Palau

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

Contact persons

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

Name (FAMILY NAME, first name)	Institution/address	Email	Tables
Desk study	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

Introductory Text

No report has been received from the country. This report is the result of a desk study prepared by the FRA secretariat in Rome, which is based on the existing available information using the established format for FRA 2015/CFRQ format.

Palau is composed of a diverse network of coral reefs and a chain of more than 300 raised limestone and volcanic islands. The islands trend northeast to southwest for a distance of about 200 km, approximately 750 km east of the Philippines. The islands range in size from the relatively large volcanic island of Babeldaob, at about 37000 hectares, to coral rocks topped with trees, only a few meters across. The tremendous marine diversity is supported by the convergence of oceanic currents and the filtering and nutrient effects of the dense terrestrial forests. The topography of the four volcanic islands is marked by steep slopes and rolling hills, with mangroves often found on coastal flats. The limestone coral islands or "Rock Islands" support a diversity of tree species on often surprisingly shallow soils deposited in the recesses of the rugged karstic topography.

Palau is hot and humid with little annual variation in the mean maximum temperature of 31 C and the mean minimum of 24 C. Annual precipitation averages about 3750 mm. In the wettest months, June and July, monthly precipitation averages about 430 mm, whereas during the driest months, February, March, and April, monthly precipitation averages 225 mm (data from Western Regional Climate Center 2004). Palau borders the typhoon belt in the western tropical Pacific and is subject to occasional typhoon damage. Prior to European contact, extensive terracing was practiced on Babeldaob in upland areas. Paleoenvironmental evidence suggests terracing may have contributed to landcover change from forest to savanna and fernland, and accelerated erosion as much as 2500 years before present (Athens and Ward 2002). Additional recent disturbances have included mining of bauxite, military action during World War II (which denuded much of Peleliu and Angaur), and conversion of forest for agriculture. Forest was cleared during the recent construction of a new capitol on Babeldaob and a new road circumnavigating the island. Barren volcanic soils pose high risk of erosion with frequent, intense rainfall and are often a corridor for colonization by invasive species.

References:

Athens, J.S.; Ward, J.V. 2002. Holocene paleoenvironmental investigations on Ngerekebesang, Koror, south Babeldaob, and Peleliu islands. International Archaeological Research Institute, Inc., Honolulu, HI.

Western Regional Climate Center. 2004. Koror, Palau, period of record monthly climate summary, 1953-2004. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?pikoro. [September 12, 2004].

Desk Study?

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

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

1.1 Categories and definitions

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

1.2 National data

1.2.1 Data sources

References to sources of information	Variables	Years	Additional comments

1	Preliminary land cover assessment for the Republic of Palau, USDA Forest Service, Pacific Northwest Forest Inventory and Analysis. Contact: Joseph Donnegan, jdonnegan@fs.fed.us	Land cover	2002	A preliminary five class land cover map was derived from IKONOS satellite data (1m resolution). Classes included: forest, nonforest vegetation, barren land, urban, and inland water.
2	Cole, T. G., M. C. Falanruw, C. D. MacLean, C. D. Whitesell, and A. H. Ambacher. 1987. Vegetation Survey of the Republic of Palau. Resource Bulletin PSW-RB-22, Pacific Southwest Research Station, USDA Forest Service.	Land cover	1979	Land cover and vegetation maps were interpreted from 1976, 1:10,000 aerial photo imagery. Final data from report was dated 1979.
3	MacLean, C. D., T. G. Cole, C. D. Whitesell, and K. E. McDuffie. 1988. Timber Resources of Babelthuap, Republic of Palau. Resource Bulletin PSW-RB-23, U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Berkeley, CA.	Timberland area	1985	Used Cole et al. 1976 maps, updating with inventory field plots for timber volumes.
4	N/A	N/A	N/A	N/A

1.2.2 Classification and definitions

National class	Definition
Forest land	Land spanning more than 0.5 hectares and a tree canopy cover of more than 10 percent.
Unreserved forest land	Forest land available for wood removals.
Protected forest land	Forest land that is not available for wood removals.
Limestone forest	Forest occurring on limestone substrate, generally in southern Palau's Rock Islands.
Volcanic forest	Forest occurring on volcanic soils, generally in northern Palau, especially Babeldaob island.
Nonforest urban	Land used primarily for urban purposes.
Nonforest vegetation	<10% canopy cover of trees." /> Land characterized primarily by non-tree species or <10% canopy cover of trees.
Barren lands	Lands with exposed soil, rock, or sand, devoid of vegetation.
Unknown	Further work is needed to determine land cover.

Water	Inland water bodies generally include major rivers, lakes and water reservoirs.

1.2.3 Original data

Forest area

1979 **Land class**	**Area (ha)**
Forest:	
Upland forest	21,891
Swamp forest	1,680
Mangrove forest	4,708
Plantation forest	26
Rock Island forest	1,116
Limestone forest	1,232
Casuarina forest	451
Atoll forest	155
Palm forest	< 1
Total forest	31,259
Secondary vegetation	727
Agroforest:	
Agroforest	16
Agroforest (w/coconut)	279
Coconut plantation	814
Total agroforest	1,109

Nonforest:	
Marsh, fresh	475
Marsh, cultivated	134
Marsh, saline	25
Grassland	6,783
Strand	11
Cropland	203
Cropland/secondary veg.	28
Urban	397
Urban/cropland	176
Urban/agroforest	61
Urban/secondary veg.	3
Barren	180
Water	48
Total nonforest	8,524
Total area	41,619

2002 Land Cover Class	Area (sq. meters)	Area (ha)
Barren	538,160	54
Forest	391,282,736	39,128
Non-forest vegetation	50,378,592	5,038
Unknown	44,192	4
Urban	7,749,424	775

Inland water	1,413,318	141
Total Area	451,406,432	45,141

1.3 Analysis and processing of national data

1.3.1 Adjustment

Forest area

FAOSTAT total area = 46,000 ha

Calibration factor 1979 = (46,000/41,619) = 1.105264422

Calibration factor 2002 = (46,000/45,141) = 1.01903734103278

	Original data		Calibration to FAOSTAT	
	1979	2002	1979	2002
	Hectares			
All forest land	33,095	39,128	36,579	39,873
Other land	8,524	6,012	9,421	6,127
Water	0	0	0	0
Total	41,619	45,141	46,000	46,000

1.3.2 Estimation and forecasting

Forest area

	Original Data	Original Data	FAO Calibrated Data	FAO Calibrated Data	Change	# per year
	1979	2002	1979	2002	23	
All forest land	33,095	39,128	36,579	39,873	3,294	143.217
Other land	8,524	6,012	9,421	6,127	-3,294	-143.217
Water	0	0	0	0	0	0
Total	41,619	45,141	46,000	46,000		

1.3.3 Reclassification

Forest area

The small amounts of agroforest and secondary forest were included in the total forest area. The inland water in the original data was included in other land to match FAOSTAT data.

1.4 Data

Table 1a

Categories		Area (000 hectares)				
		1990	**2000**	**2005**	**2010**	**2015**
CFRQ	Forest	38.154	39.587	40.303	40.303	40.303
CFRQ	Other wooded land	0	0	0	0	0
CFRQ	Other land	7.846	6.413	5.697	5.697	5.697
CFRQ	... of which with tree cover	N/A	N/A	N/A	N/A	N/A
CFRQ	Inland water bodies	0	0	0	0	0
	TOTAL	46.00	46.00	46.00	46.00	46.00

Table 1b

Categories		Annual forest establishment / loss (000 hectares per year)				...of which of introduced species (000 hectares per year)			
		1990	**2000**	**2005**	**2010**	**1990**	**2000**	**2005**	**2010**

CFRQ	Forest expansion	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which afforestation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which natural expansion of forest	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	Deforestation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which human induced	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	Reforestation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... 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 3
Other wooded land	Tier 3	Tier 3
Forest expansion	N/A	N/A
Deforestation	N/A	N/A
Reforestation	N/A	N/A

Tier criteria

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

1.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trends

Forest	FRA 2000 reported forest area of 35,000 ha in 1990 and 2000. This figure was based on the MacLean et al. (1988) report that covered only the most productive forest land, and only on the island of Babeldaob. Agroforest and secondary vegetation was not included in that figure. The vegetation inventory from Cole et al. (1987) was used here to maintain consistency for the total area of reporting and to include all forested lands, including agroforest and secondary forest. The 2003 inventory did not try to separate gradations of secondary forest and reverting agroforest from forested lands.	Owing to important land use and cover changes in Palau, the data reported in 2005 simply was carried forward to 2010. The relocation of the capitol and the building of the circumnavigating road are expected to reduce forest cover and reverse the overall trend of forest expansion seen for the largest island Babeldaob. Remeasurement of forested field plots and new forest mapping are scheduled for 2013 and will help quantify the recent changes. The increase is likely because of continued forest recovery from World War II.
Other wooded land	No data is available on other wooded land. May occur in the other land category.	N/A
Other land	N/A	N/A
Other land with tree cover	N/A	N/A
Inland water bodies	N/A	N/A
Forest expansion	N/A	N/A
Deforestation	N/A	N/A
Reforestation	N/A	N/A

Other general comments to the table
The values in T1 are preliminary values based on rapid interpretation of satellite imagery. A second, more detailed landcover classification is in progress, utilizing supplemental satellite imagery and ground verification. For both the 1979 and the 2002 data, agroforest and secondary forest vegetation were grouped with forest (approximately 5% of total land cover in 1979). Agroforest and tree gardens are relatively small in area but are an important food, cultural, craft, and watershed resource for Palauans. Agroforest and secondary vegetation often cannot be precisely delineated using satellite imagery. Palau is working on making corrections to the total country area statistics with the United Nations Statistics Office as well as with FAOSTAT for total land area and inland water area. The official request for changes has not yet been submitted as of 3/31/2009, but is expected to be submitted within the next six months. For the purposes of this report, the statistics of FAOSTAT and the UN Statistics Office will be used. The current numbers that have been calculated and will likely go into the final request for changes are the following: Inland water area: 8.7 ha Marine lakes: 143.52 ha Total land area (not including mangroves, marine lakes or inland water area): 41405.38 ha Total mangrove area: 4608.36 ha.

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

2.1 Categories and definitions

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

2.2 National data

2.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Mueller-Dombois, D., and Fosberg, F. R. 1998. Vegetation of the Tropical Pacific Islands. Springer-Verlag, New York.	Descriptive characteristics of forests	N/A	Descriptive information based on field visits and extensive experience in the tropical Pacific.

2	Cole, T. G., M. C. Falanruw, C. D. MacLean, C. D. Whitesell, and A. H. Ambacher. 1987. Vegetation Survey of the Republic of Palau. Resource Bulletin PSW-RB-22, Pacific Southwest Research Station, USDA Forest Service.	Characteristics based on aerial survey, Mangrove.	1979	Based on photo interpretation of forest and vegetation types.
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

2.2.2 Classification and definitions

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

2.2.3 Original data

NOTE TO Classification and definitions

No national classification available for forest characteristics.

_____

No quantitative data are available for forest characteristics.

2.3 Analysis and processing of national data

2.3.1 Adjustment

2.3 Analysis and processing of national data

Not needed.

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
CFRQ	Primary forest	N/A	N/A	N/A	N/A	N/A
CFRQ	Other naturally regenerated forest	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which of introduced species	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which naturalized	N/A	N/A	N/A	N/A	N/A
CFRQ	Planted forest	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which of introduced species	N/A	N/A	N/A	N/A	N/A
TOTAL		.00	.00	.00	.00	.00

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)	47.08	N/A	N/A	N/A	N/A
... of which planted	N/A	N/A	N/A	N/A	N/A

Tiers

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

Tier Criteria

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

2.5 Comments

Category	Comments related to data definitions etc	Comments on reported trend
Primary forest	N/A	N/A
Other naturally regenerating forest	N/A	N/A
Planted forest	N/A	N/A
Mangroves	N/A	A draft map from 2005 data shows some decline in mangrove area but no quantitative estimates are currently available.

Other general comments to the table
Delineation of forest according to FRA 2010 categories has not been attempted. Cole et al. (1987; figure 3) classified 75% of the area in Palau as #Forest#, 1% as #Secondary Vegetation#, 3% as #Agroforest#, and 21% as #Nonforest#. No reference is made to human disturbance or alteration of ecological processes in their aerial-photo-based classification. From a descriptive standpoint, the more remote, southern Rock Islands are relatively undisturbed, except Peleliu and Angaur, which were razed in World War II. Interior forests on Babeldaob are also relatively undisturbed with characteristics leaning toward primary forest.

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	Donnegan, J. A., S. L. Butler, O. Kuegler, B. J. Stroud, B. A. Hiserote, and K. Rengulbai. 2007. Palau's Forest Resources, 2003. Resource Bulletin PNW-RB-252, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR.	Net volume on forest land Tree stem biomass	2003	Data were collected on 0.067 ha plots spaced at approximately 3 km intervals across the forested landscape.

2	Cole, T. G., M. C. Falanruw, C. D. MacLean, C. D. Whitesell, and A. H. Ambacher. 1987. Vegetation Survey of the Republic of Palau. Resource Bulletin PSW-RB-22, Pacific Southwest Research Station, USDA Forest Service.	Volume on most productive forest lands	1985	Inventory does not cover all lands, but accounts for approximately 89% of the forested lands.
3	Penman, J., M. Gytarsky, T. Hiraishi, T. Krug, D. Kruger, R. Pipatti, L. Buendia, K. Miwa, T. Ngara, K. Tanabe, and F. Wagner, editors. 2003. Good Practice Guidance for Land Use, Land-Use Change and Forestry. Intergovernmental Panel on Climate Change, National Greenhouse Gas Inventories Programme, Institute for Global Environmental Strategies (IGES), Hayama, Kanagawa, Japan,.	Carbon mass conversion factors, biomass expansion factors and ratio of aboveground to belowground biomass.	2003	N/A
4	N/A	N/A	N/A	N/A

3.2.2 Classification and definitions

National class	Definition
Net growing stock volume	Volume over bark of all living trees more than 12.5 cm in diameter at breast height (or above buttress and stilted roots if these are higher) minus rotten cull. Includes the stem from ground level to a top diameter of 1 cm. Does not include branches off of the main stem.
Timberland volume	Volume of wood on land that is capable of producing at least 1.4 cubic meters per hectare per year of industrial wood.
Live above-ground stem biomass	Biomass of live standing tree stems #2.5 cm at breast height from ground to 1 cm top. Does not include branch, leaf, or root biomass.
Dead above-ground stem biomass	Biomass of dead standing tree stems #2.5 cm at breast height from ground to 1 cm top. Does not include branch, leaf, or root biomass.
Total above-ground stem biomass	Biomass of live and dead standing tree stems #2.5 cm at breast height from ground to 1 cm top. Does not include branch, leaf, or root biomass.
Carbon in above-ground tree stem biomass	Carbon in living tree stems # 2.5 cm in diameter at breat height from ground to 1 cm top. Does not include branches, bark, seeds, and foliage.
Carbon in dead tree stem biomass	Carbon in standing dead tree stems # 2.5 cm in diameter at breat height from ground to 1 cm top. Does not include branches, bark, seeds, and foliage.

3.2.3 Original data

Growing stock

1983 timberland volume for timber species.				
Timberland types:	Upland forest	Mangrove forest	Swamp forest	All types
	Million cubic meters			
Total volume	2.511	0.206	0.231	2.948

2003 estimated net volume of all live trees # 12.5 cm d.b.h. on forest land.	
Foresttype	million cu.m
Limestone forest	2.136
Volcanic/ravine forest	5.377
Total	7.513

Biomass data

Ranked top 10 species biomass estimate for live tree stems # 2.5 cm d.b.h. from 2003 forest inventory. Wood density for individual species was used to estimate stem biomass only.			
Scientific Name	DEAD	LIVE	Grand Total
	metric tonnes		
Maranthes corymbosa	6691	493243	499934
Campnosperma brevipetiolata	2770	325143	327914

Pinanga insignis	1491	292753	294243
Horsfieldia palauensis	1189	213428	214617
Sonneratia alba	4356	193790	198146
Intsia bijuga	0	162259	162259
Rhizophora apiculata	598	160956	161554
Horsfieldia novo-guineensi	0	154552	154552
Eugenia reinwardtiana	483	130947	131430
Semecarpus venenosus	0	129915	129915
Remaining	122519	2586919	2709438
Grand Total	140096.7	4843904	4984001

Carbon data

Biomass data was multiplied by 0.5 to estimate stem carbon.

3.3 Analysis and processing of national data

3.3.1 Adjustment

Growing stock

FAOSTAT total area = 46,000 ha

Calibration factor 1979 = (46,000/41,619) = 1.105264422

Calibration factor 2002 = (46,000/45,141) = 1.01903734103278

2003 estimated net volume of all live trees # 12.5 cm d.b.h. on forest land, calibrated to FAO area.	
Foresttype	million cu.m
Limestone forest	2.177
Volcanic/ravine forest	5.479

Total	7.656

The table here below wasn't used as the two inventories are incomparable.

Not used as the two inventories are incomparable.

FRA 2015 category / Species name(data from 1983)			Growing stock in forest (million cubic meters)			
Rank	Scientific name	Common name	1990	2000	2005	2010
1 st	*Campnosperma brevipetiolata*	kelela charm, kiu	0.370			
2 nd	*Parinari corymbosa*		0.328			
3 rd	*Horsfieldia amklaal*	emeklachel, eumail	0.232			
4 th	*Pinanga insignis*	ebouch, demailei	0.215			
5 th	*Alphitonia carolinensis*	elebiob, elebiong	0.151			
6 th	*Cocos nucifera*	lius, coconut	0.142			
7 th	*Gmelina palawensis*	blancheos	0.137			
8 th	*Calophyllum inophyllum*	laurel	0.121			
9 th	*Rhus taitensis*	eues	0.099			
10 th	*Horsfieldia novo-guineensis*		0.093			
Remaining			1.060			
TOTAL			**2.948**			

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

Biomass stock

FAOSTAT total area = 46,000 ha

Calibration factor 2002 = (46,000/45,141) = 1.01903734103278

Biomass was calculated using total stem volume and wood density, a biomass expansion factor to estimate branches, leaves, and seeds (3.4; tropical broadleaf), and an aboveground to belowground ratio estimator (0.27; tropical/sub-tropical dry forest).

2003 estimated stem biomass, Palau, calibrated by FAO area.			
Scientific Name	**DEAD**	**LIVE**	**Grand Total**
	metric tonnes		
Grand Total	142764	4936119	5078883

Carbon data

Carbon mass was estimated as ½ biomass.

3.3.2 Estimation and forecasting

Growing stock

The calibrated 2003 estimate is used for reporting years 2005 and 2010. The growing stock per hectare is assumed to be constant. Reported figures for 1990 and 2000 is based on growing stock per hectare and forest area (Question1).

Biomass stock

The calibrated 2003 estimate is used for reporting years 2005 and 2010. The biomass stock per hectare is assumed to be constant. Reported figures for 1990 and 2000 is based on biomass stock per hectare and forest area (Question 1).

Carbon stock

See data and information on Biomass.

3.3.3 Reclassification

Growing stock

None.

Biomass stock

Dead above-ground stem biomass = Dead wood

Carbon stock

Carbon in dead tree stem biomass = Carbon in dead wood

3.4 Data

Table 3a

Category		Growing stock volume (million m^3 over bark)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
CFRQ	Total growing stock	7.248	7.52	7.656	7.656	7.656	0	0	0	0	0
CFRQ	... of which coniferous	0	0	0	0	0	0	0	0	0	0
CFRQ	... of which broadleaved	7.248	7.52	7.656	7.656	7.656	0	0	0	0	0

Table 3b

Category/Species name			Growing stock in forest (million cubic meters)			
Rank	Scientific name	Common name	1990	2000	2005	2010
1 st	Campnosperma brevipetiolata	kelela charm, kiu	N/A	N/A	0.646	N/A

2 nd	Maranthes corymbosa	bkau, apgau	N/A	N/A	0.624	N/A
3 rd	Horsfieldia palauensis	ersachel	N/A	N/A	0.388	N/A
4 th	Sonneratia alba	urur	N/A	N/A	0.325	N/A
5 th	Horsfieldia novo-guineensi	ersachel	N/A	N/A	0.303	N/A
6 th	Intsia bijuga	dort	N/A	N/A	0.253	N/A
7 th	Rhizophora apiculata	bngaol	N/A	N/A	0.241	N/A
8 th	Cocos nucifera	lius, coconut	N/A	N/A	0.238	N/A
9 th	Pinanga insignis	ebouch, demailei	N/A	N/A	0.235	N/A
10 th	Semecarpus venenosus	tonget, poison tree	N/A	N/A	0.193	N/A
Remaining			N/A	N/A	4.21	N/A
TOTAL			.00	.00	7.66	.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)	12.5	N/A
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	1	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)	AS	N/A

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

Table 3c

Category		Net annual increment (m^3 per hectare and year)				
		Forest				
		1990	2000	2005	2010	2015
CFRQ	Net annual increment	N/A	N/A	N/A	N/A	N/A

CFRQ	... of which coniferous	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which broadleaved	N/A	N/A	N/A	N/A	N/A

Table 3d

Category		Biomass (million metric tonnes oven-dry weight)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
CFRQ	Above ground biomass	15.89	16.48	16.78	16.78	16.78	0	0	0	0	0
CFRQ	Below ground biomass	4.29	4.45	4.53	4.53	4.53	0	0	0	0	0
CFRQ	Dead wood	0.14	0.14	0.14	0.14	0.14	0	0	0	0	0
TOTAL		20.32	21.07	21.45	21.45	21.45	.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
CFRQ	Carbon in above ground biomass	7.94	8.24	8.39	8.39	8.39	0	0	0	0	0
CFRQ	Carbon in below ground biomass	2.14	2.23	2.27	2.27	2.27	0	0	0	0	0
CFRQ	*Subtotal Living biomass*	10.09	10.47	10.66	10.66	10.66	0	0	0	0	0
CFRQ	Carbon in dead wood	0.07	0.07	0.07	0.07	0.07	0	0	0	0	0
CFRQ	Carbon in litter	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0
CFRQ	*Subtotal Dead wood and litter*	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0

CFRQ	Soil carbon	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0
TOTAL		10.15	10.54	10.73	10.73	10.73	.00	.00	.00	.00	.00

Tiers

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

| • Carbon in above ground biomass
• Carbon in below ground biomass
• Carbon in dead wood and litter
• Soil carbon | Tier 3: Country-specific national or sub-national biomass conversion expansion factors applied Tier 2: Application of country specific national or sub-national biomass conversion factors form from other country with similar climatic conditions and forest types Tier 1: International/regional default biomass expansion factors applied | **Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other |

3.5 Comments on growing stock biomass and carbon

Category	Comments related to data definitions etc	Comments on the reported trend
Total growing stock	N/A	Reported trend reflects the change in forest area.
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	Does not include branch or root biomass.	N/A
Carbon in above-ground biomass	N/A	N/A
Carbon in below-ground biomass	N/A	N/A
Carbon in dead wood	Carbon in standing dead tree stems only. Does not include branches, bark, seeds, and foliage.	N/A
Carbon in litter	N/A	N/A
Soil carbon	Soil depth for soil carbon estimates was not reported in FRA 2010.	N/A

Other general comments to the table
The reported trend is based on forest area change. The reported trend is based on forest area change.

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	Mueller-Dombois, D., and F. R. Fosberg. 1998. Vegetation of the Tropical Pacific Islands. Springer-Verlag, New York.	Designation of forests	N/A	Descriptive information based on field visits and extensive experience in the tropical Pacific.
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

4.2.2 Classification and definitions

National class	Definition
N/A	N/A

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

4.2.3 Original data

> `4.2.2 Classification and definitions
>
> No national classification is available for designated function.
>
> _____
>
>
> Data from Question 1 is used as input.

4.3 Analysis and processing of national data

4.3.1 Adjustment

> *Analysis and processing of national data*
>
> Same as Question 1. All forested lands are assumed to be multiple purpose.

4.3.2 Estimation and forecasting

4.3.3 Reclassification

4.4 Data
Table 4a

Categories			Forest area (000 hectares)				
			1990	**2000**	**2005**	**2010**	**2015**
CFRQ	Production forest		0	0	0	0	0
CFRQ	Multiple use forest		38.154	39.587	40.303	40.303	40.303

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	US Dollar

Category
Plant products / raw material
1 Food
2 Fodder
3 Raw material for medicine and aromatic products
4 Raw material for colorants and dyes
5 Raw material for utensils handicrafts construction
6 Ornamental plants
7 Exudates
8 Other plant products

Animal products / raw material
9 Living animals
10 Hides skins and trophies
11 Wild honey and beewax
12 Wild meat
13 Raw material for medicine
14 Raw material for colorants
15 Other edible animal products
16 Other non-edible animal products

Table 4c Pre-filled data from FAOSTAT

Year	FRA 2015 category (1000 m^3 u.b.)	
	Total wood removals	...of which woodfuel
1990	N/A	N/A
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	N/A	N/A

Tiers

Category	Tier for status	Tier for reported trend
Production forest	Tier 3	Tier 3
Multiple use forest	Tier 3	Tier 3

Tier Criteria

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

4.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Production forest	N/A	N/A
Multiple use forest	All forested lands are assumed to be multiple purpose. Palau has been moderately active in growing Mahogany species for craft and minimal timber production, but reliable statistics on the extent is currently lacking. The total area involved is a very small percentage of forest land. Although there are many protected areas, all but one of the protected areas allows for multiple use.	N/A
Total wood removals	N/A	N/A
Commercial value of NWFP	N/A	N/A

Other general comments to the table

N/A

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

5.1 Categories and definitions

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

5.2 National data

5.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	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

5.2.2 Classification and definitions

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

5.2.3 Original data

5.3 Analysis and processing of national data

5.3.1 Adjustment

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
	CFRQ	Protection of soil and water	N/A	N/A	N/A	N/A	N/A
	CFRQ	... of which production of clean water	N/A	N/A	N/A	N/A	N/A
	CFRQ	... of which coastal stabilization	N/A	N/A	N/A	N/A	N/A

CFRQ	... of which desertification control	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which avalanche control	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which erosion, flood protection or reducing flood risk	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which other (please specify in comments below the table)	N/A	N/A	N/A	N/A	N/A

Other
N/A

Table 5b

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

Tiers

Category	Tier for reported trend	Tier for status
Protection of soil and water	N/A	N/A
Ecosystem services, cultural or spiritual values	N/A	N/A

Tier criteria

Category	Tier for status	Tier for reported trend

Protection of soil and water	Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations or legislation relating to soil and water protection. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other
• Cultural or spiritual values • Public recreation • Spiritual or cultural services • Other	Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

5.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Protection of soil and water	N/A	N/A
Production of clean water	N/A	N/A
Coastal stabilization	N/A	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	N/A	N/A
Public recreation	N/A	N/A
Carbon storage or sequestration	N/A	N/A
Spiritual or cultural services	N/A	N/A
Other ecosystem services	N/A	N/A

Other general comments to the table

N/A

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

6.1 Categories and definitions

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

6.2 National data

6.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Mueller-Dombois, D., and F. R. Fosberg. 1998. Vegetation of the Tropical Pacific Islands. Springer-Verlag, New York.	Designation of forests	N/A	Descriptive information based on field visits and extensive experience in the tropical Pacific.
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
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

6.2.3 Original data

Classification and definitions

No national classification is available for designated function.

_____\

Data from Question1 is used as input.

6.3 Analysis and processing of national data

6.3.1 Adjustment

Same as Question 1. All forested lands are assumed to be multiple purpose.

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**
CFRQ	Conservation of biodiversity	N/A	N/A	N/A	N/A	N/A
CFRQ	Forest area within protected areas	N/A	N/A	N/A	N/A	N/A

Tiers

Category	Tier for status	Tier for reported trend
Conservation of biodiversity	N/A	N/A

Forest area within protected areas	N/A	N/A

Tier criteria

Category	Tier for status	Tier for reported trend
• Conservation of biodiversity • Forests within protected areas	Tier 3: Data obtained from national or state agencies responsible for conservation and protected area or legislation relating to area protection. Tier 2: Studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates Tier 1 Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

6.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Conservation of biodiversity	N/A	N/A
Forest area within protected areas	N/A	N/A

Other general comments to the table
N/A

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

7.1 Categories and definitions

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

7.2 National data

7.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Donnegan, J. A., K. Waddell, O. Kuegler, and B. A. Hiserote. 2008. Forest Inventory and Analysis: The Pacific Islands Database for American Samoa, Guam, Palau, the Northern Mariana's, Micronesia, and the Marshall Islands. Database version 2008-1. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR.	Damages on trees, presence/ absence	2003	Data are collected on 0.067 ha plots spaced at approximately 3 km intervals across the forested landscape.
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
Vegetation (e.g., competition or vines)	Damage caused by other vegetation.
N/A	N/A
N/A	N/A
N/A	N/A

7.2.3 Original data

	None	Insect	Disease	Fire	Weather	Veg,	Physical	Silvi/ cultural	Unknown	Grand Total
Scientific Name										
Aglaia palauensis	171298				12293	49170				232760
Allophylus ternatus	36878									36878
Allophylus timorensis	12293									12293
Alphitonia carolinensis	454824		24585			12293				491701
Annona reticulata	12293									12293
Areca catechu	73755									73755
Artocarpus mariannensis	48372									48372
Astronidium palauense	258143		12293						12293	282728
Avicennia mariana	12293		12293							24585
Badusa palauensis	253955		24186			12093			12093	302327
Barringtonia racemosa	329904		12093			36878				378875
Bruguiera gymnorrhiza	467116		12293							479409
Buchanania palawensis	98141									98141
Calophyllum inophyllum	292428		12093						24186	328707

<table>
<tr><td colspan="11" align="center">Palau, estimated number of trees by species by damaging agent, 2003</td></tr>
</table>

Calophyllum pelewense	196481		12293							208774
Calophyllum soulattri	49170									49170
Calophyllum spp.	36479					12093			24585	73157
Campnosperma brevipetiolata	712768		24585		36878	61463				835693
Canarium hirsutum	72559		12293			12293				97144
Casearia cauliflora	12293									12293
Casearia spp.	84652									84652
Casuarina equisetifolia	60465		12093							72559
Cerbera floribunda	24585									24585
Cerbera manghas	135018	12293				61463				208774
Cocos nucifera	305718					12293				318010
Commersonia bartramia	12293									12293
Cordia micronesica	12293									12293
Cyathea lunulata	540871					12293				553164
Diospyros ferrea	98340									98340
Diospyros spp.	73356						12293			85649
Dodonaea viscosa	72957									72957
Dracaena multiflora	97742		12093							109835
Drypetes nitida	36678									36678

Elaeocarpus graeffei						12293				12293
Elaeocarpus joga	452031		24585		24585	24386				525587
Erythrina fusca	12093									12093
Eugenia cuminii	206580					12093				218673
Eugenia javanica	181396		48372							229769
Eugenia reinwardtiana	568973		24186							593160
Eugenia spp.	36678									36678
Fagraea ksid	110633		24585			36878				172095
Ficus spp.	12293									12293
Ficus tinctoria	24186									24186
Flacourtia rukam	135018	12293				12093				159404
Garcinia matudai	49170				12293	12293				73755
Garcinia rumiyo	294024		12293			12293				318609
Garcinia spp.	342595									342595
Gironniera celtidifolia	36878									36878
Glochidion ramiflorum	133822		24386			36678				194886
Glochidion spp.						12293	12293			24585
Gmelina elliptica	181795		36678							218473
Gmelina palawensis	429840		73755			12093	36878		12293	564858

Gmelina spp.	36878		12293			24585				73755
Gulubia palauensis	108838									108838
Hernandia sonora	12093		12093			12093				36279
Hernandia spp.	36279		12093			12093				60465
Heterospa/the """'elata	73755					12293				86048
Hibiscus tiliaceus	49170					49170				98340
Horsfieldia amklaal	219869		12293				12293			244455
Horsfieldia novo-guineensi	221266		12293							233558
Horsfieldia palauensis	843398		60864	12293	12293	61263				990111
Horsfieldia spp.			12293							12293
Inocarpus fagifer	12293									12293
Intsia bijuga	181396		48372							229769
Lumnitzera littorea	12293									12293
Macaranga carolinensis	122327		12293			36878				171497
Manilkara udoido	233558				12293	24585		12293		282728
Manilkara zapota	49170					12293	12293			73755
Maranthes corymbosa	552765		73755		12293	24585				663398
Morinda citrifolia			12293			12293				24585
Morinda latibracteata	24585		12293			24585				61463

Morinda pedunculata	12293								12293
Morinda spp.	12293					12293		12293	36878
Nephelium lappaceum					12293				12293
Osmoxylon oliveri	24585								24585
Osmoxylon spp.	24585				36878				61463
Pandanus aimiriikensis	61463								61463
Pandanus dubius	145117		48372					12093	205582
Pandanus kanehirae	61463								61463
Pandanus spp.	36878								36878
Pandanus tectorius	86048		12293						98340
Pandanus utiyamai	12293								12293
Pangium edule	12293				12293				24585
Parinari laurina (Atuna)	514491		12293		12293	24585			563662
Parinari spp.	24585								24585
Pinanga insignis	2065146				122925				2188071
Pithecel- lobium dulce	12093								12093
Pouteria calcarea	36878								36878
Pouteria obovata	352495		24585		24386				401465
Pouteria spp.	12293								12293

Premna obtusifolia	36878					49170				86048
Pterocarpus indicus	24585									24585
Ptychosperma palauensis	86048									86048
Rhizophora apiculata	1339813		24386		12093				12093	1388385
Rhizophora mucronata	376082									376082
Rhus taitensis	356483		12293		12293	12293			36878	430239
Rinorea carolinensis	12093									12093
Semecarpus venenosus	526584		12293			24585			12293	575755
Sonneratia alba	172095									172095
Stemonurus ammui	61463									61463
Swietenia macrophylla	49170									49170
Swietenia mahogoni	36878					36878				73755
Symplocos racemosa	36878			12293			12293			61463
Terminalia catappa	12293					36878				49170
Theobroma cacao	24585		24585		12293					61463
Timonius timon	84652					24186				108838
Tournefortia argentea	36479		12293							48771
Trichospermum ledermannii	98340									98340
Unknown	12293									12293

Unknown 0	134420							12293		146713
Unknown 1	24585		12093						12293	48971
Unknown 10	12293									12293
Unknown 11	12293									12293
Unknown 3	49170									49170
Unknown 30	12093									12093
Unknown 5	85649									85649
Unknown, other	73755		12293							86048
Vitex coffassus	61463					36878			12293	110633
Xylocarpus granatum	147510		36878							184388
Grand Total	**18658557**	**24585**	**989911**	**24585**	**171896**	**1226661**	**110633**	**24585**	**195683**	**21427096**

7.3 Analysis and processing of national data

7.3.1 Adjustment

National data is recorded as presence/absence on individual trees. Presence/absence point count cannot be expanded to area estimates.

7.3.2 Estimation and forecasting

7.3.3 Reclassification

Vegetation (e.g., competition or vines) = Disturbance by other biotic agents

7.4 Data

Table 7

Scientific name of woody invasive species	Forest area affected (000 ha)	
	2005	**2010**
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
Total	N/A	N/A

Tiers

Category	Tier for status	Tier for reported trend
Invasive species	N/A	N/A

Tier Criteria

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

7.5 Comments

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

Other general comments to the table
N/A

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	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

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	#
CFRQ	Total land area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which forest area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Category		2008		2009		2010		2011		2012	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
CFRQ	Total land area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which forest area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 8b

Outbreak category	Description/name	Year(s) of latest outbreak	Area damaged (000 hectares)
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
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
• Insects • Diseases • Severe weather events	N/A	N/A

Tier criteria

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

8.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend

Burned area	N/A	N/A
Insects	N/A	N/A
Diseases	N/A	N/A
Severe weather events	N/A	N/A

Other general comments to the table
N/A

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

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

Table 9

Category	Area of forest with reduced canopy cover (000 ha)
Reduction in canopy cover	N/A

Tiers

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

Tier criteria

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

Comments

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

Other general comments

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

10.1 Categories and definitions

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

10.2 National data

10.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	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

10.2.2 Classification and definitions

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

10.2.3 Original data

10.3 Data

Table 10

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

10.4 Comments

Variable / category	Comments related to data definitions etc
Policies supporting sustainable forest management	N/A
Legislation and regulations supporting sustainable forest management	N/A

Other general comments

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

11.1 Categories and definitions

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

11.2 National data

11.2.1 Data sources

	References to sources of information	Years	Additional comments
1	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

Is there a national platform that promotes or allows for stakeholder participation in forest policy development?	

11.3 Comments

Category	Comments related to data definitions etc
National stakeholder platform	N/A

Other general comments

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

12.1 Categories and definitions

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

12.2 National data

12.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	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

12.2.2 Classification and definitions

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

12.2.3 Original data

12.3 Analysis and processing of national data

12.3.1 Adjustment

12.3.2 Estimation and forecasting

12.3.3 Reclassification

12.4 Data

Table 12

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

Tiers

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

Tier Criteria

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

12.5 Comments

Category	Comments related to data definitions etc
Forest area intended to be in permanent forest land use	N/A
Permanent forest estate	N/A

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	100	2003		yes	yes			yes	
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	yes
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 *(sub-category)*	Forest management plan mainly focused on production
...of which for conservation *(sub-category)*	Forest management plan mainly focused on conservation
Monitoring of forest management plans	Government monitoring of forest management plan implementation conducted through field visits or audits of forest management plan performance

14.2 National data

14.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	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

14.3 Data

Table 14a

Forest plan type	Forest area 2010 (000 ha)
Forest area with management plan	N/A
... of which for production	N/A
... of which for conservation	N/A

Table 14b

Indicate which (if any) of the following are required in forest management plans in your country	
1 Soil and water management	

2 High conservation value forest delineation	
3 Social considerations community involvement	

Table 14c

Percent of area under forest management plan that is monitored annually	**N/A**

Tiers

Category	**Tier for status**
Forest area with management plan	N/A
Percent of area under forest management plan that is monitored annually	N/A

Tier criteria

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

14.4 Comments

Category	**Comments**
Forest area with management plan	N/A
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	
3. Review of operations	

Tiers

Category	Tier for status
Type of stakeholder inputs	N/A

Tier criteria

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

15.2 Comments

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

Other general comments

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

16.1 Categories and definitions

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

16.2 Data

Table 16a

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

Table 16b

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

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

Tier criteria

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

Tiers

Category	Tier for status
International forest management certification	N/A
Domestic forest management certification	N/A

16.3 Comments

Category	Comments related to data definitions etc
Certified forest area using an international forest management certification scheme	N/A
Domestic forest management certification	N/A

Other general comments

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

17.1 Categories and definitions

Category	Definition
Forest revenue	All government revenue collected from the domestic production and trade of forest products and services. For this purpose revenue include: • Goods : roundwood; sawnwood; biomass; woodbased panels; pulp and paper and non-wood forest products. • Services : including concession fees and royalties, stumpage payments, public timber sales revenue taxes and charges based on forest area or yield, taxes on domestic trade and export of forest products, special levies on forestry activities and payments into forest related funds, other miscellaneous inspection, licence and administrative fees levied by forest administrations, permit and licence fees for recreation and other forest related activities.
Public expenditure on forestry	All government expenditure on forest related activities.

17.2 National data

17.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	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

17.3 Data
Table 17

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

	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	N/A
Public expenditure on forestry	N/A
Other general comments	N/A

Other general comments

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

18.1 Categories and definitions

Category	Definition
Public ownership	Forest owned by the State or administrative units of the public administration or by institutions or corporations owned by the public administration.
...of which owned by the state at national scale *(sub-category)*	Forest owned by the State at the national scale or administrative units of the public administration or by institutions or corporations owned by the public administration.
...of which owned by the state at the sub-national government scale *(sub-category)*	Forest owned by the State at the sub-national government scale or administrative units of the public administration or by institutions or corporations owned by the public administration.
Private ownership	Forest owned by individuals, families, communities, private cooperatives corporations and other business entities, private, religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
...of which individuals *(sub-category)*	Forest owned by individuals and families.
...of which private business entities and institutions *(sub-category)*	Forest owned by private corporations cooperatives companies and other business entities as well as private nonprofit organizations such as NGOs nature conservation associations, and private religious and educational institutions etc.
...of which local tribal and indigenous communities *(sub-category)*	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area or forest owned by communities of indigenous or tribal people The community members are coowners that share exclusive rights and duties and benefits contribute to the community development.
Unknown ownership	Forest area where ownership is unknown includes areas where ownership is unclear or disputed.

Categories related to management rights of public forests	Definition
Public Administration	The Public Administration (or institutions or corporations owned by the Public Administration) retains management rights and responsibilities within the limits specified by the legislation.
Individuals households	Forest management rights and responsibilities are transferred from the Public Administration to individuals or households through long-term leases or management agreements.
Private companies	Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities private cooperatives, private nonprofit institutions and associations, etc., through long-term leases or management agreements.
Communities	Forest management rights and responsibilities are transferred from the Public Administration to local communities (including indigenous and tribal communities) through long-term leases or management agreements.
Other form of management rights	Forests for which the transfer of management rights does not belong to any of the categories mentioned above.

18.2 National data

18.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Al Caraig, National Surveyor, BLS Ramarui Daniel, Cartographer I, BLS	N/A	2008	The numbers in the original data table are estimated numbers from the Bureau of Lands and Surveys (BLS), Ministry of Resources and Development taken in 2008. The BLS does not differentiate between ownership of land covered in forest or other land cover types. Therefore, these figures are of land area and not only of forest areas. Available data does not allow reporting for this reporting table.
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

Classification and definitions

See comments.

_____

Table from the Bureau of Lands and Surveys (BLS). Note that this table does not include statistics for public and private lands in Sonsorol and Hatohobei States. Also it does not include the rock islands. The vast majority

of the rock islands are public lands however there are a few that are privately owned. The total estimated area of the rock islands is: 4,872.08 ha.

STATES (Unit in Hectares)	PUBLIC LANDS	PRIVATE LANDS	TOTAL
AIRAI	4936.02	1569.02	6505.04
AIMELIIK	4282.05	1394.72	5676.76
NGATPANG	2120.17	928.00	3048.17
NGEREMLENGUI	4713.54	303.81	5017.35
NGARDMAU	4339.55	957.01	5296.55
NGARRARD	2224.81	863.77	3088.58
NGERCHELONG	163.17	609.43	772.60
NGIWAL	1867.91	1853.15	3721.05
MELEKEOK	1554.26	818.44	2372.70
NGCHESAR	3407.92	807.30	4215.23
KOROR MAIN. IS.	309.25	487.18	796.43
PELELIU	296.56	941.21	1237.76
ANGAUR	51.02	803.68	854.70
KAYANGEL	0.00	170.94	170.94

18.3 Analysis and processing of national data

18.3.1 Adjustment

18.3.2 Estimation and forecasting

Estimations are not made for 1990, 2000 and 2005 as this information is unknown.

18.3.3 Reclassification

18.4 Data

Table 18a

Categories		Forest area (1000 hectares)			
		1990	**2000**	**2005**	**2010**
CFRQ	Public ownership	N/A	N/A	N/A	N/A
CFRQ	... of which owned by the state at national scale	N/A	N/A	N/A	N/A
CFRQ	... of which owned by the state at the sub-national government scale	N/A	N/A	N/A	N/A
CFRQ	Private ownership	N/A	N/A	N/A	N/A
CFRQ	... of which owned by individuals	N/A	N/A	N/A	N/A
CFRQ	... of which owned by private business entities and institutions	N/A	N/A	N/A	N/A
CFRQ	... of which owned by local, tribal and indigenous communities	N/A	N/A	N/A	N/A
CFRQ	Unknown ownership	N/A	N/A	N/A	N/A
TOTAL		.00	.00	.00	.00

Tiers

Category	Tier for status	Tier for reported trend
Public ownership	N/A	N/A
Private ownership	N/A	N/A
Unknown ownership	N/A	N/A

Tier criteria

Category	Tier for status	Tier for reported trend

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

Table 18b - Holder of management rights of public forests

Categories	Forest area (000 hectares)			
	1990	**2000**	**2005**	**2010**
Public Administration	N/A	N/A	N/A	N/A
Individuals	N/A	N/A	N/A	N/A
Private companies	N/A	N/A	N/A	N/A
Communities	N/A	N/A	N/A	N/A
Other	N/A	N/A	N/A	N/A
TOTAL	.00	.00	.00	.00

Category	Tier for reported trend	Tier for status
Public Administration	N/A	N/A
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	N/A	N/A
Private ownership	N/A	Each year, more and more land is moving from clan ownership to individual ownership. Data is not available to determine how much land and at what rate this conversion is happening.
Unknown ownership	N/A	N/A

Management rights	N/A	N/A

Other general comments to the table
In the early 1990s it was estimated that Palau#s privately owned lands were 80% owned by clans and/or families and not by individuals. Traditionally, individuals do not #own# land. In fact, #ownership# of land is not a Palauan concept. Land in traditional times was not bought or sold. Land was always owned by clans and managed by the High Chief to be used by this generation and handed down to the generations to come. Since the Japanese and subsequent United Nations Trust Territory Administration by the United States, Palau has been going through a process to survey and issue land titles for all of the lands in Palau. Traditionally there are two kinds of #public lands# in Palau # (1) chutem buai - are those lands that are owned by individuals but have been given to the public to use for the benefit of the larger community. Traditional meeting houses or bai and docks typically are situated on these types of public land called chutem buai. (2) chutem beluu are lands that do not belong to any one clan or family but belong to the village as a whole and were traditionally managed by the High Chief of a village. Most of these lands today are what are considered to be #public land# and are administered and managed by the PPLA and State PLAs. These lands typically have high forest cover. In Palau, public lands are those lands that were owned or maintained as government or public lands under the Japanese Administration and/or the Trust Territory Administration. Today the Palau Public Lands Authority (PPLA) has been created to receive and hold title for these lands and to administer, manage, and regulate them in trust for the people of the Republic of Palau. Technically the government does not #own# these public lands. There is a small amount of government owned lands which has been purchased by the government and these include the airport, sewer treatment plant, power plant, and several public schools. These areas however have minimal forest cover.

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	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

19.2.2 Classification and definitions

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

19.2.3 Original data

19.3 Data

Table 19

Category	Employment (000 years FTE)

		1990	2000	2005	2010
CFRQ	Employment in forestry	N/A	N/A	N/A	N/A
CFRQ	... of which female	N/A	N/A	N/A	N/A

19.4 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Employment in forestry	N/A	N/A

Other general comments to the table
N/A

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

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

20.1 Categories and definitions

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

20.2 Data

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

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

20.3 Comments

Category	Comments
Gross value added from forestry (at basic prices)	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	N/A

Forests earmarked for conversion	N/A

Other general comments