible stratum and LA=less accessible stratum. The area weighted average was calculated for each component.

| | Carbon stocks (tonnes C /ha) | | | | WEIGHTED |
|-------------------------------------|------------------------------|-----------|-----------|-----------|------------|
| | HPfC-MA | HPfC-LA | MPfC | LPfC | AVERAGE |
| Aboveground biomass (tree+saplings) | 197.8 | 271.7 | 234.6 | 234.6 | 234.51 |
| Belowground biomass (tree) | 45.5 | 62.9 | 54.3 | 54.3 | 54.23 |
| Dead Wood | 13.1 | 10.8 | 7.9 | 7.9 | 9.34 |
| Litter | 3.3 | 5.6 | 3.2 | 3.2 | 3.64 |
| Soil carbon | 99.3 | 80.3 | 96.5 | 96.5 | 94.16 |
| Area (hectares) | 3,165,731 | 3,096,270 | 5,228,621 | 6,134,588 | 17,625,210 |

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 | 234.51 | 234.51 | 234.51 | 234.51 | 234.51 | 234.51 | 234.51 | 234.51 | 234.51 |
| Carbon in below-ground biomass | 54.23 | 54.23 | 54.23 | 54.23 | 54.23 | 54.23 | 54.23 | 54.23 | 54.23 |
| Carbon in dead wood | 9.34 | 9.34 | 9.34 | 9.34 | 9.34 | 9.34 | 9.34 | 9.34 | 9.34 |
| Carbon in litter | 3.64 | 3.64 | 3.64 | 3.64 | 3.64 | 3.64 | 3.64 | 3.64 | 3.64 |
| Soil carbon | 94.16 | 94.16 | 94.16 | 94.16 | 94.16 | 94.16 | 94.16 | 94.16 | 94.16 |

| | |
|--|-------|
| Soil depth (cm) used for soil carbon estimates | 30.00 |
|--|-------|

Comments

In addressing the concern of consistency raised by various entities as it relates to data, I did a compilation for the carbon stocks data requirement for the FRA. The sources used are the reference level and the MRVS year 6 reports. A point to note is that the carbons stocks of Guyana forests will not change unless additional fields work is done to update them, as such they are the same numbers that will be applies to the changing forest areas which are tracked and reported in the MRVS reports.

3 Forest designation and management

3a Designated management objective

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

| Term | Definition |
|-------------------------------|---|
| Primary designated function | The primary function or management objective assigned to a management unit either by legal prescription documented decision of the landowner/manager or evidence provided by documented studies of forest management practices and customary use. |
| Non wood forest product(NWFP) | Goods derived from forests that are tangible and physical objects of biological origin other than wood. |
| Category | Definition |
| Production forest | Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products. |
| Multiple use forest | Forest area designated for more than one purpose and where none of these alone is considered as the predominant designated function. |

Original data

2015 Data set

Table 2-1: Updated Land Classes

| 2014 Land Classes | Forest | Non-Forest | | | | | |
|---|----------------|------------|----------|-------------|----------|------------|-------|
| | (area '000 ha) | | | | | | |
| | | Grasslands | Cropland | Settlements | Wetlands | Other land | total |
| State Forest Area | 12249 | 196 | 8 | 7 | 129 | 5 | 12594 |
| Titled Amerindian lands *(including newly titled lands) | 2582 | 695 | 3 | 9 | 22 | 4 | 3316 |
| State Lands | 2560 | 993 | 332 | 44 | 100 | 44 | 4073 |
| Protected Areas* | 1091 | 26 | <1 | <1 | 21 | <1 | 1139 |
| Total Area | 18483 | 1910 | 343 | 60 | 273 | 54 | 21122 |

2016 Data set

Table 2-1: Updated Land Classes

| 2016 Land Classes | Forest | Non-Forest | | | | | |
|---|----------------|------------|----------|-------------|----------|------------|-------|
| | (area '000 ha) | | | | | | |
| | | Grasslands | Cropland | Settlements | Wetlands | Other land | total |
| State Forest Area | 10979 | 1233 | 132 | 35 | 150 | 37 | 12566 |
| Titled Amerindian lands *(including newly titled lands) | 2865 | 322 | 34 | 9 | 39 | 10 | 3280 |
| | | | | | | | |

| | | | | | | | |
|------------------|-------|------|-----|----|-----|----|-------|
| State Lands | 3610 | 406 | 43 | 11 | 49 | 12 | 4132 |
| Protected Areas* | 998 | 112 | 12 | 3 | 14 | 3 | 1142 |
| Total Area | 18452 | 2073 | 222 | 58 | 252 | 62 | 21119 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

| National classes | FRA classes – management objectives |
|---|-------------------------------------|
| Allocated state forest that has been allocated for logging within a given year. | Production forests |
| Buffer zones | Protection of soil and water |
| Protected areas | Conservation of biodiversity |
| Multiple use forests | Multiple use forests |
| | |
| | |

Primary designated management objective

| FRA 2020 categories | Forest area (1000 ha) | | | | |
|----------------------------------|-----------------------|-----------|-----------|-----------|-----------|
| | 1990 | 2000 | 2010 | 2015 | 2020 |
| Production (a) | 18 473.39 | 16 622.00 | 12 417.00 | 12 249.00 | 10 979.00 |
| Protection of soil and water (b) | | | | | |
| Conservation of biodiversity (c) | | 151.00 | 405.00 | 1 091.00 | 998.00 |
| Social Services (d) | | | | | |
| Multiple use (e) | | | | | |
| Other (specify in comments) (f) | | | | | |
| None/unknown (g) | 128.76 | 1 791.22 | 5 697.81 | 5 121.36 | 6 438.34 |
| Total forest area | 18 602.15 | 18 564.22 | 18 519.81 | 18 461.36 | 18 415.34 |

Total area with designated management objective

| FRA 2020 categories | Forest area (1000 ha) | | | | |
|------------------------------|-----------------------|-----------|-----------|-----------|-----------|
| | 1990 | 2000 | 2010 | 2015 | 2020 |
| Production | 18 473.39 | 16 471.00 | 12 417.00 | 12 249.00 | 12 249.00 |
| Protection of soil and water | | 151.00 | 405.00 | 1 091.00 | 1 091.00 |
| Conservation of biodiversity | | 151.00 | 405.00 | 1 091.00 | 1 091.00 |
| Social Services | | 151.00 | 405.00 | | |
| Other (specify in comments) | | | 5 576.47 | 5 143.00 | 6 475.15 |

Comments

the area designated as "other" in the table for "primary designated management objective" is the forested area designated under:

titled Amerindian land - 2,582,000 ha

State land - 2,560, 000 ha

totaling 5,142,000 ha of which we are unable at this time to state what the specific management objecitves are for this area identified.

also the area size reported for forests at the national level for 2015 is 18,483,000 ha

areas allocated forproduction has been on the decline for multiple reasons one of which being that one unallocated for the purpose fo production its clasification nationally changes to "unallocated".

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

-

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) | | | | | | | | |
|---|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 1990 | 2000 | 2010 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| Forest area within protected areas | 151.00 | 151.00 | 405.00 | 1 091.00 | 998.00 | 998.00 | 998.00 | 998.00 | 998.00 |
| Forest area with long-term forest management plan | 16 773.00 | 16 773.00 | 15 909.00 | 15 900.00 | 15 587.00 | 15 587.00 | 15 587.00 | 15 587.00 | 15 587.00 |
| ...of which in protected areas | 151.00 | 151.00 | 405.00 | 1 091.00 | 998.00 | 998.00 | 998.00 | 998.00 | 998.00 |

Comments

4 Forest ownership and management rights

4a Forest ownership

National Data

Data sources + type of data source eg NFI, etc

| Reference | Year | Added comments |
|--|------|--|
| Guyana Forestry Commission Guyana REDD+ Monitoring Reporting and Verification System (MRVS) Interim Measures Report – year 1 | 2010 | Available at https://www.forestry.gov.gy/wp-content/uploads/2015/09/Guyana-MRVS-Interim-Measures-Report-Year-1-V3.pdf Page 6 |
| FOREST SECTOR INFORMATION REPORT Annual Review 2010 | 2010 | https://www.forestry.gov.gy/wp-content/uploads/2015/09/Forest-Sector-Information-Report-January-to-December-2010.pdf Page 19 |

National classification and definitions

-

Original data

Table 2-1:

Land Allocation by Forest and Non Forest Area 2009/2010

| Land Class | LCDS Status | Non Forest | Forest | Total |
|------------------------|-----------------------|------------|--------|--------|
| | (Area '000 ha) | | | |
| | | | | |
| State Forest Area | Included | 446 | 12,417 | 12,863 |
| State Land | Included | 1,690 | 3,087 | 4,777 |
| Iwokrama | Excluded | 7 | 343 | 350 |
| Kaieteur National Park | Excluded | 0.6 | 62 | 63 |
| Titled Amerindian Land | Excluded until Opt in | 589 | 2,488 | 3,077 |
| Total Area (ha) | | 2,733 | 18,397 | 21,129 |
| | | | | |

Table 2: Land allocation within the Forestry Sector 2010

| Classification | Count | Area (Hectares) | % | % | % | |
|--|-------|-----------------|-----------|------------------|--------------|--|
| Production Area Allocations | | | Area Type | Total Allocation | State Forest | |
| State Forest Permissions (SFP) | 386 | 1,549,833 | 22.6% | 19.6% | 12.1% | |
| Wood Cutting Lease (WCL) | 2 | 30,535 | 0.4% | 0.4% | 0.2% | |
| Timber Sales Agreement (TSA) | 25 | 4,538,730 | 66.1% | 57.3% | 35.3% | |
| State Forest Exploratory Permit (SFEP) | 5 | 750,063 | 10.9% | 9.5% | 5.8% | |
| Total Production Area Allocations | 418 | 6,869,161 | 100.0% | 86.7% | 53.4% | |
| | | | | | | |

| | | | | | | |
|------------------------------------|-----|-----------|--------|-------|--------|--|
| Permanent Research & Reserve Areas | | | | | | |
| GFC Forest Reserves | 11 | 17,796 | 1.7% | 0.2% | 0. 1% | |
| Other Research & Reserve Sites | 2 | 1,032,903 | 98.3% | 13.0% | 8.0% | |
| Total Research and Reserve Areas | 13 | 1,050,699 | 100.0% | 13.3% | 8.2% | |
| Total Forests Allocated | 431 | 7,919,860 | | | 100.0% | |
| Iwokrama | | 371592 | | | | |
| kaieteur | | 61000 | | | | |

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) | 0.00 | 0.00 | 2 489.47 | 2 552.36 |
| ...of which owned by individuals | 0.00 | 0.00 | 0.00 | 0.00 |
| ...of which owned by private business entities and institutions | 0.00 | 0.00 | 0.00 | 0.00 |
| ...of which owned by local, tribal and indigenous communities | 0.00 | 0.00 | 2 489.47 | 2 552.36 |
| Public ownership (b) | 18 473.39 | 18 452.12 | 15 909.00 | 15 909.00 |
| Unknown/other (specify in comments) (c) | 128.76 | 112.10 | 121.34 | 0.00 |
| Total forest area | 18 602.15 | 18 564.22 | 18 519.81 | 18 461.36 |

Comments

For 2015 the total forest area is reported as 18483000 ha.

4b Holder of management rights of public forests

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

Table 2: Forestry Land Allocation Table - 2015

| CLASSIFICATIONS | COUNT | Area(Hectares) | % Total Allocation | % State Forest |
|--|-------|----------------|-----------------------|-------------------|
| PRODUCTION LANDS | | | | |
| State Forest Authorizations and CFMA | 573 | 2,026,545 | 29.8 | 16.1 |
| State Exploratory Permits (SFEP) | 4 | 326,670 | 4.8 | 2.6 |
| Wood Cutting Leases (WCL) | 1 | 21,268 | 0.3 | 0.2 |
| Timber Sale Agreements (TSA) | 26 | 4,427,726 | 65.1 | 35.2 |
| Total Production Area Allocated by GFC | 604 | 6,802,209 | 100 | 54.1 |
| PERMANENT RESEARCH AND RESERVES | | | | |
| GFC Forest Reserves | 11 | 17,797 | | |
| Total Forest Allocated (Management by GFC) | | 6,820,006 | | |
| Unallocated State Forest Estate | | 5,773,994 | | |
| Total State Forest Estate | | 12,594,000 | | |
| PROTECTED AREAS | | | | |
| Iwokrama | 1 | 371,681 | | |
| Kaieteur National Park | 1 | 61,091 | | |
| Other Protected Areas (Shell Beach and Kanuku Mountains) | 2 | 730,300 | | |
| | | | | |
| | | | | |

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

| National classes | FRA classes |
|---|-----------------------|
| Unallocated state forests reserves and protected areas | Public administration |
| SFAs or State Forest Authorization and CFMA: Individuals or groups of individuals applying in their own capacity to manage a portion of state forests | Individuals |
| | |

| | |
|---|---|
| SFEP, TSA, and WCL: large concessions with contractual agreements to manage state forest in excess of 24000 ha for 25 years periods. Organisations or companies legally registered as | Private businesses and institutions |
| Communities that have been allocated state forest areas usually under the SFA agreement . | Local tribes and indigenous communities |
| | |
| | |

| FRA categories | Forest area (1000 ha) | | | |
|--|-----------------------|-----------|-----------|-----------|
| | 1990 | 2000 | 2010 | 2015 |
| Public Administration (a) | 18 473.39 | 18 452.12 | 15 909.00 | 9 285.54 |
| Individuals (b) | 0.00 | 0.00 | 0.00 | 1 971.11 |
| Private business entities and institutions (c) | 0.00 | 0.00 | 0.00 | 4 643.35 |
| Local, tribal and indigenous communities (d) | 0.00 | 0.00 | 0.00 | |
| Unknown/other (specify in comments) (e) | 0.00 | 0.00 | 0.00 | 9.00 |
| Total public ownership | 18 473.39 | 18 452.12 | 15 909.00 | 15 909.00 |

Comments

for the category private business and institutions this category includes holder of management right that are local tribal and indigenous but the actual figures separately are not available at this time. The figure for individual holders are exactly that, one person having applied for and being granted the rights to manage public forests for a given period.

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 | 18 564.22 | - | - | - | - | - | - | - | - | - | 18 519.81 | - | - | - | - | 18 461.36 | 18 452.16 | 18 442.95 |

Comments

data for this category is not avaiable at this time

5b Area affected by fire

National Data

Data sources + type of data source eg NFI, etc

| References to sources of information | Year(s) | Additional comments |
|---|-----------|------------------------------------|
| Establishing a Reference level for REDD+ program (2014) in Guyana | 2012 | Brown et al. Table 7 page 27 |
| Guyana MRVS interim Measures Report – year 6 (2018) | 2015/2016 | page 36 , table 7-2 |
| | | |

National classification and definitions

-

Original data

Table 7-2: Forest Change Area by Period & Driver from 1990 to 2016⁵

| Driver | Historical Period | | | Year 1 | Year 2 2010-11 (15 months) | | Year 3 2012 | | Year 4 2013 | | Year 5 2014 | | Year 6 2016 (24 months) | |
|---|-------------------|--------------|--------------|------------|-------------------------------|-------------|----------------|-------------|---------------------|-------------|-------------------------|-------------|----------------------------|---------|
| | 1990 to 2000 | 2001 to 2005 | 2006 to 2009 | 2009-10 | Deforestation | Degradation | Deforestation | Degradation | Deforestation | Degradation | Deforestation | Degradation | Deforestation | Degrad. |
| | Area (ha) | | | | | | | | | | | | | |
| ¹ Forestry (including forestry infrastructure) | 6 094 | 8 420 | 4 784 | 294 | 233 | 147 | 240 | 113 | 330 | 85 | 204 | 62 | 313 | 5 679 |
| Agriculture (permanent) | 2 030 | 2 852 | 1 797 | 513 | 52 | - | 440 | 0 | 424 | - | 817 | - | 379 | |
| ² Mining (includes mining infrastructure) | 10 843 | 21 438 | 12 624 | 9 384 | 9 175 | 5 287 | 13 516 | 1 629 | ² 11 251 | 2 955 | 10 191 | 3 674 | 6 782 | |
| Infrastructure | 590 | 1 304 | 195 | 64 | 148 | 5 | 127 | 13 | 278 | 112 | 141 | 63 | 217 | |
| Settlements | | | | | | | | | 23 | 20 | 71 | - | 8 | |
| Fire | 1 708 | 235 | | 32 | 58 | 28 | 184 | 208 | 96 | 395 | 259 | 265 | 1 509 | 762 |
| Shifting Agriculture | | | | | | | | | | 765 | | 167 | - | 93 |
| Year 2 forest degradation converted to deforestation | | | | | | | 148 | | 67 | | 22 | | | |
| Year 3 forest degradation converted to deforestation | | | | | | | | | 200 | | 94 | | | |
| ³ Year 4 forest degradation converted to deforestation | | | | | | | | | | | 127 | | | |
| ⁴ Amaila Falls Development (Infrastructure roads) | | | | | 225 | | | | 64 | 20 | 49 | 20 | - | - |
| Area Change | 21 267 | 34 249 | 19 400 | 10 287 | 9 891 | 5 467 | 14 655 | 1 963 | 12 733 | 4 352 | 11 975 | 4 251 | 9 208 | 6 534 |
| Area Change less Shifting Agriculture | | | | | | | | | | 3 587 | | 4 064 | | 6 441 |
| Total Forest Area of Guyana | 18 473 394 | 18 452 127 | 18 417 878 | 18 398 478 | 18 388 190 | | 18 502 531 | | 18 487 876 | | ⁵ 18 482 547 | | 18 470 572 | |
| ⁶ Total Forest Area of Guyana Remaining | 18 452 127 | 18 417 878 | 18 398 478 | 18 388 190 | 18 378 299 | | 18 487 876 | | 18 475 143 | | 18 470 572 | | ⁷ 18 452 156 | |
| | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|--------------------------|-------|-------|--|-------|--------|--------|--|--------|--|--------|--|--------|--|-------|--|
| Period Deforestation (%) | 0.01% | 0.04% | | 0.02% | 0.056% | 0.054% | | 0.079% | | 0.068% | | 0.065% | | 0.05% | |
| | | | | | | | | | | | | | | | |

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 | | | | | | | | | | | | | 0.39 | 0.49 | 0.52 | 1.13 | 1.13 | |
| ...of which on forest | 0.17 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.04 | 0.39 | 0.49 | 0.52 | 1.13 | 1.13 | |

Comments

information is only available for forest areas that were affected by fires and only mapped durign the MRVS process. other areas out side forest were affected but is not currently avialable.

5c Degraded forest

| | | |
|---|---|---|
| Does your country monitor area of degraded forest | | Yes |
| If "yes" | What is the national definition of "Degraded forest"? | <p>6.2 Degradation</p> <p>There is still some debate internationally over the definition of forest degradation. A commonly adopted definition outlined in IPCC (2003) report is:</p> <p>"A direct human-induced long-term loss (persisting for X years or more) of at least Y% of forest carbon stocks [and forest values] since time T and not qualifying as deforestation or an elected activity under Article 3.4 of the Kyoto Protocol ".</p> <p>The main sources of degradation are identified as:</p> <ul style="list-style-type: none">• Harvesting of timber (reported since 2011 using the Gain Loss Method)• Shifting cultivation (prototype method developed in 2012)• Fire• Associated with mining sites and road infrastructure. |
| | Describe the monitoring process and results | <p>3.2 Degradation</p> <p>Uncertainty for LDF is based on the confidence interval as a percent of the mean LDF across all logging plots as sampling showed no difference in LDF based on different extraction rates for concessions operating in various cutting cycles.</p> <p>Uncertainty for LIF is based on the confidence interval of the mean skid trail width and the mean C stock of trees below the legal allowable minimum diameter from the more accessible biomass plots.</p> <p>The uncertainty in wood products is unknown, and is assumed to be 50%.</p> <p>The emission factors for each element of degradation are shown in Table 7. Because these are not combined into one emission factor, there is not a combined uncertainty. Rather, when emissions are calculated, there is one uncertainty value for total emissions, weighted by the contribution of each factor to the total emissions.</p> <p>Table 7. Factors for calculation of uncertainty for degradation EFs.</p> <p>Factors uncertainty</p> <p>LDF 9.4%</p> <p>Wood Density 1.0%</p> <p>Skid trails 14.6%</p> |

Comments

Table 5-3: Summary of Activities & Drivers Captured in the GIS

| Activity | Driver | Criteria | Ancillary Info Available | Spatially Mapped | End Land Use Class |
|-------------|----------------|---|---|-----------------------------------|-------------------------|
| Forestry | SFM | Fall inside state forest area and is a registered concession | Annual harvest plans, GIS extent of concession, previously mapped layers, Satellite imagery | No. Volumetric measure used | Degraded forest by type |
| | Infrastructure | Roads > 10m | | Yes | Settlements |
| Settlements | Settlements | Areas of new human settlement | Population data, image evidence. | Yes | Settlements |
| Mining | Infrastructure | Roads >10 m | Existing road network, Satellite imagery | Yes | Settlements |
| | Deforestation | Deforestation sites > 1 ha | Dredge sites, GIS extent of mining concessions, previously mapped layers, Satellite imagery | Yes | Bareland |
| | Degradation | Assess any area >0.5 ha within 100 m buffer around deforestation event &– road or new infrastructure -revisit sites post 2011to assess change | Existing infrastructure incl. deforestation sites post 2011, Satellite imagery | Mapped in the accuracy assessment | Degraded forest by type |
| Agriculture | Deforestation | Deforestation sites > 1 ha | Registered agricultural leases, Satellite imagery | Yes | Bareland or crop land |
| Fire | Deforestation | Deforestation sites > 1 ha | FIRMs fire points, spatial trends from preceding periods, Satellite imagery | Yes | Bareland or crop land |
| | | | | | |

| | | | | | |
|---------------------------------|---------------|--|---|-----------------------------------|--|
| | Degradation | Degraded forest sites | | Mapped in the accuracy assessment | Degraded forest by type |
| Infrastructure | Deforestation | Roads >10 m | Existing road network Satellite imagery | Yes | Settlements |
| | Degradation | Assess any area >0.5 ha within 100 m buffer around deforestation event – road or new infrastructure - revisit sites post 2011 to assess change | Existing deforestation sites, Satellite imagery | Mapped in the accuracy assessment | Degraded forest by type |
| Shifting Agriculture | Degradation | Assess historical patterns | Proximity to rural populations, water sources and Satellite imagery | Mapped in the accuracy assessment | Degraded forest by type |
| Reforestation/ Afforestation | Reforestation | Monitor abandoned deforestation sites | Historical land use change, Satellite images | Yes | Reforestation Forest or land cover by type |
| | Afforestation | Monitor historical non-forest areas | Satellite imagery | Yes | Afforestation by land cover class. |

Previous assessments and specific projects show that the spatial distribution of change in Guyana follows a pattern and is clustered around existing access routes (GFC Year 1 & 2; 2010, 11; Watt & von Veh, 2009 & von Veh & Watt 2010).

Potentially there is some overlap between drivers as the exact cause of the forest change can be difficult to determine. This is particularly relevant when deciding on the driver of road construction when mining and forestry areas use the same access routes.

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

avaiaible at : <https://www.forestry.gov.gy/>

| Reference | Year | Comments |
|--|------|-------------|
| Forest Act | 2009 | legislation |
| National forest policy statement | 2018 | |
| COP for Forest Operations | 2018 | |
| Forest Regulations | 2018 | |
| Guidelines for large concessions | 2018 | |
| Guidelines for forest operations (small concessions) | 2018 | |
| National Forest Plan and policy | 2018 | |
| Guyana Forestry Commission Act | 2007 | |
| | | |

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 | Yes | No |

Comments

there are no sub- national regions within the country , hence national policies are implemented across the entire country

6b Area of permanent forest estate

National Data

Data sources + type of data source eg NFI, etc

| References to sources of information | Year(s) | Additional comments |
|---|-------------|---|
| Guyana MRVS interim Measures Report – year 6 (2018) | 2015/2016 | page 36 , table 7-2 |
| Guyana Forest Sector Information Reports | 2015 | https://www.forestry.gov.gy/market-reports/ |
| Forest Sector Information Reports | (1998-2017) | https://www.forestry.gov.gy/market-reports/ |

National classification and definitions

| | |
|--|-------------------------|
| National definition | FRA classification |
| State Forest Area According to the Forest Act Section 3, Chapter 61:01, the State Forest Area is that area of State land that is designated as State Forest. This area has been Gazetted. | Permanent Forest Estate |

Original data

2015 Data set

Table 2-1: Updated Land Classes

| 2014 Land Classes | Forest | Non-Forest | | | | | |
|---|----------------|------------|----------|-------------|----------|------------|-------|
| | (area '000 ha) | | | | | | |
| | | Grasslands | Cropland | Settlements | Wetlands | Other land | total |
| State Forest Area | 12249 | 196 | 8 | 7 | 129 | 5 | 12594 |
| Titled Amerindian lands *(including newly titled lands) | 2582 | 695 | 3 | 9 | 22 | 4 | 3316 |
| State Lands | 2560 | 993 | 332 | 44 | 100 | 44 | 4073 |
| Protected Areas* | 1091 | 26 | <1 | <1 | 21 | <1 | 1139 |
| Total Area | 18483 | 1910 | 343 | 60 | 273 | 54 | 21122 |

| FRA 2020 categories | Forest area (1000 ha) | | | | | |
|---------------------------------|-----------------------|-----------|-----------|-----------|-----------|-----------|
| | Applicable? | 1990 | 2000 | 2010 | 2015 | 2020 |
| Area of permanent forest estate | Yes | 16 660.00 | 16 622.00 | 12 417.00 | 12 249.00 | 12 566.00 |

Comments

With respect to the PFE, the forest area has been more strategically separated by land use and management authority. This has allowed for the state forest to be more clearly demarcated and since we have an actual ministry of Indigenous affairs there is a continuous land titling project to support the application of forest areas to indigenous communities and this has reduced the state forest estate to the current area size. this information is available on the GFC website: <https://www.forestry.gov.gy/market-reports/>

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 | | | | | | | 13.38 | | | 15.23 | | |
| ...of which silviculture and other forestry activities | | | | | | | 0.00 | | | 0.00 | | |
| ...of which logging | | | | | | | 12.85 | | | 14.77 | | |
| ...of which gathering of non wood forest products | | | | | | | 0.53 | | | 0.46 | | |
| ...of which support services to forestry | | | | | | | 0.00 | | | 0.00 | | |

Comments

7b Graduation of students in forest-related education

National Data

Data sources + type of data source eg NFI, etc

-

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 | | | | | | | | | | | | |
| Total | | | | | | | | | | | | |

Comments

No data available.

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 | Manicole Palm | Prestoea tenuiramosa | 3 253 785 | pcs | 80 534 | 1 Food |
| #2 | wattles | saplings | | pcs | | 5 Raw material for utensils handicrafts construction |
| #3 | kufa | Clusia spp. | | pcs | | 5 Raw material for utensils handicrafts construction |
| #4 | nibbi | heteropsis flexuosa | | bundles | | 5 Raw material for utensils handicrafts construction |
| #5 | wildlife | birds, mamals | | | | 9 Living animals |
| #6 | | | | | | |
| #7 | | | | | | |
| #8 | | | | | | |
| #9 | | | | | | |
| #10 | | | | | | |
| All other plant products | | | | | | |
| All other animal products | | | | | | |
| Total | | | | | 80 534 | |

| | |
|------------------|---------------|
| Name of currency | Guyana Dollar |
|------------------|---------------|

Comments

wattles is saplings cut for use in teh constrction of housing and is single use and disposable there after.

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 | 94.31 | 94.08 | 93.78 | 93.74 | 93.69 | 93.64 | 93.60 | 93.55 |

| | |
|----------------------------|-------------------------------|
| Name of agency responsible | Ministry of Natural Resources |
|----------------------------|-------------------------------|

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 | -0.02 | -0.06 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 |

| | |
|----------------------------|----------------------------------|
| Name of agency responsible | Guyana Forestry Commission (GFC) |
|----------------------------|----------------------------------|

| Sub-Indicator 2 | Forest biomass (tonnes/ha) | | | | | | | |
|--------------------------------------|----------------------------|--------|--------|--------|--------|--------|--------|--------|
| | 2000 | 2010 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| Above-ground biomass stock in forest | 498.96 | 498.96 | 498.96 | 498.96 | 498.96 | 498.96 | 498.96 | 498.96 |

| | |
|----------------------------|----------------------------|
| Name of agency responsible | Guyana Forestry Commission |
|----------------------------|----------------------------|

| 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 | 0.82 | 2.19 | 5.91 | 5.41 | 5.41 | 5.41 | 5.41 | 5.41 |

| | |
|----------------------------|----------------------------------|
| Name of agency responsible | Protected Areas Commission (PAC) |
|----------------------------|----------------------------------|

| 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 | 90.85 | 86.17 | 86.13 | 84.43 | 84.43 | 84.43 | 84.43 | 84.43 |

| | |
|----------------------------|--|
| Name of agency responsible | Ministry of Natural Resources (PAC/GFC? GL&SC) |
|----------------------------|--|

| 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 | 371.68 | 0.00 | 0.00 | 371.68 | 371.68 | — | — |