

# GLOBAL FOREST RESOURCES ASSESSMENT 2015

## COUNTRY REPORT

# **Singapore**

Rome, 2014

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Global Forest Resources Assessment (FRA). This country report is prepared as a contribution to the FAO publication, the Global Forest Resources Assessment 2015 (FRA 2015).

The content and the structure are in accordance with the recommendations and guidelines given by FAO in the document Guide for country reporting for FRA 2015 (<http://www.fao.org/3/a-au190e.pdf>). These reports were submitted to FAO as official government documents.

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## Report preparation and contact persons

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N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

### Introductory Text

Place an introductory text on the content of this report

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### Desk Study?

Check "yes" if this survey is a Desk Study, "no" otherwise	
Desk Study?	no

# 1. What is the area of forest and other wooded land and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

## 1.1 Categories and definitions

Category	Definition
Forest	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.
Other wooded land	Land not classified as "Forest" spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of 5-10 percent or trees able to reach these thresholds ; or with a combined cover of shrubs bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.
Other land	All land that is not classified as "Forest" or "Other wooded land".
...of which with tree cover ( <i>sub-category</i> )	Land considered as "Other land", that is predominantly agricultural or urban lands use and has patches of tree cover that span more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity. It includes bothe forest and non-forest tree species.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.
Forest expansion	Expansion of forest on land that, until then, was not defined as forest.
...of which afforestation ( <i>sub-category</i> )	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not defined as forest.
...of which natural expansion of forest ( <i>sub- category</i> )	Expansion of forests through natural succession on land that, until then, was under another land use (e.g. forest succession on land previously used for agriculture).
Deforestation	The conversion of forest to other land use or the longterm reduction of the tree canopy cover below the minimum 10 percent threshold.
...of which human induced ( <i>sub-category</i> )	Human induced conversion of forest to other land use or the permanent reduction of the tree canopy cover below the minimum 10 percent threshold.
Reforestation	Natural regeneration or re-establishment of forest through planting and/or deliberate seeding on land already in forest land use.
...of which artificial reforestation ( <i>sub- category</i> )	Re-establishment of forest through planting and/or deliberate seeding on land already in forest land use.

## 1.2 National data

### 1.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments

1	Chan, L. and Corlett, R. T. Eds. 1997. Biodiversity in the nature reserves of Singapore, Proceedings of the Nature Reserves Survey Seminar, Singapore December 1997. The Gardens' Bulletin, Singapore 49 (2). National Parks Board, Singapore Botanic Gardens, 1 Cluny Road.	National Definitions	1990	These are used for previous reporting and are cited to complement current vegetation cover class definitions.
2	Yee, A.T.K., Corlett, R. T., Liew, S. C. and Tan, H. T. W. 2011. The vegetation of Singapore - an updated map. The Gardens' Bulletin, Singapore 63 (1 & 2): 205 - 212. National Parks Board	Extent	2010	N/A
3	Yee, A.T.K. 2010. An updated vegetation map of Singapore. National University of Singapore	Vegetation cover class	2010	Unpublished thesis
4	FAOSTAT	Country Area, Land Area, Inland Water Area	1990, 2000, 2005 & 2010	N/A

### 1.2.2 Classification and definitions

National class	Definition
Primary Dryland Forest	forest of complex structure comprising 5 canopy layers with emergent trees more than 30m tall, mostly of native species.
Mangrove Forest	coastal forest dominated by mangrove species.
Freshwater Swamp Forest	low-lying areas flooded with freshwater at certain periods of time with trees that form a continuous canopy.
Old Secondary Forest	old secondary regrowth forest of floristic and structural complexity intermediate between primary dryland forest and young secondary forest, with mostly native species
Young Secondary Forest	young secondary regrowth forest of simple floristic and structural complexity dominated by few native or exotic tree species
Scrubland	open vegetation of mainly tall unmanaged herbs, shrubs, and seedlings and saplings of exotic tree species
Managed Vegetation	actively managed vegetation such as wayside plantings, suburban gardens, managed wooded areas such as parks, fields and golf courses
Non-vegetated areas	bare ground such newly reclaimed land, and concrete structures such as buildings and roads
Freshwater marsh	freshwater swamp dominated by woody shrubs with areas of open vegetation

Water	water bodies such as ponds, reservoirs, canals, rivers and the sea
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### 1.2.3 Original data

<b>Forest area</b>	
<b>National class</b>	<b>Extent in ha in 2010</b>
Primary Dryland Forest	118
Freshwater Swamp Forest	283
Mangrove Forest	662
Secondary Forests	15,283
Total	16,347

(Source: Yee et al. 2011)

**Forest expansion, deforestation, reforestation**

There are no further establishment and expansion of forests.

## 1.3 Analysis and processing of national data

### 1.3.1 Adjustment

<b>Forest area</b>		
<b>National Categories</b>	<b>Extent of Forests in ha</b>	<b>Extent of Forests in ha</b>

	<b>1990</b>	<b>2010</b>
Dryland Primary Forest	118	118
Freshwater Swamp Forest	283	283
Mangrove Forest	662	662
Secondary Forests	15 283	15 283
All Other land Categories	50 654	53 653 <sup>^</sup>
... of which ... with tree cover	NIL	24 281 <sup>#</sup>
Inland water bodies	1000	1 000 <sup>*</sup>
<b>Total for country</b>	<b>68000</b>	<b>71 000</b>

<sup>^</sup> From Yee et al (2011), Forest area + Other Wooded Land + Other land + Inland Water

= 16 347.11 Ha + 4 384.14 Ha + 48 243.39 Ha + 3 600.04 Ha = 72 574.68 Ha.

Adjusting to FAOSTAT 2009 data and using Inland water = 1 000, the Country Area = 69 976 Ha.

Therefore to calibrate to Country Area = 71 000 Ha, "Other Land Categories" was adjusted to 53 653 Ha.

The additional 1025 Ha is adjusted into "Other Land" (without vegetation).

<sup>#</sup>This is "Other Wooded Land" + "Managed Vegetation", although only the latter is under "Other Land"

<sup>\*</sup> The data for inland water is obtained from FAOSTAT 2009 official figures

### 1.3.2 Estimation and forecasting

#### Forest area

Earlier reporting accounted only for forests within protected nature reserves and used figures based on Chan & Corlett (1997). It had been assumed that there was no change in forest resources since 1990, and the same assumption had been applied for forecasting figures for 2008. Latest estimation was based on Yee et al (2011) and forecasts for 2015 are assumed to be the same.

<b>National Categories</b>	<b>Extent in ha</b>			
	<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2008</b>
Dryland Primary Forest	118	118	118	118




Primary Freshwater Swamp Forest	283	283	283	283
Mangrove Forest	662	662	662	662
Secondary Forests	15 283	15 283	15 283	15 283
All Other land Categories	50 654	50 654	52 554	53 653
... of which ... with tree cover	NIL	NIL	NIL	NIL
Inland water bodies	1 000	1 000	1 000	1 000
<b>Total for country</b>	<b>68 000</b>	<b>68 000</b>	<b>69 900</b>	<b>71 000</b>

### 1.3.3 Reclassification

Forest area		
National Categories (Land)	FRA classes (%)	
	Forest	Other Land
Dryland Primary Forest	100	
Freshwater Swamp Forest	100	
Mangrove Forest	100	
Secondary Forests	100	
All Other land Categories		100

## 1.4 Data

Table 1a

Categories		Area (000 hectares)				
		1990	2000	2005	2010	2015
	Forest	16.35	16.35	16.35	16.35	16.35












	Other wooded land	4.38	4.38	4.38	4.38	4.38
	Other land	46.27	46.27	48.17	49.27	49.27
	... of which with tree cover	19.97	19.97	19.97	19.97	19.97
	Inland water bodies	1	1	1	1	1
	TOTAL	68.00	68.00	69.90	71.00	71.00

Table 1b

Categories		Annual forest establishment / loss (000 hectares per year)				...of which of introduced species (000 hectares per year)			
		1990	2000	2005	2010	1990	2000	2005	2010
	Forest expansion	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	... of which afforestation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	... of which natural expansion of forest	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Deforestation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	... of which human induced	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Reforestation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	... of which artificial	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

## Tiers

Category	Tier for status	Tier for reported trend
Forest	Tier 3	Tier 1
Other wooded land	Tier 2	Tier 1
Forest expansion	Tier 2	Tier 1
Deforestation	Tier 2	Tier 1
Reforestation	Tier 2	Tier 1

## Tier criteria

Category	Tier for status	Tier for reported trend
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<ul style="list-style-type: none"> <li>• Forest</li> <li>• Other wooded land</li> <li>• Afforestation</li> <li>• Reforestation</li> <li>• Natural expansion of forest</li> <li>• Deforestation</li> </ul>	<b>Tier 3</b> : Data sources: Either recent (less than 10 years ago) National Forest Inventory or remote sensing, with ground truthing, or programme for repeated compatible NFIs <b>Tier 2</b> : Data sources: Full cover mapping / remote sensing or old NFI (more than 10 years ago) <b>Tier 1</b> : Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other
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### 1.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trends
Forest	Forest in primary dryland forest, freshwater swamp forest, secondary forest and mangrove forest	Changes in forest cover is due to more recent and accurate estimation taking into account all forest in Singapore, as compared to previous figures accounting only for forest in protected forest reserves.
Other wooded land	Areas with scrubland and freshwater marsh	Other wooded land was not previously reported
Other land	Managed vegetation, non-vegetated areas and water bodies	The figure had been adjusted to calibrate the Country Area to the FAOSTAT 2009 official area data
Other land with tree cover	Managed vegetation	This includes wayside plantings, suburban gardens, managed wooded areas eg. Parks, fields and golf courses
Inland water bodies	water bodies such as ponds, reservoirs, canals, rivers and the sea	The data used is from FAOSTAT 2009 official area data, and differs from the data for Inland Water that can be derived from Yee et al (2011)
Forest expansion	N/A	Not available
Deforestation	N/A	Not available
Reforestation	N/A	Not available

#### Other general comments to the table

Latest figures were based on Yee et al (2011) which used satellite imagery and ground truthing for more accurate figures, and included forests outside protected nature reserves which were previously not reported. Figures reported in FRA 2010 were based on a different estimate taking into account only protected areas.

## 2. What is the area of natural and planted forest and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 2.1 Categories and definitions

Term	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Naturalized introduced species	Other naturally regenerated forest where the tree species are predominantly non-native and do not need human help to reproduce/maintain populations over time.
Introduced species	A species, subspecies or lower taxon occurring <b>outside</b> its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans).
Category	Definition
Primary forest	Naturally regenerated forest of native species where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Other naturally regenerated forest	Naturally regenerated forest where there are clearly visible indications of human activities.
...of which of introduced species ( <i>sub-category</i> )	Other naturally regenerated forest where the trees are predominantly of introduced species.
...of which naturalized ( <i>sub-sub category</i> )	Other naturally regenerated forest where the trees are predominantly of naturalized introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
...of which of introduced species ( <i>sub-category</i> )	Planted forest where the planted/seeded trees are predominantly of introduced species.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
...of which planted ( <i>sub-category</i> )	Mangroves predominantly composed of trees established through planting.

### 2.2 National data

#### 2.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Corlett, R.T., 1997. The vegetation in the Nature Reserves of Singapore. The Gardens Bulletin of Singapore Vol. 49 (2) : pp : 147-160	National Definitions	1997	N/A

2	Yee, A.T.K., Corlett, R. T., Liew, S. C. and Tan, H. T. W. 2011. The vegetation of Singapore - an updated map. The Gardens' Bulletin, Singapore 63 (1 & 2): 205 - 212. National Parks Board	Extent	2010	N/A
3	Yee, A.T.K. 2010. An updated vegetation map of Singapore. National University of Singapore	Vegetation cover class	2010	Unpublished thesis
4	N/A	N/A	N/A	N/A

### 2.2.2 Classification and definitions

National class	Definition
Primary Dryland Forest	forest of complex structure comprising 5 canopy layers with emergent trees more than 30m tall, mostly of native species
Mangrove Forest	coastal forest dominated by mangrove species
Freshwater Swamp Forest	low-lying areas flooded with freshwater at certain periods of time with trees that form a continuous canopy
Old Secondary Forest	old secondary regrowth forest of floristic and structural complexity intermediate between primary dryland forest and young secondary forest, with mostly native species
Young Secondary Forest	young secondary regrowth forest of simple floristic and structural complexity dominated by few native or exotic tree species

### 2.2.3 Original data

Forest of primary nature ie. forest that had never been completely cleared, are found in primary dryland forest and some areas of fresh water swamp forest (Yee, 2010).

## 2.3 Analysis and processing of national data

### 2.3.1 Adjustment

### 2.3.2 Estimation and forecasting

## 2.3.3 Reclassification

## 2.4 Data

Table 2a







Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Primary forest	0.21	0.21	0.21	0.21	0.21
	Other naturally regenerated forest	16.14	16.14	16.14	16.14	16.14
	... of which of introduced species	N/A	N/A	N/A	N/A	N/A
	... of which naturalized	N/A	N/A	N/A	N/A	N/A
	Planted forest	0	0	0	0	0
	... of which of introduced species	0	0	0	0	0
TOTAL		16.35	16.35	16.35	16.35	16.35

Table 2b

Primary forest converted to (000 ha)								
1990-2000			2000-2010			2010-2015		
Other natural regeneration	Planted	Other land	Other natural regeneration	Planted	Other land	Other natural regeneration	Planted	Other land
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 2c

Categories	Area (000 hectares)				
	1990	2000	2005	2010	2015
Mangroves (forest and OWL)	0.66	0.66	0.66	0.66	0.66
... of which planted	0	0	0	0	0

## Tiers

Category	Tier for status	Tier for reported trend
Primary forest	Tier 3	Tier 1

Other naturally regenerated forest	Tier 3	Tier 1
Planted forest	Tier 3	Tier 1
Mangroves	Tier 3	Tier 1

### Tier Criteria

Category	Tier for status	Tier for reported trend
Primary forest/Other naturally regenerated forest/Planted forest	<p><b>Tier 3</b> : Data sources: Recent (less than 10 years) National Forest Inventory or remote sensing with ground truthing or data provided by official agencies or programme for repeated compatible NFIs</p> <p><b>Tier 2</b> : Data sources: Full cover mapping/ remote sensing or old NFI (more than 10 years)</p> <p><b>Tier 1</b> : Other</p>	<p><b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status)</p> <p><b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status)</p> <p><b>Tier 1</b> : Other</p>

### 2.5 Comments

Category	Comments related to data definitions etc	Comments on reported trend
Primary forest	Current definition of primary forest precedes previous definitions	Difference in latest data are due to improvements in definitions, not actual change in forest cover
Other naturally regenerating forest	Forest of non-primary nature in freshwater swamp forest, secondary forest and mangrove forest	Difference in latest data are due to improvements in definitions and coverage beyond protected nature reserves, and does not reflect actual change in forest cover
Planted forest	No data available	No data available
Mangroves	Mangrove forests is subsumed under FRA 2010 category of Forest in Table T1	Differences in latest data are due to estimates using improved methodology eg. remote sensing, and recent satellite imagery, and does not reflect actual change in forest cover

#### Other general comments to the table

No data is available for conversion of forest to other categories or of non-vegetated land to forest. There were previous small-scale activities of reforestation in degraded forest and mangrove areas but no area data are currently available. Figures reported in FRA 2010 were based on a different estimate taking into account only protected areas.

### 3. What are the stocks and growth rates of the forests and how have they changed?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

#### 3.1 Categories and definitions

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

#### 3.2 National data

##### 3.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A



### 3.2.2 Classification and definitions

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

### 3.2.3 Original data

Singapore does not monitor the stocks and growth rates of forest as they are not designated for production purposes. As such, no data is available.

## 3.3 Analysis and processing of national data

### 3.3.1 Adjustment

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### 3.3.2 Estimation and forecasting



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### 3.3.3 Reclassification

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## 3.4 Data

Table 3a

Category		Growing stock volume (million m <sup>3</sup> over bark)											
		Forest					Other wooded land						
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015		
	Total growing stock	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	... of which coniferous	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A


	... of which broadleaved	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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Table 3b

Category/Species name			Growing stock in forest (million cubic meters)			
Rank	Scientific name	Common name	1990	2000	2005	2010
1 st	N/A	N/A	N/A	N/A	N/A	N/A
2 nd	N/A	N/A	N/A	N/A	N/A	N/A
3 rd	N/A	N/A	N/A	N/A	N/A	N/A
4 th	N/A	N/A	N/A	N/A	N/A	N/A
5 th	N/A	N/A	N/A	N/A	N/A	N/A
6 th	N/A	N/A	N/A	N/A	N/A	N/A
7 th	N/A	N/A	N/A	N/A	N/A	N/A
8 th	N/A	N/A	N/A	N/A	N/A	N/A
9 th	N/A	N/A	N/A	N/A	N/A	N/A
10 th	N/A	N/A	N/A	N/A	N/A	N/A
Remaining			N/A	N/A	N/A	N/A
TOTAL			.00	.00	.00	.00

**THE PRE-FILLED VALUES FOR GROWING STOCK REFER TO THE FOLLOWING THRESHOLD VALUES (SEE TABLE BELOW)**

Item	Value	Complementary information
Minimum diameter (cm) at breast height of trees included in growing stock (X)	N/A	N/A
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	N/A	N/A
Minimum diameter (cm) of branches included in growing stock (W)	N/A	N/A
Volume refers to above ground (AG) or above stump (AS)	N/A	N/A

**PLEASE NOTE THAT THE DEFINITION OF GROWING STOCK HAS CHANGED AND SHOULD BE REPORTED AS GROWING STOCK DBH 10 CM INCLUDING THE STEM FROM GROUND LEVEL UP TO A DIAMETER OF 0 CM, EXCLUDING BRANCHES.**

Table 3c




Category		Net annual increment (m <sup>3</sup> per hectare and year)				
		Forest				
		1990	2000	2005	2010	2015
	Net annual increment	N/A	N/A	N/A	N/A	N/A
	... of which coniferous	N/A	N/A	N/A	N/A	N/A
	... of which broadleaved	N/A	N/A	N/A	N/A	N/A

Table 3d











Category		Biomass (million metric tonnes oven-dry weight)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
	Above ground biomass	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Below ground biomass	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Dead wood	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

Table 3e

Category		Carbon (Million metric tonnes)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
	Carbon in above ground biomass	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Carbon in below ground biomass	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	<i>Subtotal Living biomass</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	Carbon in dead wood	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Carbon in litter	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	<i>Subtotal Dead wood and litter</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Soil carbon	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

## Tiers

Variable/category	Tier for status	Tier for trend
Total growing stock	N/A	N/A
Net annual increment	N/A	N/A
Above ground biomass	N/A	N/A
Below ground biomass	N/A	N/A
Dead wood	N/A	N/A
Carbon in above-ground biomass	N/A	N/A
Carbon in below ground biomass	N/A	N/A
Carbon in dead wood and litter	N/A	N/A
Soil carbon	N/A	N/A

## Tier criteria

Category	Tier for status	Tier for reported trend
Total growing stock	Tier 3: Data sources Recent 10 years National Forest Inventory or remote sensing with ground truthing or programme for repeated compatible NFI 10 years Domestic volume functions Tier 2: Data sources/registers and statistics modelling or old NFI 10 years or partial field inventory Tier 1: Other data sources	Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Domestic growth functions Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 tier for status Tier 1: Other
Net annual increment	Tier 3: Scientifically tested national volume and growth functions Tier 2: Selection of volume and growth functions as relevant as possible Tier 1: Other	Tier 3: Confirmation/adjustment of functions used through scientific work Tier 2: Review work done to seek alternative functions Tier: 1 Other

Biomass	Tier 3: Country-specific national or sub-national biomass conversion expansion factors applied or other domestic or otherwise nationally relevant biomass studies Tier 2: Application of country specific national or sub-national biomass conversion factors from other country with similar climatic conditions and forest types Tier 1: International/regional default biomass expansion factors applied	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other
<ul style="list-style-type: none"> <li>• Carbon in above ground biomass</li> <li>• Carbon in below ground biomass</li> <li>• Carbon in dead wood and litter</li> <li>• Soil carbon</li> </ul>	Tier 3: Country-specific national or sub-national biomass conversion expansion factors applied Tier 2: Application of country specific national or sub-national biomass conversion factors form from other country with similar climatic conditions and forest types Tier 1: International/regional default biomass expansion factors applied	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other

### 3.5 Comments on growing stock biomass and carbon

Category	Comments related to data definitions etc	Comments on the reported trend
Total growing stock	N/A	N/A
Growing stock of broadleaved coniferous	N/A	N/A
Growing stock composition	N/A	N/A
Net annual increment	N/A	N/A
Above-ground biomass	N/A	N/A
Below-ground biomass	N/A	N/A
Dead wood	N/A	N/A
Carbon in above-ground biomass	N/A	N/A
Carbon in below-ground biomass	N/A	N/A
Carbon in dead wood	N/A	N/A
Carbon in litter	N/A	N/A
Soil carbon	N/A	N/A

#### Other general comments to the table

Singapore does not monitor the stocks and growth rates of forest as they are not designated for production purposes. As such, no data is available.

## 4. What is the status of forest production and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 4.1 Categories and definitions

Term	Definition
Primary designated function	The primary function or management objective assigned to a management unit either by legal prescription documented decision of the landowner/manager or evidence provided by documented studies of forest management practices and customary use.
Non wood forest product (NWFP)	Goods derived from forests that are tangible and physical objects of biological origin other than wood.
Commercial value of NWFP	For the purpose of this table, value is defined as the commercial market value at the forest gate.
Category	Definition
Production forest	Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.
Multiple use forest	Forest area designated for more than one purpose and where none of these alone is considered as the predominant designated function.
Total wood removals	The total of industrial round wood removals and woodfuel removals.
...of which woodfuel	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

### 4.2 National data

#### 4.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Yee, A.T.K., Corlett, R. T., Liew, S. C. and Tan, H. T. W. 2011. The vegetation of Singapore - an updated map. The Gardens' Bulletin, Singapore 63 (1 & 2): 205 - 212. National Parks Board	Extent	2010	N/A
2	FAOSTATS	Data	1988 - 2011	External data provided by FAO
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 4.2.2 Classification and definitions

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

#### 4.2.3 Original data

<p>All forest area in the nature reserves are managed mainly for conservation of biodiversity with recognition that they also serve the social function and conserve soil and water, and there are no commercial removals of wood in the forest.</p> <p>External data is provided by FAO and sourced from FAOSTAT.</p>
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### 4.3 Analysis and processing of national data

#### 4.3.1 Adjustment

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#### 4.3.2 Estimation and forecasting

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#### 4.3.3 Reclassification

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### 4.4 Data

Table 4a



Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Production forest	0	0	0	0	0
	Multiple use forest	12.99	12.99	12.99	12.99	12.99

Table 4b

Rank	Name of product	Key species	Commercial value of NWFP removals 2010 (value 1000 local currency)	NWFP category
1 st	N/A	N/A	N/A	N/A

2 nd	N/A	N/A	N/A	N/A
3 rd	N/A	N/A	N/A	N/A
4 th	N/A	N/A	N/A	N/A
5 th	N/A	N/A	N/A	N/A
6 th	N/A	N/A	N/A	N/A
7 th	N/A	N/A	N/A	N/A
8 th	N/A	N/A	N/A	N/A
9 th	N/A	N/A	N/A	N/A
10 th	N/A	N/A	N/A	N/A
TOTAL			.00	

2010	
Name of local currency	Singapore Dollar

Category
<b>Plant products / raw material</b>
1 Food
2 Fodder
3 Raw material for medicine and aromatic products
4 Raw material for colorants and dyes
5 Raw material for utensils handicrafts construction
6 Ornamental plants
7 Exudates
8 Other plant products
<b>Animal products / raw material</b>
9 Living animals
10 Hides skins and trophies
11 Wild honey and beeswax



12 Wild meat
13 Raw material for medicine
14 Raw material for colorants
15 Other edible animal products
16 Other non-edible animal products

Table 4c Pre-filled data from FAOSTAT

Year	FRA 2015 category (1000 m <sup>3</sup> u.b.)	
	Total wood removals	...of which woodfuel
1990	32.25	0
1991	N/A	N/A
1992	N/A	N/A
1993	N/A	N/A
1994	N/A	N/A
1995	N/A	N/A
1996	N/A	N/A
1997	N/A	N/A
1998	N/A	N/A
1999	N/A	N/A
2000	N/A	N/A
2001	N/A	N/A
2002	N/A	N/A
2003	N/A	N/A
2004	N/A	N/A
2005	N/A	N/A
2006	N/A	N/A
2007	N/A	N/A
2008	N/A	N/A

2009	N/A	N/A
2010	N/A	N/A
2011	32.25	0

## Tiers

Category	Tier for status	Tier for reported trend
Production forest	Tier 2	Tier 1
Multiple use forest	Tier 2	Tier 1

## Tier Criteria

Category	Tier for status	Tier for reported trend
Production forest Multiple use forest	Tier 3: Updated including field verifications national forest maps including functions Tier 2: Forest maps older than 6 years including forest functions Tier 1: Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other

## 4.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Production forest	N/A	N/A
Multiple use forest	These forest are not within nature reserves and are not primarily designated for production or conservation of biodiversity.	N/A
Total wood removals	N/A	N/A
Commercial value of NWFP	N/A	N/A

## Other general comments to the table

All forest area in the nature reserves are managed mainly for conservation of biodiversity with recognition that they also serve the social function and conserve soil and water, and there are no commercial removals of wood in the forest. External data is provided by FAO from FAOSTAT. Figures reported in FRA 2010 were based on a different estimate taking into account only protected areas.

## 5. How much forest area is managed for protection of soil and water and ecosystem services?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 5.1 Categories and definitions

Category	Definition
Protection of soil and water	Forest area designated or managed for protection of soil and water
...of which production of clean water ( <i>sub-category</i> )	Forest area primarily designated or managed for water production, where most human uses are excluded or heavily modified to protect water quality.
...of which coastal stabilization ( <i>sub-category</i> )	Forest area primarily designated or managed for coastal stabilization.
...of which desertification control ( <i>sub-category</i> )	Forest area primarily designated or managed for desertification control.
...of which avalanche control ( <i>sub-category</i> )	Forest area primarily designated or managed to prevent the development or impact of avalanches on human life assets or infrastructure.
...of which erosion, flood protection or reducing flood risk ( <i>sub-category</i> )	Forest area primarily designated or managed for protecting communities or assets from the impacts of erosion riparian floods and landslides or for providing flood plain services.
...of which other ( <i>sub-category</i> )	Forest area primarily designated or managed for other protective functions.
Ecosystem services, cultural or spiritual values	Forest area primarily designated or managed for selected ecosystem services or cultural or spiritual values.
...of which public recreation ( <i>sub-category</i> )	Forest area designated or managed for public recreation.
...of which carbon storage or sequestration ( <i>sub-category</i> )	Forest area designated or managed for carbon storage or sequestration.
...of which spiritual or cultural services ( <i>sub-category</i> )	Forest area designated or managed for spiritual or cultural services.
...of which other ( <i>sub-category</i> )	Forest area designated or managed for other ecosystem services.

### 5.2 National data

#### 5.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments

1	Yee, A.T.K., Corlett, R. T., Liew, S. C. and Tan, H. T. W. 2011. The vegetation of Singapore - an updated map. The Gardens' Bulletin, Singapore 63 (1 & 2): 205 - 212. National Parks Board	Extent	2010	N/A
2	Ng, K.L.P., Corlett, R.T. & Tan, T.W.H. Eds. 2011. Singapore biodiversity: an encyclopedia of the natural environment and sustainable development. Singapore: Editions Didier Millet in association with Raffles Museum of Biodiversity Research	Extent	2011	Area of Central Catchment Nature Reserve
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 5.2.2 Classification and definitions

National class	Definition
Primary Dryland Forest	forest of complex structure comprising 5 canopy layers with emergent trees more than 30m tall, mostly of native species.
Freshwater Swamp Forest	low-lying areas flooded with freshwater at certain periods of time with trees that form a continuous canopy.
Old Secondary Forest	old secondary regrowth forest of floristic and structural complexity intermediate between primary dryland forest and young secondary forest, with mostly native species
Young Secondary Forest	young secondary regrowth forest of simple floristic and structural complexity dominated by few native or exotic tree species
Mangrove Forest	coastal forest dominated by mangrove species.
Scrubland	open vegetation of mainly tall unmanaged herbs, shrubs, and seedlings and saplings of exotic tree species
Freshwater marsh	freshwater swamp dominated by woody shrubs with areas of open vegetation

### 5.2.3 Original data

All forest area in the nature reserves are managed mainly for conservation of biodiversity with recognition that they also serve the social function and conserve soil and water. Forest area outside of nature reserves are managed for other purposes including the conservation of soil and water. These include areas with unmanaged vegetation classified under Other Wooded Land eg. freshwater marsh and scrubland.

## 5.3 Analysis and processing of national data

### 5.3.1 Adjustment

### 5.3.2 Estimation and forecasting

### 5.3.3 Reclassification

## 5.4 Data

Table 5a

Categories		Forest area (1000 hectares)				
		1990	2000	2005	2010	2015
CRQ	Protection of soil and water	3.045	3.045	3.045	3.045	3.045
CRQ	... of which production of clean water	N/A	N/A	N/A	N/A	N/A
CRQ	... of which coastal stabilization	N/A	N/A	N/A	N/A	N/A
CRQ	... of which desertification control	0	0	0	0	0
CRQ	... of which avalanche control	0	0	0	0	0
CRQ	... of which erosion, flood protection or reducing flood risk	0	0	0	0	0
CRQ	... of which other (please specify in comments below the table)	0	0	0	0	0

### Other

N/A

Table 5b

Categories	Forest area (1000 hectares)				
	1990	2000	2005	2010	2015
Ecosystem services, cultural or spiritual values	3.35	3.35	3.35	3.35	3.35
...of which public recreation	N/A	N/A	N/A	N/A	N/A
...of which carbon storage or sequestration	0	0	0	0	0
...of which spiritual or cultural services	0	0	0	0	0
...of which other (please specify in comments below the table)	0	0	0	0	0

## Tiers

Category	Tier for reported trend	Tier for status
Protection of soil and water	Tier 1	Tier 2
Ecosystem services, cultural or spiritual values	Tier 1	Tier 1

## Tier criteria

Category	Tier for status	Tier for reported trend
Protection of soil and water	Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations or legislation relating to soil and water protection. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other
<ul style="list-style-type: none"> <li>• Cultural or spiritual values</li> <li>• Public recreation</li> <li>• Spiritual or cultural services</li> <li>• Other</li> </ul>	Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other

## 5.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Protection of soil and water	This is the reported area of Central Catchment Nature Reserve	N/A
Production of clean water	N/A	N/A
Coastal stabilization	There some small-scale activities on planting trees for coastal stabilization, but no data area available and not included.	N/A
Desertification control	N/A	N/A
Avalanche control	N/A	N/A
Erosion, flood protection or reducing flood risk	N/A	N/A
Other protective functions	N/A	N/A
Ecosystem services, cultural or spiritual values	This is the combined reported area of all four nature reserves	N/A
Public recreation	These include publicly accessible areas in the nature reserves, however no data is available.	N/A
Carbon storage or sequestration	While forests are not primarily designed for carbon storage, all forests sequester carbon.	N/A
Spiritual or cultural services	N/A	N/A
Other ecosystem services	N/A	N/A

#### Other general comments to the table

All forest area in the nature reserves are managed mainly for conservation of biodiversity with recognition that they also serve the social function and conserve soil and water. Forest area outside of nature reserves are managed for other purposes including the conservation of soil and water. These include areas with unmanaged vegetation classified under Other Wooded Land eg. freshwater marsh and scrubland. Figures reported in FRA 2010 were based on a different estimate taking into account only protected areas.

## 6. How much forest area is protected and designated for the conservation of biodiversity and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 6.1 Categories and definitions

Category	Definition
Conservation of biodiversity	Forest area designated primarily for conservation of biological diversity. Includes but is not limited to areas designated for biodiversity conservation within the protected areas.
Forest area within protected areas	Forest area within formally established protected areas independently of the purpose for which the protected areas were established.

### 6.2 National data

#### 6.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Ng, K.L.P., Corlett, R.T. & Tan, T.W.H. Eds. 2011. Singapore biodiversity: an encyclopedia of the natural environment and sustainable development. Singapore: Editions Didier Millet in association with Raffles Museum of Biodiversity Research	Extent	2011	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 6.2.2 Classification and definitions

National class	Definition
Nature reserve	An area set aside primarily for the conservation of biodiversity that is legally protected.
N/A	N/A
N/A	N/A
N/A	N/A



### 6.2.3 Original data

All forest area is managed mainly for conservation of biodiversity with recognition that they also serve the social function and conserve soil and water.

## 6.3 Analysis and processing of national data



### 6.3.1 Adjustment

### 6.3.2 Estimation and forecasting

### 6.3.3 Reclassification

## 6.4 Data

Table 6

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Conservation of biodiversity	3.35	3.35	3.35	3.35	3.35
	Forest area within protected areas	3.35	3.35	3.35	3.35	3.35

### Tiers

Category	Tier for status	Tier for reported trend
Conservation of biodiversity	Tier 3	Tier 1
Forest area within protected areas	Tier 1	Tier 1

### Tier criteria

Category	Tier for status	Tier for reported trend
<ul style="list-style-type: none"> <li>Conservation of biodiversity</li> <li>Forests within protected areas</li> </ul>	<p>Tier 3: Data obtained from national or state agencies responsible for conservation and protected area or legislation relating to area protection. Tier 2: Studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates Tier 1 Other</p>	<p><b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other</p>

## 6.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Conservation of biodiversity	Forest within nature reserves are set aside primarily for the conservation of biodiversity. This does not include forest outside the nature reserves without legal protection that serve as habitat for biodiversity.	Not data available
Forest area within protected areas	While no details on the size of forest area within protected areas are available, it is assumed that all areas in nature reserves are forested.	No data available

### Other general comments to the table

All forest area is managed mainly for conservation of biodiversity with recognition that they also serve the social function and conserve soil and water. Figures reported in FRA 2010 were based on a different estimate taking into account only protected areas.

## 7. What is the area of forest affected by woody invasive species?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 7.1 Categories and definitions

Category	Definition
Invasive species	Species that are non-native to a particular ecosystem and whose introduction and spread cause, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health.

### 7.2 National data

#### 7.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 7.2.2 Classification and definitions

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

#### 7.2.3 Original data

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### 7.3 Analysis and processing of national data

#### 7.3.1 Adjustment

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## 7.3.2 Estimation and forecasting

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## 7.3.3 Reclassification

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## 7.4 Data

Table 7

Scientific name of woody invasive species	Forest area affected (000 ha)	
	2005	2010
Falcataria moluccana	N/A	N/A
Acacia auriculiformis	N/A	N/A
Cecropia pachystachya	N/A	N/A
Andira inermis	N/A	N/A
Leucaena leucocephala	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
Total	N/A	N/A

## Tiers

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

## Tier Criteria

Category	Tier for status	Tier for reported trend
----------	-----------------	-------------------------

Invasive species	Tier 3: Systematic assessment in forest inventory or other survey (e.g. by conservation department) within the last 5 years) Tier 2: Systematic assessment in forest inventory or other survey (e.g. by conservation department conducted more than 5 years ago) Tier 1: Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other
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**7.5 Comments**

Category	Comments related to data definitions etc	Comments on the reported trend
Invasive species	N/A	N/A

<b>Other general comments to the table</b>
While there are forest areas affected by invasive non-native species, there is no data on the area of land affected by these species.

## 8. How much forest area is damaged each year?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 8.1 Categories and definitions

Category	Definition
Number of fires	Number of fires per year
Burned area	Area burned per year
Outbreaks of insects	A detectable reduction in forest health caused by a sudden increase in numbers of harmful insects.
Outbreaks of diseases	A detectable reduction in forest health caused by a sudden increase in numbers of harmful pathogens, such as bacteria, fungi, phytoplasma or virus.
Severe weather events	Damage caused severe weather events, such as snow, storm, drought, etc.

### 8.2 National data

#### 8.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	National Parks Board, 1 Cluny Road, Singapore 259569	Extent	2011	This is a record of an area of forest severely damaged by a wind storm.
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 8.2.2 Classification and definitions

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

## 8.2.3 Original data

## 8.3 Analysis and processing of national data

## 8.3.1 Adjustment

## 8.3.2 Estimation and forecasting

## 8.3.3 Reclassification

## 8.4 Data

Table 8a




Category		000 ha, number of fires									
		2003		2004		2005		2006		2007	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
	Total land area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	... of which forest area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Category		2008		2009		2010		2011		2012	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
	Total land area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	... of which forest area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 8b

Outbreak category	Description/name	Year(s) of latest outbreak	Area damaged (000 hectares)
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Severe weather events	Forest area severely affected by wind storm	2011	0.02
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

### Outbreak category

1 Insects

2 Diseases

3 Severe weather events

### Tiers

Category	Tier for status	Tier for trend
Area affected by fire	N/A	N/A
<ul style="list-style-type: none"> <li>• Insects</li> <li>• Diseases</li> <li>• Severe weather events</li> </ul>	Tier 2	Tier 1

### Tier criteria

Category	Tier for status	Tier for reported trend
Burned area	<b>Tier 3</b> : National fire monitoring routines <b>Tier 2</b> : Remote sensing surveys <b>Tier 1</b> : Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other
<ul style="list-style-type: none"> <li>• Insects</li> <li>• Diseases</li> <li>• Severe weather events</li> </ul>	<b>Tier 3</b> : Systematic survey (e.g. via inventory or aerial damage assessment) <b>Tier 2</b> : Management records <b>Tier 1</b> : Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other



## 8.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Burned area	Unintentional fires occurring on forest, other wooded land and other land with tree cover.	N/A
Insects	N/A	N/A
Diseases	N/A	N/A
Severe weather events	Area is based on estimation from a quick ground survey	N/A

### Other general comments to the table

There is no data currently available on the area of forest land affected by fire, insects or disease.

## 9. What is the forest area with reduced canopy cover?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

Category	Definition
Reduction in canopy cover	Forest that has undergone a reduction of canopy cover of more than 20% between the years 2000 and 2010 within the forest canopy cover range of 30-80% as detected by the MODIS VCF sensor.

Table 9

Category	Area of forest with reduced canopy cover (000 ha)
Reduction in canopy cover	0.4

Tiers

Category	Tier for reported trend
Reduction in canopy cover	Tier 2

Tier criteria

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

Comments

Category	Comments related to data definitions etc
Reduction in canopy cover	N/A

Other general comments

External data is provided by FAO.

## 10. What forest policy and regulatory framework exists to support implementation of sustainable forest management SFM?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 10.1 Categories and definitions

Category	Definition
Policies supporting sustainable forest management	Policies or strategies that explicitly encourage sustainable forest management.
Legislation and regulations supporting sustainable forest management	Legislation and regulations that govern and guide sustainable forest management, operations and use.

### 10.2 National data

#### 10.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	National Parks Board, 1 Cluny Road, Singapore 259569	Data	2005	The National Parks Board administers the Parks and Trees Act 2005
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 10.2.2 Classification and definitions

National class	Definition
Policies supporting sustainable forest management	Administrative processes serving as policy guidelines supporting sustainable forest management
Legislation supporting sustainable forest management	Legislative instruments serving as protection of forest and supporting sustainable forest management.
N/A	N/A
N/A	N/A

## 10.2.3 Original data

The National Parks Board administers the Parks and Trees Act 2005, and collaborate with other government agencies in implementing policies supporting sustainable forest management

## 10.3 Data

Table 10

Category				
	National	Sub-national		
		Regional	Provincial/State	Local
Policies supporting sustainable forest management	yes	no	no	no
... of which, in <u>publicly</u> owned forests	yes	no	no	no
... of which, in <u>privately</u> owned forests	no	no	no	no
Legislation and regulations supporting sustainable forest management	yes	no	no	no
... of which, in <u>publicly</u> owned forests	yes	no	no	no
... of which, in <u>privately</u> owned forests	no	no	no	no

## 10.4 Comments

Variable / category	Comments related to data definitions etc
Policies supporting sustainable forest management	These include policies developed through inter-agency collaborations and recommendations at the planning level.
Legislation and regulations supporting sustainable forest management	The key legislative instruments supporting sustainable forest management are the Parks and Trees Act and the Parks and Trees Regulations.

## Other general comments

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## 11. Is there a national platform that promotes stakeholder participation in forest policy development?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 11.1 Categories and definitions

Category	Definition
National stakeholder platform	A recognized procedure that a broad range of stakeholders can use to provide opinions, suggestions, analysis, recommendations and other input into the development of national forest policy.

### 11.2 National data

#### 11.2.1 Data sources

	References to sources of information	Years	Additional comments
1	N/A	N/A	N/A
2	N/A	N/A	N/A
3	N/A	N/A	N/A
4	N/A	N/A	N/A

Table 11

<b>Is there a national platform that promotes or allows for stakeholder participation in forest policy development?</b>	no
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### 11.3 Comments

Category	Comments related to data definitions etc
National stakeholder platform	While there are no official platforms, the government do engage a broad range of stakeholders through various channels for inputs relating to national forest policies.

Other general comments

--

## 12. What is the forest area intended to be in permanent forest land use and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 12.1 Categories and definitions

Category	Definition
Forest area intended to be in permanent forest land use	Forest area that is designated or expected to be retained as forest and is highly unlikely to be converted to other land use.
...of which permanent forest estate ( <i>sub-category</i> )	Forest area that is designated by law or regulation to be retained as forest and may not be converted to other land use.

### 12.2 National data

#### 12.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	National Parks Board, 1 Cluny Road, Singapore 259569	Data	N/A	The National Parks Board administers the Parks and Trees Act 2005
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 12.2.2 Classification and definitions

National class	Definition
Nature reserve	An area set aside primarily for the conservation of biodiversity that is legally protected.
N/A	N/A
N/A	N/A
N/A	N/A

### 12.2.3 Original data

Forest in Nature Reserves are protected by the Parks and Trees Act as well as the Parks and Trees Regulations.

## 12.3 Analysis and processing of national data

### 12.3.1 Adjustment



### 12.3.2 Estimation and forecasting

The is no expected change in the forest area protected under the Park and Trees Act.

### 12.3.3 Reclassification

## 12.4 Data

Table 12

Categories		Forest area 2010 (000 ha)
	Forest area intended to be in permanent forest land use	2.3
	... of which permanent forest estate	0

### Tiers

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

### Tier Criteria

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

**12.5 Comments**

<b>Category</b>	<b>Comments related to data definitions etc</b>
Forest area intended to be in permanent forest land use	Forest in nature reserves are intended to be in permanent forest land use.
Permanent forest estate	Not applicable

**Other general comments**

--



## 13. How does your country measure and report progress towards SFM at the national level?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 13.1 Categories and definitions

Category	Definition
Forest area monitored under a national forest monitoring framework	Forest area monitored by a national monitoring framework or systems that provide measurement based periodic monitoring of forest extent and quality.
Forest reporting at national scale	National reporting of forest extent and characteristics that includes some measure of progress toward sustainable forest management.

### 13.2 National data

#### 13.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 13.2.2 Classification and definitions

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

### 13.3 Data

Table 13a

Category	% of total forest area	Most recent year	Check all boxes that apply					
			Continuous	Periodic	Permanent ground plots	Temporary ground plots	Aerial/remote sensing sample based	Aerial/remote sensing full coverage
Forest inventory	N/A	N/A						
Other field assessments	N/A	N/A						
Updates to other sources	N/A	N/A						
Expert estimate	N/A	N/A						

Table 13b

Type of forest reporting used at national scale	Check boxes that apply
1 Criteria and Indicators reporting	
2 Periodic national state of the forest report	
3 Other (please document)	
4 None	

Other type of forest reporting
N/A

### 13.4 Comments

Category	Comments
N/A	N/A
N/A	N/A
N/A	N/A

Other general comments

--

## 14. What is the area of forest under a forest management plan and how is this monitored?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 14.1 Categories and definitions

Category	Definition
Forest area with management plan	Forest area that has a long-term documented management plan, aiming at defined management goals which is periodically revised
...of which for production ( <i>sub-category</i> )	Forest management plan mainly focused on production
...of which for conservation ( <i>sub-category</i> )	Forest management plan mainly focused on conservation
Monitoring of forest management plans	Government monitoring of forest management plan implementation conducted through field visits or audits of forest management plan performance

### 14.2 National data

#### 14.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	National Parks Board, 1 Cluny Road, Singapore 259569	Data	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 14.3 Data

Table 14a

Forest plan type	Forest area 2010 (000 ha)
Forest area with management plan	2.3
... of which for production	0
... of which for conservation	2.3

Table 14b

Indicate which (if any) of the following are required in forest management plans in your country	
1 Soil and water management	no

2 High conservation value forest delineation	no
3 Social considerations community involvement	no

Table 14c

<b>Percent of area under forest management plan that is monitored annually</b>	<b>100</b>
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## Tiers

Category	Tier for status
Forest area with management plan	Tier 2
Percent of area under forest management plan that is monitored annually	Tier 2

## Tier criteria

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

## 14.4 Comments

Category	Comments
Forest area with management plan	The management plans of nature reserves serve to guide the management of these forests with the main objective of biodiversity conservation.
N/A	N/A
N/A	N/A

## Other general comments

--

## 15. How are stakeholders involved in the management decision making for publicly owned forests?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 15.1 Categories and definitions

Category	Definition
Stakeholder involvement	Stakeholder involvement is defined as significant inputs into at least one aspect of forest management at the operational scale

Table 15

Please indicate the type of stakeholder involvement in forest management decision making required in your country	
1. Planning phase	
2. Operations phase	yes
3. Review of operations	yes

Tiers

Category	Tier for status
Type of stakeholder inputs	Tier 1

Tier criteria

Category	Tier for status
Type of stakeholder inputs	<b>Tier 3</b> : Government (national or sub-national) documentation of stakeholder inputs <b>Tier 2</b> : Government (national or subnational) requirement but stakeholder inputs not documented <b>Tier 1</b> : Other

### 15.2 Comments

Category	Comments
Stakeholder involvement	It is not a requirement for stakeholder involvement in management decision making for publicly owned forest. However, stakeholders are occasionally invited to provide inputs through informal discussions that are useful for management decision making.
N/A	N/A
N/A	N/A

Other general comments

--

## 16. What is the area of forest under an independently verified forest certification scheme?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 16.1 Categories and definitions

Category	Definition
FSC certification	Forest area certified under the Forest Stewardship Council certification scheme
PEFC certification	Forest area certified under the Programme for the Endorsement of Forest Certification scheme
Other international forest management certification	Forest area certified under an international forest management certification scheme with published standards and is independently verified by a third-party, excluding FSC and PEFC certification.
Certified forest area using a domestic forest management certification scheme	Area certified under a forest management certification scheme with published standards that are nationally recognized and independently verified by a thirdparty

### 16.2 Data

Table 16a













International forest management certification		Forest area (000 ha)						
		2000	2001	2002	2003	2004	2005	2006
	FSC	0	0	0	0	0	0	0
	PEFC	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0
		2007	2008	2009	2010	2011	2012	
	FSC	0	0	0	0	0	0	
	PEFC	0	0	0	0	0	0	
	Other	0	0	0	0	0	0	

Table 16b

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

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

## Tier criteria

Category	Tier for status
<b>International</b> forest management certification	Tier 3: International forest management scheme records maintained by the certifying organization for the reporting year Tier 2: International forest management scheme records reported by the certifying organization for a period 2 years prior to the reporting year Tier: 1 Other
<b>Domestic</b> forest management certification	Tier 3: National registry reports for domestic forest management certification maintained by the certifying organization for the reporting year Tier 2: Domestic forest management scheme records reported by the certifying organization for a period 2 years prior to the reporting year Tier: 1 Other

## Tiers

Category	Tier for status
<b>International</b> forest management certification	Tier 3
<b>Domestic</b> forest management certification	Tier 3

## 16.3 Comments

Category	Comments related to data definitions etc
Certified forest area using an international forest management certification scheme	Not applicable
Domestic forest management certification	Not applicable

## Other general comments

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## 17. How much money do governments collect from and spend on forests?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 17.1 Categories and definitions

Category	Definition
Forest revenue	All government revenue collected from the domestic production and trade of forest products and services. For this purpose revenue include: <ul style="list-style-type: none"> <li>• <u>Goods</u> : roundwood; sawnwood; biomass; woodbased panels; pulp and paper and non-wood forest products.</li> <li>• <u>Services</u> : including concession fees and royalties, stumpage payments, public timber sales revenue taxes and charges based on forest area or yield, taxes on domestic trade and export of forest products, special levies on forestry activities and payments into forest related funds, other miscellaneous inspection, licence and administrative fees levied by forest administrations, permit and licence fees for recreation and other forest related activities.</li> </ul>
Public expenditure on forestry	All government expenditure on forest related activities.

### 17.2 National data

#### 17.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	National Parks Board, 1 Cluny Road, Singapore 259569	Data	N/A	Singapore does not have a ministry overseeing forestry and does not have a forestry industry.
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 17.3 Data

Table 17

Category	Revenues / expenditures (000 local currency)		
	2000	2005	2010
Forest revenue	0	0	0
Public expenditure on forestry	0	0	0
	2000	2005	2010

Name of Local Currency	N/A	N/A	N/A
------------------------	-----	-----	-----

#### 17.4 Comments

Category	Comments related to data definitions etc
Forest revenue	Not applicable
Public expenditure on forestry	There was no public expenditure on forestry as an industry, which is not the same as for forest conservation activities of which there is some expenditure.
Other general comments	Singapore's policy is not to exploit timber and non-timber products from forest areas.

Other general comments

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## 18. Who owns and manages the forests and how has this changed?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 18.1 Categories and definitions

Category	Definition
Public ownership	Forest owned by the State or administrative units of the public administration or by institutions or corporations owned by the public administration.
...of which owned by the state at national scale ( <i>sub-category</i> )	Forest owned by the State at the national scale or administrative units of the public administration or by institutions or corporations owned by the public administration.
...of which owned by the state at the sub-national government scale ( <i>sub-category</i> )	Forest owned by the State at the sub-national government scale or administrative units of the public administration or by institutions or corporations owned by the public administration.
Private ownership	Forest owned by individuals, families, communities, private cooperatives corporations and other business entities, private, religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
...of which individuals ( <i>sub-category</i> )	Forest owned by individuals and families.
...of which private business entities and institutions ( <i>sub-category</i> )	Forest owned by private corporations cooperatives companies and other business entities as well as private nonprofit organizations such as NGOs nature conservation associations, and private religious and educational institutions etc.
...of which local tribal and indigenous communities ( <i>sub-category</i> )	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area or forest owned by communities of indigenous or tribal people The community members are coowners that share exclusive rights and duties and benefits contribute to the community development.
Unknown ownership	Forest area where ownership is unknown includes areas where ownership is unclear or disputed.
Categories related to management rights of public forests	Definition
Public Administration	The Public Administration (or institutions or corporations owned by the Public Administration) retains management rights and responsibilities within the limits specified by the legislation.
Individuals households	Forest management rights and responsibilities are transferred from the Public Administration to individuals or households through long-term leases or management agreements.
Private companies	Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities private cooperatives, private nonprofit institutions and associations, etc., through long-term leases or management agreements.
Communities	Forest management rights and responsibilities are transferred from the Public Administration to local communities (including indigenous and tribal communities) through long-term leases or management agreements.
Other form of management rights	Forests for which the transfer of management rights does not belong to any of the categories mentioned above.

### 18.2 National data

### 18.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	National Parks Board, 1 Cluny Road, Singapore 259569	Data	N/A	All forest in Singapore are publicly owned.
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 18.2.2 Classification and definitions

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

### 18.2.3 Original data

All forests are publicly owned.

## 18.3 Analysis and processing of national data









### 18.3.1 Adjustment

### 18.3.2 Estimation and forecasting

### 18.3.3 Reclassification

## 18.4 Data

Table 18a

Categories		Forest area (1000 hectares)			
		1990	2000	2005	2010
	Public ownership	16.35	16.35	16.35	16.35
	... of which owned by the state at national scale	16.35	16.35	16.35	16.35
	... of which owned by the state at the sub-national government scale	0	0	0	0
	Private ownership	0	0	0	0
	... of which owned by individuals	0	0	0	0
	... of which owned by private business entities and institutions	0	0	0	0
	... of which owned by local, tribal and indigenous communities	0	0	0	0
	Unknown ownership	0	0	0	0
TOTAL		16.35	16.35	16.35	16.35

## Tiers

Category	Tier for status	Tier for reported trend
Public ownership	Tier 2	Tier 1
Private ownership	Tier 2	Tier 1
Unknown ownership	Tier 3	Tier 1

## Tier criteria

Category	Tier for status	Tier for reported trend
Ownership	Tier 3: National forestry statistics registers of land titles or maps on land ownership or all forest area under one ownership category that is five years old or less. Tier 2: National forestry statistics registers of land titles or maps on land ownership or questionnaires that are more than five years old. Tier 1: Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other

Table 18b - Holder of management rights of public forests

Categories	Forest area (000 hectares)			
	1990	2000	2005	2010
Public Administration	16.35	16.35	16.35	16.35
Individuals	0	0	0	0
Private companies	0	0	0	0
Communities	0	0	0	0
Other	0	0	0	0
<b>TOTAL</b>	<b>16.35</b>	<b>16.35</b>	<b>16.35</b>	<b>16.35</b>

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

### 18.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Public ownership	All forest are on publicly owned land, and managed by various state agencies.	N/A
Private ownership	N/A	N/A
Unknown ownership	N/A	N/A
Management rights	N/A	N/A

#### Other general comments to the table

All forest are on publicly owned land, and managed by various state agencies.

## 19. How many people are directly employed in forestry?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 19.1 Categories and definitions

Category	Definition
Full-time equivalents (FTE)	A measurement equal to one person working full-time during a specified reference period.
Employment in forestry	Employment in activities related to production of goods derived from forests. This category corresponds to the ISIC/NACE Rev. 4 activity A02 (Forestry and logging).

### 19.2 National data

#### 19.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	National Parks Board, 1 Cluny Road, Singapore 259569	Data, definitions	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 19.2.2 Classification and definitions

National class	Definition
Provision of services through Conservation Division	The total staff strength of Conservation Division of the National Parks Board.
Provision of services through Parks and Reserves	Number of staff within those sections of Conservation Division who are based directly in parks and reserves.
N/A	N/A
N/A	N/A

#### 19.2.3 Original data

Category	Employment (1000 person-years)		
	1990	2000	2005

Primary production of goods	NIL	NIL	NIL
Provision of services through Conservation Division	0.09	0.09	0.09
Unspecified forestry activities	NIL	NIL	NIL

(Note 1. Total number of staff (90) in the Conservation Division, National Parks Board subsumes the number of staff (37), who are based directly in the parks and reserves.)



All staff in the Conservation Division is under full-time employment.

### Estimation and forecasting

Same figures have been assumed for 1990, 2000 and 2005. For 2010, the figure reported only for nature reserves (48) consisting of the Central Nature Reserve (28 staff), Sungei Buloh Wetland Reserve (15 staff) and Labrador Park (5 staff).

## 19.3 Data

Table 19

Category		Employment (000 years FTE)			
		1990	2000	2005	2010
	Employment in forestry	0	0	0	0
	... of which female	0	0	0	0

## 19.4 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Employment in forestry	FTE managing the nature reserves.	N/A

### Other general comments to the table

Singapore does not have a forestry industry. Figures reported here are FTE managing the nature reserves.



## 20. What is the contribution of forestry to Gross Domestic Product (GDP)?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 20.1 Categories and definitions

Category	Definition
Gross value added from forestry (at basic prices)	This category corresponds to the ISIC/NACE Rev. 4 activity A02 (Forestry and logging).

### 20.2 Data

Table 20 (Pre-filled data from UNdata/EUROSTAT)

Category	Million	Currency	Year for latest available information
Gross value added from forestry (at basic prices)	N/A	N/A	N/A

### 20.3 Comments

Category	Comments
N/A	N/A

Other general comments

--

## 21. What is forest area likely to be in the future

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

### 21.1 Categories and definitions

Category	Definition
Government target/aspiration for forest area	Government target/aspiration for forest area for a specific year.
Forests earmarked for conversion	Forest area that is allocated/classified or scheduled to be converted into non-forest uses.

### 21.2 National data

#### 21.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 21.3 Data

Table 21a

Category	Forest area (000 ha)	
	2020	2030
Government target/aspiration for forest area	N/A	N/A

Table 21b

Category	Forest area (000 ha)
	2013
Forests earmarked for conversion	N/A

### 21.4 Comments

Category	Comments
Government target/aspiration for forest area	No change from current area.

Forests earmarked for conversion	No data available
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Other general comments

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