

# GLOBAL FOREST RESOURCES ASSESSMENT 2015

## COUNTRY REPORT

# **United States of America**

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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### Introductory Text

Place an introductory text on the content of this report

The national forest inventory of the United States covers the 50 States and all of the nation's associated islands in the Caribbean and Pacific regions.

The main landmass of the United States, containing 48 of the 50 States, is situated in mid-North America (fig. 1), has a central plain with hills and low mountains to the east and rugged mountains and wide valleys to the

west. The State of Alaska, on Canada's western border, is dominated by Pacific and Arctic mountains, a central plateau, and the Arctic slope.

*Figure 1. – Geographic location of the United State, territories and freely associated islands*

The U.S. Caribbean Islands are composed of Puerto Rico and the U.S. Virgin Islands. In general, the Caribbean Islands are a 4,000-km arc of islands, tectonically uplifted from the sea floor separating the Atlantic Ocean from the Caribbean Sea. Low-lying islands often are capped with limestone from ancient coral reefs, and other islands exhibit volcanic activity that has pushed up steep peaks that divert the moisture-laden north-easterly trade winds upward, greatly increasing rainfall.

The U.S. Pacific Islands are composed of American Samoa, Guam, the State of Hawaii, the Republic of the Marshall Islands, the Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands, and the Republic of Palau. These islands span a vast and diverse area, beginning with Hawaii, 4,000 km west of the U.S. mainland, and extending to Southeast Asia. Land masses vary widely and include small coral atolls, small

sand islands, moderate-sized islands of mixed limestone and volcanic substrates, and large, high-elevation, volcanic islands.

This report presents data only for the 50 States. Separate reports will be provided by the United States for Puerto Rico, the U.S. Virgin Islands, American Samoa, Guam, the Republic of the Marshall Islands, the Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands, and the Republic of Palau.

Desk Study?

<b>Check "yes" if this survey is a Desk Study, "no" otherwise</b>	
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	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Oswald, Sonja N.; Smith, W. Brad; Miles, Patrick D.; Pugh, Scott, A. 2013. Forest Resources of the United States, 2012. (in Prep)	Forest landOther land	2012	Forest data compiled from inventory data to be used as basis for 2012 U.S. national assessment. Represents FRA data for 2015.
2	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Smith, W. Brad; Miles, Patrick L.; Perry, C; Pugh, S. 2008. Forest Resources of the United States, 2007. Gen. Tech. Rep. WO-xxx. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office. (in preparation)	Forest landOther land	2007	Forest data compiled from inventory data to be used as basis for 2007 U.S. national assessment. Represents FRA data for 2010..
3	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Smith, W. Brad; Miles, Patrick D.; Vissage, John S.; Pugh, Scott A. 2003. Forest Resources of the United States, 2002. Gen. Tech. Rep. NC-241. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 137 p.	Forest landOther land	2002	Forest data compiled from inventory data to be used as basis for 2002 U.S. national assessment. Represents FRA data for 2005.
4	Smith, W. Brad; Vissage, John S.; Darr, David R. 2001; Sheffield, Raymond M. Forest Resources of the United States, 199. Gen. Tech. Rep. NC-219. St. Paul, MN:USDA, Forest Service, North Central Research Station. 190 p.	Forest landOther land	1997	Forest data compiled from inventory data to be used as basis for 1997 U.S. national assessment. Represents FRA data for 2000.
5	Waddell, Karen L., Oswald, Daniel D., and Powell, Douglas S. 1989. Forest statistics of the United States, 1987. Resour. Bull. PNW-RB-168. Portland, OR: USDA, Pacific Northwest Research Station. 106 p.	Forest landOther land	1987	Forest data compiled from inventory data to be used as basis for 1987 U.S. national assessment. Represents FRA data for 1990.
6	U.S. Department of Agriculture, Forest Service. 2012. Future of America's Forest and Rangelands: Forest Service 2010 Resources Planning Act Assessment. Gen. Tech. Rep. WO-87. Washington, DC. 198 p.	Urban area Urban forest	2010	Data for delineating urban areas in the U.S. reported by Dave Nowak's urban forestry project.



7	Tree Planters Notes	Annual tree planting	1990-2006	<a href="http://www.rngr.net/Publications/tpn/">http://www.rngr.net/Publications/tpn/</a>
8	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a>	Planted forest	1987-2012	N/A

### 1.2.2 Classification and definitions

National class	Definition
Forest land	Land that has at least 10% cover, or equivalent stocking, by forest trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated. Forest land includes transition zones, such as areas between heavily forested and nonforested lands that have at least 10% cover with forest trees and forest areas adjacent to urban and built-up lands. Also included are pinyon-juniper and chaparral areas in the West and afforested areas. The minimum area for classification of forest land is 0.4 hectare. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 37 meters to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if less than 37 meters wide.
Other land	Land that has never supported forests and lands formerly forested where use of forest management is precluded by development for other uses. (Note: This includes area used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 0.4- to 1.8-hectare areas of water or streams, sloughs, estuaries, and canals between 37 and 61 meters wide classified by the Bureau of the Census as land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 37 meters wide, and clearings, etc., more than 0.4 hectare, to qualify as nonforest land.)
Inland water(Census water)	Streams, sloughs, estuaries, and canals more than 60 meters wide; and lakes, reservoirs, and ponds more than 1.8 hectares in size.
Other wooded land	Partially available. Currently represents lands covered with woody species that can not achieve an average height of 5 meters at maturity. Historic data have been estimated.
Other land with tree cover (Subordinated to “Other land”)	10% and generally greater than 20m wide. " /> Currently included in “Other land”. Other land with trees has not been previously reported and includes urban land with trees, farm/pastureland with trees, wooded strips, windbreaks, shelterbelts, and other unclassified land with tree cover > 10% and generally greater than 20m wide.
New planting	Estimated area of tree planting on previously nonforest land
Replanting	Estimated area of tree planting on previously planted land after harvest
Conversion	Estimated area of tree planting on previously natural forest land

Natural extension of forest	Estimated area of natural regeneration of trees on previously nonforest land
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### 1.2.3 Original data

This report refers to RPA as a data source. RPA stands for the Resources Planning Act of 1974 (U.S. Public Law 93-378) which mandates periodic resource assessments which are “*to make and keep current a comprehensive survey and analysis of the present and prospective conditions of and requirements for the renewable resources of the forest and range lands of the United States, its territories and possessions, and of the supplies of such renewable resources, including a determination of the present and potential productivity of the land, and of such other facts as may be necessary and useful in the determination of ways and means needed to balance the demand for and supply of these renewable resources, benefits and uses in meeting the needs of the people of the United States.*”

Original Data:

<http://www.fia.fs.fed.us/>

#### **Metric conversions**

1 acre = 0.404686 hectares

1 cubic foot = 0.028317 cubic meters

1 cubic meter = 35.315 cubic feet

1 inch = 2.54 centimeters or 0.0254 meters

1 foot = 30.48 centimeters or 0.3048 meters

1 ton = 0.90718 metric tonnes

## 1.3 Analysis and processing of national data

### 1.3.1 Adjustment

#### **Forest area**

Total land and inland water data are aligned with FAOSTAT 2010 data.

U.S. forest inventory data for 1987, 1997, 2002, 2007 and 2012 are reported for FRA 1990, 2000, 2005, 2010 and 2015 respectively.

#### **Forest expansion, reforestation**

Not needed for data on afforestation and reforestation.

## 1.3.2 Estimation and forecasting

**Forest area**

No forecasting is used in this report for forest area.

**Forest expansion, reforestation**

Not needed for afforestation and reforestation.

## 1.3.3 Reclassification

**Forest area**

See comments.

**Forest expansion, reforestation**

Moreover, see “original data”, for afforestation and reforestation.

**1.4 Data**

Table 1a













Categories		Area (000 hectares)				
		1990	2000	2005	2010	2015
	Forest	302450	303536	304757	308720	310095
	Other wooded land	15050	15577	15452	15962	21279
	Other land	598692	597079	595983	591510	584818
	... of which with tree cover	25019	25660	26318	26993	27668
	Inland water bodies	47011	47011	47011	47011	47011
	TOTAL	963203.00	963203.00	963203.00	963203.00	963203.00

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	109	244	793	275	4	2	2	2
	... of which afforestation	60	122	198	28	N/A	N/A	N/A	N/A
	... of which natural expansion of forest	49	122	594	247	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	3280	3640	4000	2900	N/A	N/A	N/A	N/A
	... of which artificial	492	546	600	435	4	2	2	2

## Tiers

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

## Tier criteria

Category	Tier for status	Tier for reported trend
<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>	<p><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</p> <p><b>Tier 2</b> : Data sources: Full cover mapping / remote sensing or old NFI (more than 10 years ago)</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>

## 1.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trends
Forest	Historic data have been revised to include areas of change based on “in situ” vs. “in range” definition of trees to better reflect FRA definition.	Trend data are reported from a reconciled historic data base corrected for definitional changes.
Other wooded land	The data for this report includes an estimate of other wooded land that is more consistent with FRA definition of a tree. NOTE: These lands, however, are not the same lands reported in FRAs prior to 2005.	Trends have been back-casted based on subject forest types and relationships to current estimates. These data are estimates only and are not necessarily complete.

Other land	N/A	This is reported as the balance of lands not in other categories
Other land with tree cover	Includes urban land with trees, farm land with trees, wooded strips, windbreaks, shelterbelts, and other unclassified land with trees.	These data are estimated from regional databases and are not necessarily complete.
Inland water bodies	N/A	FAOSTAT data used
Forest expansion	Based total planted area data from annual Tree Planters Notes adjusted for estimated rates of new planting, replanting and conversion. Expansion generated by subtraction of year 1 from year 2. Natural expansion was calculated by subtracting planted area from total expansion.	Planting of non-native species assumed to be predominantly afforestation. Major species are Norway spruce ( <i>Picea abies</i> ), Scotch pine ( <i>Pinus sylvestris</i> ) and some Paulonia.
Deforestation	While nearly three-fourths of all reforestations in the U.S. is by natural means, this data includes only planting of previously planted or converted natural forest areas net of lost planted areas.	As designed, this table ignores the dominant form of regeneration in the U.S. which is natural (about 2/3 of all forest regeneration).
Reforestation	This is net natural extension forest [may include deforestation offset by expansion] This is particularly prominent in the interior regions of the U.S. where lower productivity forests are expanding mainly due to decades of fire suppression.	N/A

#### Other general comments to the table

It should be noted that this table reflects only regeneration by planting and natural extension of forest on previously nonforest land. Of the annual 4.5 million hectares of forest that have some form of harvesting in the U.S., nearly two-thirds naturally regenerate with native species.

## 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	FIADB national database <a href="http://fia.fs.fed.usForestResourcesoftheUnitedStates,2012">http://fia.fs.fed.usForestResourcesoftheUnitedStates, 2012</a> . See reference in Table 1.	Forest area	2012	Forest data compiled from inventory data to be used as basis for 2012 U.S. national assessment. Represents FRA data for 2015.

2	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2007. See reference in Table 1.	Forest area	2007	Forest data compiled from most recent inventory data to be used as basis for 2007 U.S. national assessment. Represents FRA data for 2010.
3	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2002. See reference in Table 1.	Forest area	2002	Forest data compiled from most recent inventory data to be used as basis for 2002 U.S. national assessment. Represents FRA data for 2005.
4	Forest Resources of the United States, 1997. See reference in Table 1.	Forest area	1997	Forest data from the referenced U.S. report represents FRA data for 2000. Adjustments made for other wooded land.
5	Forest Statistics of the United States, 1987. See reference in Table 1.	Forest area	1987	Forest data from the referenced U.S. report represents FRA data for 1990.
6	Conservation Biology Institute, Protected Areas Database PAD <a href="http://www.consbio.org">http://www.consbio.org</a>	Protected areas	2005	This polygon data set was overlaid on the U.S. forest inventory plot grid to classify plot and area data for IUCN categories 1-5 to verify national inventory data.
7	National Forest Systems Roadless Area Database	NFS Roadless areas	2002	This polygon data set was overlaid on the U.S. forest inventory plot grid to classify plot and area data for National Forest Systems roadless areas. Considered IUCN class 6.
8	FAO Forestry Paper 153, The world's mangroves 1980-2005 ( <a href="http://www.fao.org/forestry/49663/en/">http://www.fao.org/forestry/49663/en/</a> )	Mangrove Area	1990	N/A
9	Giri, C., Ochieng, et al. 2011. Status and distribution of mangrove forests of the world using earth observation satellite data. <i>Global Ecology and Biogeography</i> 20: 154-159	Mangrove Area	2000, 2005	2000 and 2005 numbers reflect new updates since FRA 2010. Analysis of imagery applicable to 2000, carried over to 2005.

10	Dennis Jacobs 2013, remote sensing analysis of 2008-2010 thematic mapper images of continental United States, USDA Forest Service SRS FIA office	Mangrove Area	2010, 2015	2010 number reflects new updates since FRA 2010 Data Source for 2010 FRA came from FAO Forestry Paper 153, The world's mangroves 1980-2005 ( <a href="http://www.fao.org/forestry/49663/en/">http://www.fao.org/forestry/49663/en/</a> ) which has been determined by landsat imagery to be an underestimate of the actual area.
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### 2.2.2 Classification and definitions

National class	Definition
Planted forest	Planted forests are areas deemed to be forest comprised of at least 40 percent of its composition in planted trees of either native or introduced species. Planted forests may be divided into two groups: Plantations- Forest stands consisting almost exclusively of planted trees, of native or introduced species, and managed to generally maintain this composition at maturity. Management practices may include extensive site preparation prior to planting and suppression of competing vegetation. Augmented forest- Forest stands consisting of at least 40 percent planted trees, of native or introduced species, but not intensively managed, to assure dominance of these trees in the stand at maturity. Management practices, however, may include suppression of competing vegetation at the time of planting. Frequently found in the western U.S. where trees are planted to insure that stocking levels are adequate to fully occupy the stand in the future with desired species.
N/A	N/A
N/A	N/A
N/A	N/A

### 2.2.3 Original data

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## 2.3 Analysis and processing of national data

### 2.3.1 Adjustment

The U.S. national inventory lists 30 of 39 non-native tree species found in forests within the continental 48 States. It is difficult to estimate the influence of these species on an area basis as most non-native trees are escaped or naturalizing individuals and relative to the total population of trees in the US are a very small number.
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The area reported reflects the proportion of the non-native trees relative to the total number of trees on a frequency of occurrence basis of 0.68%.

### 2.3.2 Estimation and forecasting

No forecasting done for this table.

### 2.3.3 Reclassification

#### Forest area

See comments.

#### Forest expansion, reforestation

Moreover, see “original data”, for afforestation and reforestation.

## 2.4 Data

Table 2a







Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Primary forest	70012	72305	75709	75294	75300
	Other naturally regenerated forest	214500	208671	204623	207862	208431
	... of which of introduced species	605	614	616	623	627
	... of which naturalized	N/A	N/A	N/A	N/A	N/A
	Planted forest	17938	22560	24425	25564	26364
	... of which of introduced species	309	388	420	440	359
TOTAL		302450.00	303536.00	304757.00	308720.00	310095.00

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)	240	236	236	243	243
... of which planted	N/A	N/A	N/A	N/A	N/A

## Tiers

Category	Tier for status	Tier for reported trend
Primary forest	Tier 3	Tier 3
Other naturally regenerated forest	Tier 3	Tier 3
Planted forest	Tier 3	Tier 3
Mangroves	Tier 3	Tier 2

## 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	Includes all Conservation of Biological diversity forest.	Increase due to increase in IUCN designated forest.

Other naturally regenerating forest	Balance of forest not in primary or planted categories. The U.S. has about 39 common introduced and domesticated tree species in forests within the continental 48 States. It would be difficult to estimate this variable on an area basis as trees are generally escaped or naturalizing individuals with the exception of a few species such as Scotch pine, Norway spruce and Paulonia that occur in plantation settings. Relative to the total population of trees in the US, these species are a very small percentage.	According to data, major non-native, non-planted species constitute 0.2% of the total forest trees. The area reported reflects the proportion of the non-native trees relative to the total number of trees on an area basis of 0.2% of total forest area.
Planted forest	Based on national inventory plot data. Trends used to support some historic data.	N/A
Mangroves	N/A	Data reflect updates from FRA 2010

**Other general comments to the table**

While many non-native species have been naturalized over time, the national inventory does not have accurate numbers on the trends.

### 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	FIADB national database <a href="http://fia.fs.fed.usForestResourcesoftheUnitedStates,2012">http://fia.fs.fed.usForestResourcesoftheUnitedStates, 2012</a> . (See reference in Table 1.	All live volume (value used for FRA growing stock)	2012	Forest data compiled from most recent inventory data to be used as basis for 2012 U.S. national assessment. Represents FRA data for 2015.
2	FIADB national database <a href="http://fia.fs.fed.usForestResourcesoftheUnitedStates,2007">http://fia.fs.fed.usForestResourcesoftheUnitedStates, 2007</a> . See reference in Table 1.	As above	2007	Forest data compiled from most recent inventory data to be used as basis for 2007 U.S. national assessment. Represents FRA data for 2010.

3	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2002. See reference in Table 1.	As above	2002	Forest data compiled from most recent inventory data to be used as basis for 2002 U.S. national assessment. Represents FRA data for 2005.
4	Forest Resources of the United States, 1997. See reference in Table 1.	As above	1997	Forest data compiled from most recent inventory data to be used as basis for 1997 U.S. national assessment. Represents FRA data for 2000.
5	Forest Statistics of the United States, 1987. See reference in Table 1.	As above	1987	Forest data compiled from most recent inventory data to be used as basis for 1987 U.S. national assessment. Represents FRA data for 1990.
6	Miles, Patrick D.; Vissage, John S.; Smith, W. Brad 2004. The 2002 RPA Plot Summary database users manual. Gen. Tech. Rep. NC-251. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 80p.	Forest area, volume, ownership, conifer and broadleaf data	1987-2012	User guide for multi-year national summary database of forest inventory data.
7	Little, Elbert L., Jr. 1979. Checklist of United States trees (native and naturalized). Agric. Handb. 541. Washington, DC. U.S.D.A., Forest Service, 375 p.	Tree definition, species list and status	1979	Updated using PLANTS database information to compile current list of tree species in U.S. See next entry.
8	PLANTS database <a href="http://plants.usda.gov/">http://plants.usda.gov/</a>	Plant species	2000	Used to update data from Little, 1979.
9	US Environmental Protection Agency. 2008. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2006. EPA 430-R-08-005. United States Environmental Protection Agency, Office of Atmospheric Programs, Washington, D.C. Available at <a href="http://epa.gov/climatechange/emissions/usinventoryreport.html">http://epa.gov/climatechange/emissions/usinventoryreport.html</a> (15 August 2008).	Data and methods	All	The Land-Use Change and Forestry chapter and Annex 3.12 provide details of the data and methods.

10	USDA Forest Service. 2008. Forest Inventory and Analysis National Program: Data and Tools. Washington, DC: U.S. Department of Agriculture, Forest Service. [A website: <a href="http://fia.fs.fed.us/tools-data/default.asp">http://fia.fs.fed.us/tools-data/default.asp</a> ] (13 March 2013).	Forest inventory data access tools	All	This is the principal source of US Forest Service's Forest Inventory and Analysis data and documentation.
11	Woodall, Christopher W.; Heath, Linda S.; Domke, Grant M.; Nichols, Michael C. 2011. Methods and equations for estimating aboveground volume, biomass, and carbon for trees in the U.S. forest inventory, 2010. Gen. Tech. Rep. NRS-88. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 30 p.	Methods to use of inventory data for compatible estimation of biomass across inventories	All	This publication provides the basic component ration method (CRM) applied to forest inventory data.
12	Penman, J., M. Gytarsky, T. Hiraishi, [et al.], eds. (2003) Good practice guidance for land use, land use change, and forestry. Hayama, Kanagawa, Japan: Institute for Global Environmental Strategies for the Intergovernmental Panel on Climate Change. 502 p.	Reporting guidelines	All	N/A
13	Jenkins, J.C., D.C. Chojnacky, L.S. Heath, R.A. Birdsey (2003) National-scale biomass estimators for United States tree species. Forest Science, 49:12-35.	Live tree component data	All	Provides ratios for the non-bole components of trees to use with the CRM method to calculate tree level biomass estimates for all trees in the inventory database (FIADB)
14	Birdsey, R.A. 1996. Carbon storage for major forest types and regions in the conterminous United States. Pages 1-26 and 261-379 in R. N. Sampson and D. Hair, editors. Forest and Global Change Volume 2: Forest Management Opportunities for Mitigating Carbon Emissions. American Forests, Washington D. C.	Live understory	All	See US EPA (2008) for factors.

15	Domke GM, Woodall CW, Walters BF, Smith JE (2013) From Models to Measurements: Comparing Downed Dead Wood Carbon Stock Estimates in the U.S. Forest Inventory. PLoS ONE 8(3): e59949 doi:10.1371/journal.pone.0059949	Dead wood	All	N/A
16	Domke GM, Woodall CW, Walters BF, Smith JE (2013) From Models to Measurements: Comparing Downed Dead Wood Carbon Stock Estimates in the U.S. Forest Inventory. PLoS ONE 8(3): e59949 doi:10.1371/journal.pone.0059949	Dead wood	All	N/A
17	See Annex 3.12 of US EPA (2008)	Dead wood carbon	All	N/A
18	Smith, J.E., and L.S. Heath. 2002. A model of forest floor carbon mass for United States forest types. Northeastern Research Station Research Paper NE-722, U.S. Department of Agriculture, Forest Service, Newtown Square, PA, 37 p.	Litter carbon	All	N/A
19	Amichev, B. Y. and J. M. Galbraith. 2004. A Revised Methodology for Estimation of Forest Soil Carbon from Spatial Soils and Forest Inventory Data Sets. Environmental Management 33, Supplement 1: S74-S86.	Soil organic carbon	All	See US EPA (2008) for carbon conversion factors.

### 3.2.2 Classification and definitions

National class	Definition
Growing-stock volume(US definition)	A classification of net volume under bark that includes live trees of commercial species meeting specified standards of quality or vigor on productive forest land. When associated with volume, includes only trees 12.7 cm d.b.h. and larger from stump height of 0.3 m to a top diameter of 10.0 cm. This will be used as the US estimate of volume (after adding 14% for bark) of commercial species.
All live volume(FRA growing stock)	Volume under bark of all living trees more than 12.7 cm in diameter at breast height on all forest land. Includes the stem from stump height of 0.3m to a top diameter of 10.0 cm. Sound cull trees, trees on unproductive forest and protected forest are included. This will be used as the basis for the US estimate of growing stock volume (after adding 14% for bark).

Above-ground biomass	All living biomass above the soil including stem, stump, branches, bark, and seeds,– includes trees and understory vegetation. Does not currently include foliage.
Below-ground biomass	All living biomass of coarse living roots greater than 2 mm diameter – includes trees and understory vegetation.
Dead wood biomass	All non-living woody biomass with a diameter greater than or equal to 7.5 cm at transect intersection either standing, lying on the ground, or in the soil.
Litter biomass	The litter itself, fomic, and humic layers, and all non-living biomass with a diameter less than 7.5 cm at transect intersection, lying on the ground.
Soil biomass	All organic material in soil to a depth of 1 meter but excluding the coarse roots of the above pools.
Above-ground carbon	Carbon in all living biomass above the soil including stem, stump, branches, bark, and seeds – includes trees and understory vegetation. Does not currently include foliage.
Below-ground carbon	Carbon in all living biomass of coarse living roots greater than 2 mm diameter – includes trees and understory vegetation.
Dead wood carbon	Carbon in all non-living woody biomass either standing, lying on the ground (but not including litter), or in the soil.
Litter carbon	Carbon in the litter itself, fomic and humic layers, and all non-living biomass, such as small woody debris, with a diameter less than 7.5 cm at transect intersection, lying on the ground.
Soil carbon	Carbon in all organic material in soil to a depth of 1 meter but excluding the coarse roots of the above pools.

### 3.2.3 Original data

#### Original Data

<http://www.fia.fs.fed.us/>

*Note: National data is reported underbark. Data were adjusted upward by an average of 14% to account for bark.*

#### Top 10 species trends



**Methods Explanation:**

**The draft 2013 NGHGI estimates (through inventory year 2012) were used as the basis for total C stocks (forest + woodland). The acres potentially in woodland was derived from Pat Miles query of FIADB (details in calculations worksheet). The trends in total forest from 1990-2012 in the NGHGI were scaled to the 2012 estimate of woodlands. Next a mean of the median C density by pool for Pinyon Juniper across all states in Pat Miles 2012 query was determined (see calculations sheet) using forest type C density by pools estimates from the 2012 NGHGI. Next, C stocks for woodland types were estimates from the C densities and estimates of woodland area back to 1990. Finally, the estimates of woodland C stocks were subtracted from the total forest estimates (2013 NGHGI) for a "forest" estimate. The combination of woodland and forest C pop estimates should be consistent with what is reported in the US 2013 NGHGI totals.**

**Biomass was simply doubling the relevant C stocks**

## **Growing stock**

See Classification and definitions for application of national data for FRA use.

# **Analysis and processing of national data**

## **3.3 Analysis and processing of national data**

### **3.3.1 Adjustment**

## **Growing stock**

Historic growing stock volume are taken from a historic national assessment summary database developed by FIA. Data presented represent all forest land for current and historic.

### **3.3.2 Estimation and forecasting**

## **Growing stock**

No forecasting is used in this report for forest volume. However, data gaps for volume on reserved and unproductive forest for years prior to 1997 and earlier were estimated. Estimates for top 10 species were adjusted to represent volume on all forest land.

## **Carbon stock**

Forecasting is not used and carbon stocks are calculated to be consistent with volume estimates provided in this report using a conversion of 50% of the biomass value is the estimated carbon stock value.

### **3.3.3 Reclassification**

## **Growing stock**

Growing stock volume for FRA definition is all live tree volume by U.S. definition.

Commercial volume (when requested for international reporting) is approximately the volume defined as U.S. growing stock.

### 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	33223	35556	36523	38582	40699	406	408	410	412	414
	... of which coniferous	19894	21339	21530	22353	23282	324	326	328	330	331
	... of which broadleaved	13329	14217	14993	16229	17416	82	82	82	82	83

Table 3b

Category/Species name			Growing stock in forest (million cubic meters)			
Rank	Scientific name	Common name	1990	2000	2005	2010
1 st	<i>Pseudotsuga menziesii</i>	Douglas-fir	4523	4775	5296	4657
2 nd	<i>Pinus taeda</i>	Loblolly pine	2875	2869	2817	2790
3 rd	<i>Pinus ponderosa</i>	Ponderosa pine	1865	1969	1899	1379
4 th	<i>Tsuga heterophylla</i>	Western hemlock	1540	1626	1564	1578
5 th	<i>Pinus contorta</i>	Lodgepole pine	1327	1400	1433	957
6 th	<i>Acer rubrum</i>	Red maple	1127	1312	1614	1576
7 th	<i>Quercus alba</i>	White oak	1059	1118	1234	1127
8 th	<i>Liriodendron tulipifera</i> ,	Yellow-poplar	851	898	1043	1104
9 th	<i>Quercus rubra</i>	Northern Red oak	848	895	884	868
10 th	<i>Acer saccharum</i>	Sugar maple	769	812	1147	1016
Remaining			11946	13295	16270	20795
TOTAL			28730.00	30969.00	35201.00	37847.00

**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)	12.7	For FRA, volume of all live trees from U.S. inventories is used for growing stock.
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	10.0	N/A
Minimum diameter (cm) of branches included in growing stock (W)	n/a	Not included.
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 <sup>3</sup> per hectare and year)				
		Forest				
		1990	2000	2005	2010	2015
	Net annual increment	2.56	2.65	2.66	2.96	2.91
	... of which coniferous	1.53	1.59	1.57	1.72	1.67
	... of which broadleaved	1.03	1.06	1.09	1.25	1.25

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	24117	26228	27368	28494	28933	452	454	456	458	460
	Below ground biomass	4779	5195	5418	5641	5728	84	84	86	86	86
	Dead wood	4264	4487	4625	4764	4824	58	58	58	58	58
TOTAL		33160.00	35910.00	37411.00	38899.00	39485.00	594.00	596.00	600.00	602.00	604.00

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	12058	13114	13684	14247	14466	226	227	228	229	230
	Carbon in below ground biomass	2390	2597	2709	2820	2864	42	42	43	43	43
	<i>Subtotal Living biomass</i>	14448	15711	16392	17067	17330	268	269	271	272	273
	Carbon in dead wood	2132	2244	2313	2382	2412	29	29	29	29	29
	Carbon in litter	4376	4415	4437	4507	4535	440	441	443	445	447
	<i>Subtotal Dead wood and litter</i>	6508	6658	6749	6889	6947	469	470	472	474	476
	Soil carbon	16419	16523	16636	16862	16950	665	667	670	673	675
TOTAL		37375.00	38893.00	39779.00	40818.00	41227.00	1402.00	1406.00	1413.00	1419.00	1424.00

## Tiers

Variable/category	Tier for status	Tier for trend
Total growing stock	Tier 3	Tier 3
Net annual increment	Tier 3	Tier 3
Above ground biomass	Tier 3	Tier 3
Below ground biomass	Tier 2	Tier 2
Dead wood	Tier 3	Tier 3
Carbon in above-ground biomass	Tier 3	Tier 3
Carbon in below ground biomass	Tier 2	Tier 2
Carbon in dead wood and litter	Tier 2	Tier 2
Soil carbon	Tier 1	Tier 1

## 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	Use all live volume for FRA growing stock	N/A
Growing stock of broadleaved coniferous	N/A	N/A
Growing stock composition	N/A	N/A
Net annual increment	Reported values are under bark	N/A
Above-ground biomass	N/A	N/A
Below-ground biomass	modelled	N/A
Dead wood	modelled	N/A
Carbon in above-ground biomass	As noted in 3.2.2	N/A

Carbon in below-ground biomass	As noted in 3.2.2	N/A
Carbon in dead wood	As noted in 3.2.2	N/A
Carbon in litter	As noted in 3.2.2	N/A
Soil carbon	Estimates are based on regional averages according to forest type and do not reflect effects of past land use change. Please note that the reported soil depth is 100 cm.	N/A

**Other general comments to the table**

N/A

## 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	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2012. See reference in Table 1.	Forest area	2012	Forest data compiled from inventory data to be used as basis for 2012 U.S. national assessment. Represents FRA data for 2015.
2	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2007. See reference in Table 1.	Forest area	2007	Forest data compiled from most recent inventory data to be used as basis for 2007 U.S. national assessment. Represents FRA data for 2010. Adjustments made for other wooded land.
3	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2002. See reference in Table 1.	Forest area	2002	Forest data compiled from most recent inventory data to be used as basis for 2002 U.S. national assessment. Represents FRA data for 2005. Adjustments made for other wooded land.



4	Forest Resources of the United States, 1997. See reference in Table 1.	Forest area	1997	Forest data from the referenced U.S. report represents FRA data for 2000. Adjustments made for other wooded land.
5	Forest Statistics of the United States, 1987. See reference in Table 1.	Forest area	1987	Forest data from the referenced U.S. report represents FRA data for 1990. Adjustments made for other wooded land.
6	Butler, Brett J. 2008. Family Forest Owners of the United States, 2006. Gen. Tech. Rep. NRS-27. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 72 p.	Forest ownership objectives	2006	This report summarizes results from the U.S. Forest Service's National Woodland Owner Survey of the estimated 10 million family forest owners who own 35 percent of forest land in the U.S. Information on forest owner characteristics, ownership histories, ownership objectives, forest uses and forest management practices.
7	Conservation Biology Institute, Protected Areas Database PAD <a href="http://www.consbio.org">http://www.consbio.org</a>	Protected areas	2010	This polygon data set was overlaid on the U.S. forest inventory plot grid to classify plot and area data for IUCN categories 1-5 to verify national inventory data.
8	National Forest Systems Roadless Area Database	NFS Roadless areas	2002	This polygon data set was overlaid on the U.S. forest inventory plot grid to classify plot and area data as forest/nonforest for National Forest Systems roadless areas. Considered IUCN class 6.

#### 4.2.2 Classification and definitions

National class	Definition
Corporate land	An ownership class of private lands owned by entities that are legally incorporated. Recent divestitures of industry lands to Timber Investment Management Organizations (TIMOs) and Real Estate Investment Trusts (REITs) have clouded the picture for assessing what was once forest industry lands relative to long-term management. Studies are planned to investigate these changes and their implications. Note: Although other forest lands may have production as a primary purpose, no defining data currently exist.
Export of Nonwood Products	Export value of nonwood products. Includes both wild and cultivated where separation is not possible. Blueberries and ginseng numbers represent wild harvest only.

Domestic Nonwood Forest Products	Domestic quantities and values of nonwood products. Primarily wild, but may include domestics where separation is not possible (e.g. honey and Christmas trees)
N/A	N/A

#### 4.2.3 Original data

<http://www.fia.fs.fed.us/>

### 4.3 Analysis and processing of national data

#### 4.3.1 Adjustment

##### **Forest designation and management**

U.S. forest inventory data for 1987, 1997, 2002, 2007 and 2012 were compiled for use for 1990, 2000, 2005, 2010 and 2015 FRA assessment data respectively.

In North America, most forests are primarily designated for multiple use. In United States, these forests are managed for protective functions and ecosystem services, but are not primarily designated for these functions.

#### 4.3.2 Estimation and forecasting

##### **Forest designation and management**

No forecasting is used in this report for forest area.

##### **Non-wood forest products removals and value of removals**

Data have been compiled from tariff and trade data from the U.S. Department of Commerce and the U.S. International Trade Commission, 2007. No forecasting was used. Omission of categories (e.g. game animals) indicates either data was unavailable or data exist only for cultivated or captive production and harvest.

#### 4.3.3 Reclassification

See 4.2.3.

Data from previous FRA reports were reclassified to meet the new additive requirements of tables 4, 5 and 6.

## 4.4 Data

Table 4a



Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Production forest	71033	81331	84954	89212	91339
	Multiple use forest	107251	101160	97883	92550	88780

Table 4b

Rank	Name of product	Key species	Commercial value of NWFP removals 2010 (value 1000 local currency)	NWFP category
1 st	ChristmasTrees	MixedSoftwoods	1070000	8
2 nd	*Pecans(shelledorin-shell)	Caryaillinoensis	492714	1
3 rd	Honey	Mixed	257000	11
4 th	MapleSyrup	Acersaccharum	106000	1
5 th	*Foliage,moss,lichens,branchesandotherpartsforornamentalpurposes	Mixed	18900	6
6 th	*Blueberries	Vacciniumspp.	79946	1
7 th	FurbearingAnimals	Mixed	40603	10
8 th	*Ginseng	Panaxquinquefolius	35163	3
9 th	*Gum,wood,turpentineoil	Mixedsoftwoods	32863	7
10 th	CranberriesandotherfruitsfromVacciniumspp.	Vaccinium(excl.293blueberries)	21293	1
TOTAL			2254514.00	

2010

Name of local currency

USD

### 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
<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	509319	82119
1991	491260	102960
1992	483803	80703
1993	470726	69206
1994	473107	62326
1995	469830	60882
1996	461077	54482
1997	464231	48139
1998	469750	46213

1999	469313	46015
2000	466549	45930
2001	449114	45902
2002	448000	43042
2003	448513	42900
2004	461739	43608
2005	467347	43891
2006	457048	44914
2007	425129	46358
2008	380509	43614
2009	332528	40437
2010	323986	40437
2011	324433	40437

## 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	<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
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Production forest	Includes All planted forest, public and private, approximately 70% of corporate natural forest (much of this was previously forest industry lands that have been divested since 2000 to TIMOs and REITs but many areas have timber agreements as condition of sale.), approximately 22% of forested lands (excluding planted areas) in National forest ownership are deemed suitable for timber management as a primary emphasis, approximately 20% of private noncorporate natural forest lands have timber as a primary goal based on a recent study of owners of these forests. Excludes area of non-federal public land managed primarily for timber due to lack of data.	Production forest trends are revised from those reported in 2005 due improved review of management practices and new information from forest ownership studies.
Multiple use forest	All forest not otherwise classified as production function.	Multiple purpose
Total wood removals	As reported to FAOSTAT by the U.S. Forest Service Forest Products Laboratory.	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 ( <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	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

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## 5.3 Analysis and processing of national data

### 5.3.1 Adjustment

In FRA2010 country reports, reporting on the designated functions of forests was contained within a single table (Table 3a). Recognizing that this did not provide sufficient information, reporting in FRA2015 was expanded to four tables (Tables 4a, 5a, 5b and 6).

### 5.3.2 Estimation and forecasting

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### 5.3.3 Reclassification








**Protection of soil and water**, as defined in Section 5.1, includes all lands designated or managed for protection of soil and water, while the sub-categories include only lands that are primarily designated. Table 5a is therefore not additive when using the definitions provided in FRIMS. According to these definitions, lands that are designated or managed for protection of soil and water, but not primarily so, may be reported in the main category but not in the sub-categories.

## 5.4 Data

Table 5a

Categories	Forest area (1000 hectares)
------------	-----------------------------



		1990	2000	2005	2010	2015
	Protection of soil and water	185077	195670	199766	209125	211221
	... of which production of clean water	N/A	N/A	N/A	N/A	N/A
	... of which coastal stabilization	N/A	N/A	N/A	N/A	N/A
	... of which desertification control	N/A	N/A	N/A	N/A	N/A
	... of which avalanche control	N/A	N/A	N/A	N/A	N/A
	... of which erosion, flood protection or reducing flood risk	N/A	N/A	N/A	N/A	N/A
	... of which other (please specify in comments below the table)	185077	195670	199766	209125	211221

### Other

Information on the "area where forests and other wooded land are managed primarily for soil protection" is not generally available for the United States. In fact, this type of information lacks relevance in the context of forest management in the United States because soil and water protection are over-riding considerations in the development of forest policy and in forest management practices. Soil and water protection are two of many elements that are considered in developing management regimes that maintain ecosystem function. There is a broad range of other elements that are simultaneously considered, including (but not limited to) site regeneration, water quality, habitat, aesthetic impacts, landscape diversity, endangered species, cultural/spiritual impacts, and others. Therefore, it is difficult to isolate areas in terms of being managed primarily for soil protection. Measures to protect water and soil values have been in place for a time; however, these measures are constantly being reviewed, updated, revised, and improved (e.g., federal Clean Water Act, Best Management Practices legislation in the various States, etc.). Management factors that can affect water and soil quality include harvesting close to streams and rivers, road construction techniques, harvesting on steep slopes, skidding methods, mechanized harvesting on soils sensitive to soil compaction, winter harvesting vs. summer harvesting operations, and post harvest site treatments (such as scarification, treatment of debris, etc.). Potential soil disturbance (or degradation) factors include compaction, erosion, loss of organic matter, and loss of productivity. Some areas are more susceptible to damage from these factors than others. For example, sensitive sites include riparian zones, steep slopes, wet and poor soils, shallow soils over bedrock, and soils susceptible to compaction. In general, the creation of riparian buffer zones is now standard practice throughout most of the country. These zones range from 30 - 50 meters on either side of streams. Most States also have guidelines for road construction to minimize reductions in soil and water quality and aquatic habitats. Mechanized harvesting has accounted for an increasing proportion of the total harvest in recent years. The use of heavy equipment in the forest environment has the potential to cause problems relative to soil compaction. However, two factors mitigate or reduce potential problems related to reductions in soil quality. First, timing harvest activities to minimize site degradation such as winter harvesting in areas where it is feasible or avoiding harvest during seasonal wet periods. Second, through various new decision support tools such as forest ecosystem classification frameworks, management agencies are improving their understanding of a) which types of sites are sensitive to soil disturbance, b) where these sites are situated, and c) the kinds of modifications in management practices and equipment required to minimize the impacts of harvest operations.

Table 5b

Categories	Forest area (1000 hectares)				
	1990	2000	2005	2010	2015
Ecosystem services, cultural or spiritual values	302450	303536	304757	308720	310095
...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	63605	63834	64090	64924	65213
...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	Tier 3	Tier 3
Ecosystem services, cultural or spiritual values	Tier 3	Tier 3

## 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	Tier 3 rating based on requirements for public agencies on their lands and on repeated private forest ownership surveys on private land.	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	Arguably all forest land in the United States provides some tangible degree of ecosystem services, whether related to air or water quality, aesthetics, carbon sequestration, recreation, or spiritual/cultural services.	Percent was derived from 2015 categories and applied to previous reporting years
Public recreation	All forest area managed by the U.S. National Park Service, private area designated as recreation use (e.g. hunting clubs), and 15 percent of all individually owned private land in the United States is considered available for public recreation.	Percent was derived from 2015 categories and applied to previous reporting years
Carbon storage or sequestration	Insufficient Data	N/A
Spiritual or cultural services	All forest land owned by Native Americans is designated as primarily spiritual and/or cultural, though there are many lands outside of those ownership categories that have spiritual and cultural values and designations.	Percent was derived from 2015 categories and applied to previous reporting years
Other ecosystem services	All forest land designated as “Multiple Use” in FRA 2010 not included in the above mentioned categories are included as “Ecosystem Services, other”	Percent was derived from 2015 categories and applied to previous reporting years

**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	Conservation Biology Institute, Protected Areas Database PAD <a href="http://www.consbio.org">http://www.consbio.org</a>	Protected areas	2010	This polygon data set was overlaid on the U.S. forest inventory plot grid to classify plot and area data for IUCN categories 1-5 to verify national inventory data.
2	National Forest Systems Roadless Area Database	NFS Roadless areas	2002	This polygon data set was overlaid on the U.S. forest inventory plot grid to classify plot and area data for National Forest Systems roadless areas. Considered IUCN class 6.
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
Roadless area	An area in the National Forest System without any improved roads maintained for travel by standard passenger type vehicles (FSH 1909.12, Section 7.11) <a href="http://www.fs.fed.us/r4/uinta/projects/planning/docs/roadless/draft_roadless.htm">Http://www.fs.fed.us/r4/uinta/projects/planning/docs/roadless/draft_roadless.htm</a> . An area that generally appears to have been primarily affected by the forces of nature, with the imprint of human activity substantially unnoticeable.

Conservation of biodiversity	All public forest land is managed to conserve biodiversity under the National Environmental Policy Act (NEPA). NEPA is a United States environmental law that established a U.S. national policy promoting the enhancement of the environment and also established the President's Council on Environmental Quality (CEQ). As one of the most emulated statutes in the world, NEPA has been called the modern-day equivalent of an “environmental Magna Carta”. NEPA's most significant effect was to set up procedural requirements for all federal government agencies to prepare environmental assessments (EAs) and environmental impact statements (EISs). EAs and EISs contain statements of the environmental effects of proposed federal agency actions. NEPA's procedural requirements apply to all federal agencies in the executive branch.
IUCN class	Category I: an area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring or a large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition. Category II: a natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area, and (c) provide a foundation for spiritual, educational, recreational, and visitor opportunities, all of which must be environmentally and culturally comparable. Category III: an area of land and/or sea containing one or more specific natural or natural/cultural features which are of outstanding or unique value because of their inherent rarity, representative or aesthetic qualities, or cultural significance. Category IV: an area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species. Category V: an area of land with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological, and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance, and evolution of such an area. Category VI: an area of land and/or sea containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.
N/A	N/A

### 6.2.3 Original data

<http://www.fia.fs.fed.us/>

Categories were populated as follows:

- Area of permanent forest estate includes all public forest.
- Forest area within protected areas includes all reserved forest (IUCN 1-5 only).
- Forest area under sust. forest management includes all public forest plus SFI certified forest (predominantly private) for 1990, 2000, and 2005 reported ( www.sfiprogram.org).
- Forest area with management plan includes all public forest, all planted private forest, 70% of corporate natural forest and 20% of noncorporate private natural forest land as indicated by forest landowner studies.

## 6.3 Analysis and processing of national data

### 6.3.1 Adjustment

U.S. forest inventory data for 1987, 1997, 2002, 2007 and 2012 were compiled for use for 1990, 2000, 2005, 2010 and 2015 FRA assessment data respectively.



### 6.3.2 Estimation and forecasting

No forecasting is used in this report for forest area.

### 6.3.3 Reclassification

## 6.4 Data

Table 6

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Conservation of biodiversity	60561	60715	60846	65050	64763
	Forest area within protected areas	19826	22995	28189	33384	32863

### Tiers

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

### Tier criteria

Category	Tier for status	Tier for reported trend
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<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	<p>Includes area classified as “reserved” in US forest inventories which coincide with the IUCN classes 1 through 5, roadless areas in the National Forest System (areas without any improved roads maintained for travel by standard passenger type vehicles - FSH 1909.12, Section 7.11) which are IUCN class 6, approximately 80% of unreserved forest in Alaska based on poor access and private conservation areas in lower 48 States reported in the National Land Trust Census Report and assumed to be predominantly forest for estimate but may or may not be all forest land.</p>	<p>It might be suggested that areas of National and State Parks that are not in Protected Areas be designated as primarily for “Social Services”. However, since they also play a major role in conservation of biodiversity in the U.S., we have placed them here.</p>
Forest area within protected areas	<p>This estimate comes from national inventory data and coincides with IUCN class 1 through 5. We did not include lands within private conservation trusts.</p>	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	Southern Nonnative Invasive Plant Data Extraction Tool (SNIPET) <a href="http://srsfia2.fs.fed.us/SNIPET/">http://srsfia2.fs.fed.us/SNIPET/</a>	Non-native species occurrence	2001-2011	Forest data compiled from non-native invasive collection protocols. Compared to national list of invasive trees and determined that major non-native invasive species predominately affect the south, thus we used only southern data for the national analysis.
2	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2007. See reference in Table 1.	Non-native species occurrence	2007	Forest data compiled from most recent inventory data to be used as basis for 2007 U.S. national assessment. Represents FRA data for 2010.
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
Affected Forest Area	Any plot wherein any portion of the plot meets the national definition of “forest land” where an invasive plant from a list of known non-native invasive species is recorded by a crew, divided by the total number of forested plots in the sample population. The proportion is then applied to total forest area in the sample population to reach an expanded value.
N/A	N/A
N/A	N/A



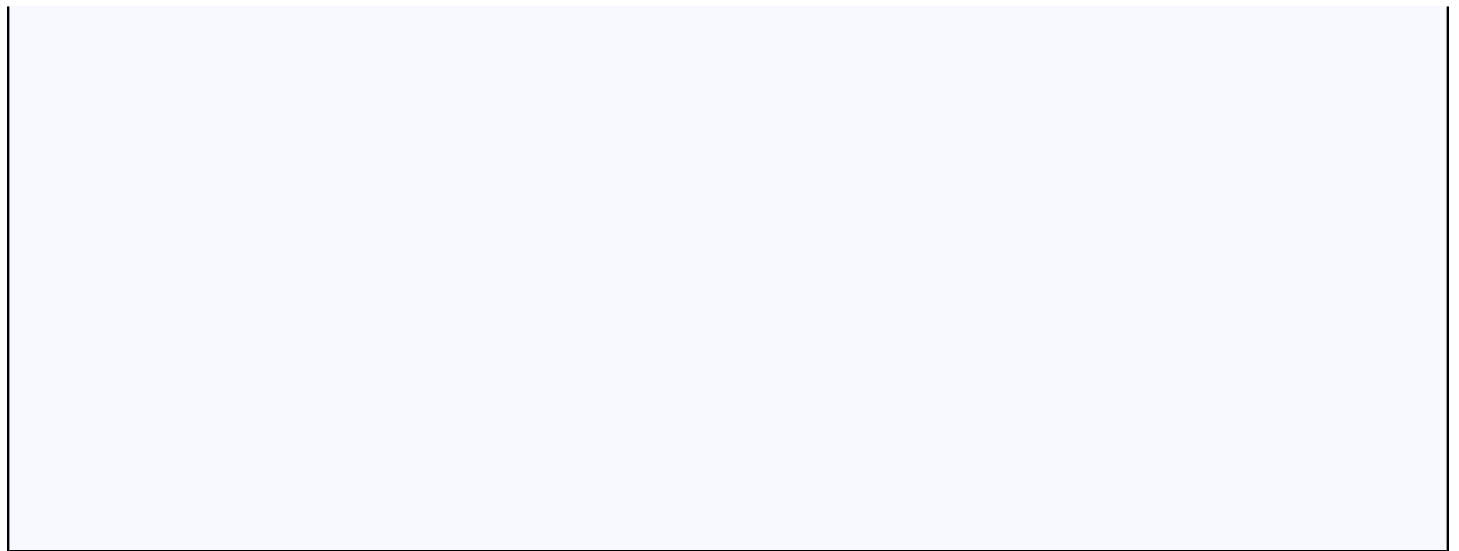
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N/A	N/A
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### 7.2.3 Original data

Based on data from national inventory database for identified species and various regional research reports.

NOTE: The total forest area affected by woody invasive species is not necessary the sum of the values above, as these may be overlapping. Area reported is area affected by woody invasives, not actual area covered by the invasive species.



### 7.3 Analysis and processing of national data

#### 7.3.1 Adjustment

Forest data compiled from non-native invasive collection protocols. Compared to national list of invasive trees and determined that the top 10 non-native invasive species predominately affect the south. Because the southern United States gathers more detailed information and the top 10 invasive species happen to primarily affect the southern United States, we used only southern data for the national analysis.

#### 7.3.2 Estimation and forecasting

No forecasting for this table. 2010 data will be recalculated to match 2015 methodology.

#### 7.3.3 Reclassification



### 7.4 Data

Table 7

Scientific name of woody invasive species	Forest area affected (000 ha)	
	2005	2010
1. <i>Lonicera japonica</i> (vine)	N/A	37688
2. <i>Ligustrum sinense</i> (shrub)	N/A	18086
3. <i>Rosa multiflora</i> , <i>bracteata</i> , <i>laevigata</i> (shrub)	N/A	7596
4. <i>Triadica sebifera</i> (tree)	N/A	3125

5. Ailanthus altissima (tree)	N/A	2041
6. Melia azedarach (tree)	N/A	1204
7. Albizia julibrissin (tree)	N/A	1577
8. Ligustrum japonicum (shrub)	N/A	1051
9. Lonicera spp (shrub)	N/A	1025
10. Eleagnus umbellata	N/A	828
Total	N/A	74221

### Tiers

Category	Tier for status	Tier for reported trend
Invasive species	Tier 3	Tier 2

### 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

### 7.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Invasive species	Data for top 10 species are southern only, as the top 10 invasives in the United States are found primarily in the southern U.S.	2005 data to be backfilled based on new methodology

#### Other general comments to the table

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

## 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 Interagency Fire Center, Boise ID. [ <a href="http://www.nifc.gov/">http://www.nifc.gov/</a> ]. Compiled by U.S. Forest Service Remote sensing Applications Center.	Fire	2003-2010	These data were compiled by intersecting MTBS (Monitoring Trends in Burn Severity) burn severity data with the Conterminous U.S. and Alaska Forest Type Mapping Using Forest Inventory and Analysis (FIA) data set. Burn severity classes include:* Low Burn Severity * Moderate Burn Severity * High Burn Severity
2	National Insect & Disease (IDS) database USDA Forest Service, Forest Health Technology Enterprise Team (FHTET), Fort Collins, CO April 11, 2013	Insects/disease/weather	2000-2012	Acres reported primarily from aerial observation. Acres are summarized for all damage types (mortality, defoliation, discoloration, etc.). Acres are summarized for individual year's observations only and are not cumulative. These
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

<http://www.fia.fs.fed.us/>

- Table 8a- Fire data: National Interagency Fire Center, Boise ID. [<http://www.nifc.gov/>] and Vicky Johnson, Remote Sensing/GIS Analyst, RedCastle Resources, Inc., Remote Sensing Applications Center (RSAC), Salt Lake City, UT 84119.
- Table 8b- Insect and disease data: National Insect & Disease (IDS) database, USDA Forest Service, Forest Health Technology Enterprise Team (FHTET), Fort Collins, CO

Note: Acres reported primarily from aerial observation. Acres are summarized for all damage types (mortality, defoliation, discoloration, etc.). Acres are summarized for individual year's observations only and are not cumulative. These "footprint" acres represent the affected area on the ground. Do not summarize acres across pests or years due to possible overlapping of damage areas.

## 8.3 Analysis and processing of national data

### 8.3.1 Adjustment

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### 8.3.2 Estimation and forecasting

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### 8.3.3 Reclassification

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## 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	1708	610	3197	634	3857	978	3820	1995	3640	1266
	... of which forest area burned	1679	574	3136	512	3640	792	3692	1738	3362	998
Category		2008		2009		2010		2011		2012	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
	Total land area burned	1937	1514	3058	1639	1687	1545	N/A	N/A	N/A	N/A
	... of which forest area burned	1611	665	2091	845	790	408	N/A	N/A	N/A	N/A

Table 8b

Outbreak category	Description/name	Year(s) of latest outbreak	Area damaged (000 hectares)
1	MountainPineBeetle	2000-12	18148
1	WesternSpruceBudworm	2000-12	10804
1	GypsyMoth	2000-12	4406
1	SpruceBeetle	2000-12	1697
1	Douglas-firBeetle	2000-12	1642
1	SpruceBudworm	2000-12	869
1	Douglas-firTussockMoth	2000-12	333
2	Beechbarkdisease	2000-12	943
2	WhitePineBlisterRust	2000-12	313
3	Snow-Icedamage	2000-12	13044

Outbreak category
1 Insects
2 Diseases
3 Severe weather events

## Tiers

Category	Tier for status	Tier for trend
Area affected by fire	Tier 2	Tier 2
<ul style="list-style-type: none"> <li>• Insects</li> <li>• Diseases</li> <li>• Severe weather events</li> </ul>	N/A	Tier 3

## 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	Reported for annual summary data across constant period 2000-2010.	Annual trends for period reported in original data section 8.2.3.
Insects	Reported for annual summary data across constant period 2000-2012.	Annual trends for period reported in original data section 8.2.3.
Diseases	Reported for annual summary data across constant period 2000-2012.	Annual trends for period reported in original data section 8.2.3.
Severe weather events	Reported for annual summary data across constant period 2000-2012.	Annual trends for period reported in original data section 8.2.3. The tier for severe weather events was reported as tier 3 for status and for reported trend.

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	0

Tiers

Category	Tier for reported trend
Reduction in canopy cover	Tier 3

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	The United States had a net gain of 17 percent canopy cover. The table does not allow for net change in the form of gain, thus we report 0.

Other general comments

Landfire developed circa 2001 tree canopy cover and height maps by modeling tree canopy cover on FIA plots as a function of 3 phenologically different dates of imagery, terrain, image texture, and other predictors using regression trees. Canopy cover on the FIA plots was obtained by applying a stem-mapping algorithm to single condition, design code 1, 1999-2007 plots only (Toney et al. 2009).

Circa 2008 maps reflecting changes in canopy cover and height since the 2001 products were produced by integrating information from the Landfire Disturbance Grids and simulated forest changes on FIA plots using FVS. The Landfire Disturbance Grids combine information from image-based disturbance maps based on VCT with annually solicited polygon data describing management activities on state and federal lands, referred to as the Landfire Events Database. Disturbance was classified into five types, each mapped at low, medium, and high severity. Simulations on FIA plots were run within FVS variants and three strata, namely, vegetation



type, disturbance agent, and severity. Simulated response of canopy cover and height within strata were then projected onto the 2008 cover and height products.

Circa 2010 maps of cover and height are currently being developed by combining information from the annually solicited Events database with change maps generated from MIICA. Results from the FVS simulations run for the 2008 product are being applied here as well. The 2010 maps are done in the Northwest, and Southwest, with the rest of CONUS anticipated to be completed by the end of June 2013 followed by Alaska, Hawaii, Puerto Rico, Virgin Islands, and Pacific islands by August.

Documentation on these three products can be found in Vogelmann et al. 2011, Toney et al. 2012, and at [www.landfire.gov](http://www.landfire.gov) under the Data Products section.

### **Alternative estimates of forest area with reduced canopy**

1. Difference 2008 and 2001 canopy cover products
2. Difference 2010 and 2001 canopy cover products
3. Construct estimates from changes in canopy cover on plots remeasured near the 2000-2010 time period

### **Caveats**

Alternatives 1 and 2 are strictly model-based estimates with extensive (and somewhat intractable) error propagation. In addition, canopy cover was only mapped within Landfire's forest mask which targets areas with  $\geq 10\%$  cover but excludes urban, agriculture, grasslands, and shrublands.

Although fitting FIA's usual design-based estimation approach, alternative 3 would use "modeled observations" of tree canopy on FIA plots. These models are not expected to perform well on multi-condition plots where conditions break forest and nonforested areas. In addition, timing on remeasurements could pose challenges, particularly in the west.

### **References**

Biswas, T., Walterman, M., Maus, P., Megown, K. A., Healey, S. P., & Brewer, K. (2012). Assessment of land use change in the coterminous United States and Alaska for global assessment of forest loss conducted by the food and agricultural organization of the United Nations. In: Morin, Randall S.; Liknes, Greg C., comps. Moving from status to trends: Forest Inventory and Analysis (FIA) symposium 2012; 2012 December 4-6; Baltimore, MD. Gen. Tech. Rep. NRS-P-105. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station.[CD-ROM]:37-45.

Toney, C., J.D. Shaw, M.D. Nelson. 2009. A stem-map model for predicting tree canopy cover of Forest Inventory and Analysis (FIA) plots. In: McWilliams, W., G. Moisen, R. Czaplewski, comps. Forest Inventory and Analysis (FIA) Symposium 2008; October 21-23, 2008; Park City, UT. Proc. RMRS-P-56CD. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 19 p.

Toney, C., B. Peterson, D. Long, R. Parsons, G. Cohn. 2012. Development and applications of the LANDFIRE forest structure layers. In: Morin, R.S., G.C. Liknes, comps. Moving from status to trends: Forest Inventory and

Analysis (FIA) symposium 2012; 2012 December 4-6; Baltimore, MD. Gen. Tech. Rep. NRS-P-105. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. [CD-ROM]: 305-309.

Vogelmann, J.E., J.R. Kost, B. Tolk, S. Howard, K. Short, X. Chen, C. Huang, K. Pabst, and M.G. Rollins. 2011. Monitoring landscape change for LANDFIRE using multi-temporal satellite imagery and ancillary data. *IEEE Journal Of Selected Topics In Applied Earth Observations And Remote Sensing*. 4(2): 252-264.

## 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	Clean Water Act (42 U.S.C. 7401–7626) consists of Public Law 159 (July 14, 1955; 69 Stat.322) and the amendments made by subsequent enactments.	Legislation and regulations supporting sustainable forest management	1972-current	Federal Clean Water Act applies to both public and private lands in the United States and encourages best management practices by states to avoid water pollution.
2	Endangered Species Act (7 U.S.C.136; 16 U.S.C.460 et seq.)	Legislation and regulations supporting sustainable forest management	current	Applies to both public and private lands in the United States and requires all public and some private lands to enter into habitat conservation plans to ensure habitat for listed species.
3	National Environmental Policy Act [42 U.S.C. 4321 et seq.]	Policies or strategies that explicitly encourage sustainable forest management.	1970-current	The Act establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals within the federal agencies

4	State-level Best Management Practices	Policies or strategies that explicitly encourage sustainable forest management.	Varies by state	Varies by state, and level of compliance required varies by state. Some state BMPs are required while others are voluntary. Primarily relates to water quality, but also to reforestation and sustainable management.
5	Healthy Forests Restoration Act	Policies or strategies that explicitly encourage sustainable forest management.	2003-current	Provisions to speed up restoration planning and projects on at-risk Federal land
6	Cooperative Forestry Assistance Act of 1978, as amended through 2008	Policies or strategies that explicitly encourage sustainable forest management.	1978-current	Provides USDA Secretary of Agriculture authorization to provide assistance on non-federal lands for a variety of programs including protection of ecologically valuable and threatened lands, planning, prevention of insects and disease, and other management priorities.
7	<a href="http://www.archives.gov/federal-register/laws/access.html">http://www.archives.gov/federal-register/laws/access.html</a>	Listing of U.S. Public Laws		Access for NFMA, and Related federal laws addressing forest management and conservation
8	<a href="http://www.stateforesters.org/">http://www.stateforesters.org/</a>	State level forest management activities		Website for the National Association of State Foresters. Access to State Forest Action Plans and related documents

### 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

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## 10.3 Data

Table 10

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

#### 10.4 Comments

Variable / category	Comments related to data definitions etc
Policies supporting sustainable forest management	Generally, the National Environmental Policy Act (NEPA), Public Law 91-190, 42 U.S.C. 4321-4347 can be considered a national policy statement. The Act establishes a national policy for the environment and provides for the establishment of a Council on Environmental Quality. Voluntary State-level Best Management Practices and State Forestry Agency environmental policies may be considered state-level policy statements. Local-level policy may apply to privately owned land and municipality lands. Regionally and sub-regionally, policies may apply to particular features, for example a large watershed or mountain range. Forest management plans are requirements in all programs for private market certification, e.g. Forest Stewardship Council, Sustainable Forestry Initiative, and American Tree Farm System.
Legislation and regulations supporting sustainable forest management	There are over 100 national laws and regulations relating to natural resource management in the United States, and all may be considered to support sustainable management of forests. We have listed several examples, but could not list all applicable laws and 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	<a href="http://ceq.hss.doe.gov/">http://ceq.hss.doe.gov/</a>	N/A	Homepage for the National Environmental Policy Act of 1970
2	<a href="http://www.fs.fed.us/research/rpa/">http://www.fs.fed.us/research/rpa/</a>	N/A	Webpage for project information and publications related to the Resource Planning Act (RPA) Assessment
3	<a href="http://www.fs.fed.us/research/sustain/">http://www.fs.fed.us/research/sustain/</a>	N/A	Webpage for project information and publications related to the National Report on Sustainable Forests
4	<a href="http://www.sustainableforests.net/">http://www.sustainableforests.net/</a>	N/A	Homepage for the Roundtable on Sustainable Forests

Table 11

<b>Is there a national platform that promotes or allows for stakeholder participation in forest policy development?</b>	yes
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### 11.3 Comments

Category	Comments related to data definitions etc
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<p>National stakeholder platform</p>	<p>The National Environmental Policy Act of 1970 (NEPA, Public Law 91-190, 42 U.S.C. 4321-4347) stipulates planning documentation and public participation guidelines for national, regional and local projects with anticipated environmental impacts. This extends to national level policy initiatives such as revisions to the U.S. Forest Service’s forest planning rule. Through public hearings, public comment and review of planning documents (Environmental Impact Statements) and related mechanisms, various and diverse stakeholders can and do provide perspectives and advocate interests in the national policy development process. Policy decisions can be legally challenged on the basis of inadequate public input or failure to adequately address valid perspectives. On a more informal basis, national stakeholder groups, roundtables and similar bodies interact with federal agencies in forest policy formation on a regular basis. Notable among these is the Roundtable on Sustainable Forests.</p>
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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	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2012. (See reference in Table 1.	Public forest land area	2012	Forest data compiled from most recent inventory data to be used as basis for 2012 U.S. national assessment. Represents FRA data for 2015.
2	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2007. See reference in Table 1.	As above	2007	Forest data compiled from most recent inventory data to be used as basis for 2007 U.S. national assessment. Represents FRA data for 2010.
3	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2002. See reference in Table 1.	As above	2002	Forest data compiled from most recent inventory data to be used as basis for 2002 U.S. national assessment. Represents FRA data for 2005.
4	Forest Resources of the United States, 1997. See reference in Table 1.	As above	1997	Forest data compiled from most recent inventory data to be used as basis for 1997 U.S. national assessment. Represents FRA data for 2000.



5	Forest Statistics of the United States, 1987. See reference in Table 1.	As above	1987	Forest data compiled from most recent inventory data to be used as basis for 1987 U.S. national assessment. Represents FRA data for 1990.
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### 12.2.2 Classification and definitions

National class	Definition
Public forest land (as representative of the permanent forest estate)	It is assumed that all public forest land will remain in forest cover to the extent feasible. Some areas may be designated for recreation or spiritual purposes but will generally retain tree cover for these purposes. Rarely, forest cover may be removed on these lands for restoration of historically significant landscapes to a specified state.
N/A	N/A
N/A	N/A
N/A	N/A

### 12.2.3 Original data

<p><a href="http://www.fia.fs.fed.us/">http://www.fia.fs.fed.us/</a></p> <ul style="list-style-type: none"> <li>• Area of permanent forest estate includes all public forest</li> <li>• Forest area within protected areas includes all reserved forest (IUCN 1-5 only)</li> <li>• Forest area under sust. forest management includes all public forest plus SFI certified forest (predominantly private) ( www.sfiprogram.org )</li> <li>• Forest area with management plan includes all public forest, all planted private forest, 70% of corporate natural forest and 20% of noncorporate private natural forest land.</li> </ul>
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## 12.3 Analysis and processing of national data

### 12.3.1 Adjustment

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### 12.3.2 Estimation and forecasting

<p>Area with intent to remain forested 2015 calculated as:  Area of permanent forest 133014 + 26364 +</p>
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## 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	133014
	... of which permanent forest estate	133014

## 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

Category	Comments related to data definitions etc
Forest area intended to be in permanent forest land use	All forest area with management plan was assumed to have an "intent" to remain in forest land use. Thus, all land previously classified by FRA as "forest area with management plan" was now included in this category. See "original data" above.
Permanent forest estate	All public forest land falls into this category. Conservation NGO lands may go in this category but data is not currently available.

## Other general comments

While there are large groups of private landowners that own forest land that may intend to retain their land in forest permanently, we can not speak for the private landowners. Thus, we report the "Intent" of land use only for public ownerships.

### 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	2011. National Report on Sustainable Forests 2010. USDA Forest Service FS-979.	Forest reporting at national scale	N/A	Additional reporting through National level Resources Planning Act (RPA)
2	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Smith, W. Brad; Miles, Patrick L.; Perry, C; Pugh, S. 2014. Forest Resources of the United States, 2012. Gen. Tech. Rep. WO-xxx. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office. (in preparation)	Forest area monitored under a national forest monitoring framework	2012	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	2012	yes		yes			yes
Other field assessments	100	2012						yes
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	yes
2 Periodic national state of the forest report	yes
3 Other (please document)	yes
4 None	

Other type of forest reporting
National Studies with topical focus or otherwise outside of periodic national reporting processes (see comments)

### 13.4 Comments

Category	Comments
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Forest Reporting	The US Forest Service conducts several periodic assessments of forest conditions at the national level: (1) The resource Planning Act (RPA) Assessment; and (2) The National Report on Sustainable Forests. The RPA Assessments uses an integrated modelling framework to project natural resource conditions to a 50 year time horizon, with particular emphasis on forests. The National Report on Sustainable Forests uses the Montréal Process Criteria & Indicators for Sustainable Forest Management to display current conditions and trends in U.S. Forests. Various other national reports are produced to meet specific needs.
N/A	N/A
N/A	N/A

Other general comments

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## 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	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2007. See reference in Question 1.	Forest ownership and land class	2007	Forest data compiled from most recent inventory data to be used as basis for 2007 U.S. national assessment. Represents FRA data for 2010.
2	Interpolated data	Forest ownership and land class	2002	Data for FRA 2005 are based on interpolation between 1997 and 2007 data sources.
3	Forest Resources of the United States, 1997. See reference in Question 1.	Forest ownership and land class	1997	Forest data from the referenced U.S. report represents FRA data for 2000. Reported data are adjusted for removal of chaparral as a forest cover.
4	Forest Statistics of the United States, 1987. See reference in Question 1.	Forest ownership and land class	1987	Forest data from the referenced U.S. report represents FRA data for 1990. Reported data are adjusted for removal of chaparral as a forest cover and for a reporting error in data for National Forests in OR and WA, and forest in west TX which increased the total forest area above the 1987 reported value.

5	Butler, Brett J. 2008. Family Forest Owners of the United States, 2006. Gen. Tech. Rep.NRS-27. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 72 p.	Forest ownership objectives	2006	This report summarizes results from the U.S. Forest Service's National Woodland Owner Survey of the estimated 10 million family forest owners who own 35 percent of forest land in the U.S. Information on forest owner characteristics, ownership histories, ownership objectives, forest uses and forest management practices.
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### 14.3 Data

Table 14a

Forest plan type	Forest area 2010 (000 ha)
Forest area with management plan	202342
... of which for production	83790
... of which for conservation	118552

Table 14b

Indicate which (if any) of the following are required in forest management plans in your country	
1 Soil and water management	yes
2 High conservation value forest delineation	yes
3 Social considerations community involvement	yes

Table 14c

Percent of area under forest management plan that is monitored annually	65
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#### Tiers

Category	Tier for status
Forest area with management plan	Tier 3
Percent of area under forest management plan that is monitored annually	Tier 3

#### 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
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#### 14.4 Comments

Category	Comments
Percent of area under forest management plan that is monitored annually (Table 14c)	Includes all public forest, all planted private forest, 70% of corporate natural forest and 20% of non-corporate private natural forest land as indicated by forest landowner studies.
Table 14a	Production forest includes: All planted forest (public and private), 70% of corporate natural forest, 22% of National forest ownership and 20% of private non-corporate natural forest lands. Conservation forest includes: All public forest except NFS production forest. Private conservations areas not included.
N/A	N/A

#### Other general comments

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## 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	yes
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	Stakeholder involvement occurs through various channels, particularly through National Environmental Policy Act (NEPA) planning stipulations. National Forest lands are subject to periodic planning revisions with on-going monitoring and public review functions. Whether public review extends to stand-level operations depends upon the level of public scrutiny given to specific projects or areas, but monitoring information is made available to the public. Public involvement in planning and monitoring on private forest lands is limited to the formal NEPA processes. Monitoring information is variable and operational review is likely minimal in most cases. Private forest managers, however, must conform to local and national regulations and standards, and deviations from these regulations and standards can elicit focused public scrutiny.

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Type of stakeholder inputs	Tiers 1, 2, and 3 all apply
N/A	N/A

Other general comments

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## 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	3510	3654	5475	7359	9694
	PEFC	0	0	0	0	0	0	0
	Other	7434	13067	18700	19863	21027	22190	23353
		2007	2008	2009	2010	2011	2012	
	FSC	9186	9755	11684	13105	13688	14180	
	PEFC	0	9978	10292	10349	10853	10732	
	Other	22532	23879	25225	26572	0	0	

Table 16b

Domestic forest management certification		Forest area (000 ha)						
		2000	2001	2002	2003	2004	2005	2006
	1.Name	0	0	0	0	0	0	0
	2.Name	0	0	0	0	0	0	0
	3.Name	0	0	0	0	0	0	0

		2007	2008	2009	2010	2011	2012	
	1.Name	0	0	0	0	0	0	
	2.Name	0	0	0	0	0	0	
	3.Name	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	As reported domestically and by FAO
Domestic forest management certification	The Sustainable Forestry Initiative (SFI) certification program was launched in 1994 as one of the U.S. forest sector's contributions to the vision of sustainable development established by the 1992 United Nations Conference on Environment and Development. Its original principles and implementation guidelines began in 1995, and it evolved as the first SFI national standard backed by third-party audits in 1998. Today, SFI Inc. is an independent, non-profit organization responsible for maintaining, overseeing and improving a sustainable forestry certification program that is internationally recognized and is the largest single forest standard in the world. The SFI 2010-2014 Standard is based on principles and measures that promote sustainable forest management and consider all forest values. It includes unique fiber sourcing requirements to promote responsible forest management on all forest lands in North America. <a href="http://www.sfiprogram.org/who-is-sfi/basics-of-sfi11/">http://www.sfiprogram.org/who-is-sfi/basics-of-sfi11/</a>

## Other general comments

Certified lands listed as "other" may be assumed to be SFI

## 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	US Dept of Commerce, Bureau of Census. 2008. 2002 Economic Census	Forest revenue -- Taxes and fees paid to the federal government by industries (by NAICS code)	2002	N/A
2	State government web sites	Forest revenue - excise and severance taxes paid by forest landowners to states when timber is harvested	dates for state data range from 1992 to 2007	N/A
3	USDA Forest Service, WO Budget Staff	Total Domestic funding for the USDA Forest Service - Appropriations master spreadsheet: Program funding level	2000, 2005	N/A
4	USDA Forest Service, WO State and Private Forestry Budget Staff	Transfer payments from Forest Service to States	2005	N/A
5	USDA Natural Resources Conservation Service WO Staff	Transfer payments for forestry practices under the WHIP and EQUIP programs	2005	N/A
6	USDA Farm Services Administration WO staff	Transfer payments for forestry practices under the Conservation Reserve (CRP) program	recent years general estimate	N/A

7	Association of State Foresters	Total public expenditures by State forestry agencies	2004	N/A
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### 17.3 Data

Table 17

Category	Revenues / expenditures (000 local currency)		
	2000	2005	2010
Forest revenue	1279000	N/A	N/A
Public expenditure on forestry	5798715	8167721	9750000

	2000	2005	2010
Name of Local Currency	US \$	N/A	N/A

### 17.4 Comments

Category	Comments related to data definitions etc
Forest revenue	Government revenue from forestry activities includes the amount of federal taxes and fees paid in 2002 (placed in the table under 2000) by 3 categories of forest products industry - forestry and logging, wood products, and paper products. It also includes estimated excise and severance taxes paid by forest landowners when timber is harvested. It does not include taxes paid to states or local governments by forest sector firms or firms that provide forest-based recreation.
Public expenditure on forestry	Total public expenditures include the budget for USDA Forest Service programs and for state forestry programs. It does not include forestry expenditures by the Department of Interior for BLM land or for forestry expenditures of counties and cities. Domestic funding by governments is likely to be underestimated by the amount expended by government agencies other than the US Forest Service, USDA NRCS, USDA FSA, and State forestry agencies (e.g Dept of Defense, Dept of Interior, Bureau of Land Management). Data on operational expenses or transfers payments were not obtained on funding from "External" entities. Transfer payments include some funding of state technical support activities - not all goes to "non-government and private-sector institutions, enterprises communities or individuals"
Other general comments	N/A

Other general comments

No data available for 2005 or 2010
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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	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2007. See reference in Table 1.	Forest ownership	2007	Forest data compiled from most recent inventory data to be used as basis for 2007 U.S. national assessment. Represents FRA data for 2010.
2	FIADB national database <a href="http://fia.fs.fed.us">http://fia.fs.fed.us</a> Forest Resources of the United States, 2002. See reference in Table 1.	As above	2002	Forest data compiled from most recent inventory data to be used as basis for 2002 U.S. national assessment. Represents FRA data for 2005.
3	Forest Resources of the United States, 1997. See reference in Table 1.	As above	1997	Forest data compiled from most recent inventory data to be used as basis for 1997 U.S. national assessment. Represents FRA data for 2000.
4	Forest Statistics of the United States, 1987. See reference in Table 1.	As above	1987	Forest data compiled from most recent inventory data to be used as basis for 1987 U.S. national assessment. Represents FRA data for 1990.

## 18.2.2 Classification and definitions

National class	Definition
Public	Includes: Federal--An ownership class of public lands owned by agencies of the U.S. Government. State--An ownership class of public lands owned by States or lands leased by States for more than 50 years. County and municipal--An ownership class of public lands owned by counties or local public agencies, or lands leased by these governmental units for more than 50 years.
Private corporate	An ownership class of forest land that is owned by entities that are legally incorporated. Includes lands previously reported as "forest industry".
Private noncorporate	An ownership class of private lands that are not owned by corporate interests. Includes Native American lands, unincorporated partnerships, clubs, lands leased by corporate interests, etc.
Native American (Tribal)	(a) Lands held in trust by the United States or individual States for Native American tribes or individual Native Americans; (b) Lands owned in fee by Native American tribes whether subject to Federal or State restrictions against alienation or not. Due to insufficient data, this category included in private noncorporate for this report.

### 18.2.3 Original data

<http://www.fia.fs.fed.us/>

- Corporate- In previous reports the US only reported forest industry here. As these owners have now divested nearly 80% of their lands since 2000, mostly to other corporate ownerships such as TIMOs and REITs, the data have been revised to include all corporate forest land.
- Tribal- We currently estimate that there are about 5 million hectares of tribal forest land in the continental 48 States but data for Alaska, which has significant holdings, is unavailable.
- Inland water- This area is based on FAOSTAT.
- Public forest owners retail rights to management of their forest lands and require concessionaires to meet public land management requirements.

## 18.3 Analysis and processing of national data

### 18.3.1 Adjustment

U.S. forest inventory data for 1987, 1997, 2002, 2007 and 2012 were compiled for use for 1990, 2000, 2005, 2010 and 2015 FRA assessment data respectively.




### 18.3.2 Estimation and forecasting






No forecasting for this table.

### 18.3.3 Reclassification

## 18.4 Data

Table 18a

Categories		Forest area (1000 hectares)			
		1990	2000	2005	2010
	Public ownership	120119	124549	124936	129974
	... of which owned by the state at national scale	92530	96437	95487	97673
	... of which owned by the state at the sub-national government scale	27589	28112	29450	32301

	Private ownership	182331	178987	179821	178746
	... of which owned by individuals	52287	53095	59138	57283
	... of which owned by private business entities and institutions	116044	111641	106183	106469
	... of which owned by local, tribal and indigenous communities	14000	14251	14500	14994
	Unknown ownership	0	0	0	0
TOTAL		302450.00	303536.00	304757.00	308720.00

## Tiers

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

## 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	120119	124549	124936	129974
Individuals	0	0	0	0
Private companies	0	0	0	0
Communities	0	0	0	0
Other	0	0	0	0

TOTAL	120119.00	124549.00	124936.00	129974.00
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Category	Tier for reported trend	Tier for status
Public Administration	Tier 3	Tier 3
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	In the U.S., this is land administered by federal, state, county or municipal entities.	N/A
Private ownership	In the U.S., this is land administered by private individuals, corporations, or other non-public entities. This category includes lands held by, or in trust for, native tribes. (Indigenous people).	Since 2000, forest industries in the US have divested over 80% of their lands to Timber Investment Management Organizations (TIMOs) or Real Estate Investment Trusts (REITs). Many industrial owners retained timber agreements ranging from 10 to 50 years with the new owners. TIMOs and REITs fall under the private corporate ownership category.
Unknown ownership	N/A	N/A
Management rights	In the U.S., management rights are generally held by the land owner. In the case of leased lands, these rights are controlled by the owner in collaboration with the management entity.	Many private corporations still have residual leasing arrangements with private landowners for timber following divestiture of most forest industry lands in the US, primarily in the South. Indigenous tribes, through various arrangements have “gathering” rights on some public forest lands, but generally not “commercial” harvesting rights.

#### Other general comments to the table

Due to major changes in the national inventory design between 1997 and 2001 from a State by State periodic survey to an annualized survey operating in every State each year, data for 2005 in this report have been interpolated between 1997 and current survey data to better reflect actual trends.

## 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	U.S. Department of Labor, Bureau of Labor Statistics. Logging: 101133	N/A	2000, 2005, 2010	1990 data unavailable
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
Forestry and Logging employment	U.S. Census, Bureau of Labor Statistics employment estimates for forestry and logging.
N/A	N/A
N/A	N/A
N/A	N/A

#### 19.2.3 Original data



As presented in reporting table.
<b>Reclassification</b>

The source data for the employment category is the U.S. Department of Labor, Bureau of Labor Statistics. Included categories are Logging (NAICS 10-1133). Data are revised from previous FRA reports. <http://www.bls.gov/data/#employment> .

Previously, individuals employed in sawmills and other wood-producing mills were included but they have been excluded for this report.

### 19.3 Data

Table 19

Category		Employment (000 years FTE)			
		1990	2000	2005	2010
	Employment in forestry	N/A	75	70	55
	... 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	There was not a definition given for this category. The data reported here is only for “forestry and logging” or “in-the-forest” operations. Employment in the forest-related segment of the U.S. economy (forestry and logging, wood and paper manufacturing , furniture manufacturing and wood-related construction) comprise over 2.5 million jobs, of which only 50,000 were in the forestry and logging segment. The broader “forest-related” category comprises 4-6% of U.S. GDP.	The reported general trend is declining.

#### 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)	2659	Million USD	2010

### 20.3 Comments

Category	Comments
Gross value added from forestry (at basic prices)	Only includes logging, not secondary products or employment related to secondary products such as sawmills, etc.

Other general comments

No Data was supplied to the USA for this pre-filled table.

## 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	2012. Wear, Dave. USDA Forest Service Forest Futures project	Government target/aspiration for forest area	2020, 2030	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	306354	304215

Table 21b

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

### 21.4 Comments

Category	Comments
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Government target/aspiration for forest area	50-year forest projections are made part of each RPA national natural resource assessment which is required by law every 10 years in the U.S. The most recent assessment provided projections for 2010 through 2060. These projections are based on scenarios that take into account various economic, climate and population dynamics and their effects on natural resource sustainability.
Forests earmarked for conversion	N/A

Other general comments