

# GLOBAL FOREST RESOURCES ASSESSMENT 2015

## COUNTRY REPORT

# **Iceland**

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 work in this report was conducted by the Icelandic Forest Inventory (IFI) which is a cluster project at the Iceland Forest Research (IFR). IFR is a division of the Iceland Forest Service (IFS), the official forestry agency in Iceland. One of the main projects of the IFI is a National Forest Inventory. Other inventories and forest mensuration work are also part of IFI work.

January, 2014

Arnór Snorrason

### Desk Study?

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

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

Documents for this question:

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

### 1.1 Categories and definitions

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

### 1.2 National data

#### 1.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Data from a sample plot inventory of the settlement area of Reykjavík city	Estimates of canopy cover of trees reaching more than 5 m at maturity	2008	Work conducted by IFI

2	Data from a sample plot inventory (SPI) of forest and woodland in Iceland	Area estimates for cultivated forests are built on sample plot inventory	2005-2012	Work conducted by IFI
3	FAOSTAT	Total surface area, water bodies	N/A	N/A
4	Landmælingar Íslands (E: National land survey of Iceland ). CORINE landcover classification for 2000 and 2006 Responsible: Kolbeinn Árnason kolbeinn@lmi.is	Urban areas	2000 and 2006	As an estimate for Other land with tree cover
5	Remapping of the natural birch woodland	Area estimate built on field mapping	2010-2012	Work conducted by IFI

### 1.2.2 Classification and definitions

National class	Definition
Natural birch woodland (NBW)	All land dominated by self-regenerated mountain birch ( <i>Betula pubescens</i> ) of natural origin. The mean height can vary from 0.3 m to 10.0 m.
Cultivated forests (CF)	Forests originating from plantation/seeding of trees of both exotic and native species and natural regeneration and expansion of these.
Other land with trees	A part of urban areas with canopy coverage of trees reaching 5 m or more at maturity 10% or more.
N/A	N/A

### 1.2.3 Original data

#### Forest definition and classification

A general official classification of forests and woodlands has been defined in accordance to the demand of the Kyoto protocol of the UNFCCC. (See: [http://unfccc.int/national\\_reports/initial\\_reports\\_under\\_the\\_kyoto\\_protocol/items/3765.php](http://unfccc.int/national_reports/initial_reports_under_the_kyoto_protocol/items/3765.php))

To define area as a forest it has to pass these minimum requirements:

- tree crown cover: 10 percent
- minimum land area: 0.5 hectare
- tree height: 2 meters

Further Iceland Forest Inventory (IFI) has added practical requirements that are in accordance to international definitions:

- minimum width of forest: 20 m

- maximum permanent gap in forest. 0.5 ha

In the sample plot inventory (SPI) these definitions are incorporated. The inventory is also constructed in such a manner that classes can be broken up based on international definitions of forest, such as the FAO definition with minimum 5 m height at maturity.

The two traditional woodland classes of Iceland are the two main strata of SPI with different sample intensity both in space and time. These classes are the self-regenerated birch woodlands of natural origin ( natural birch woodlands: NBW) and human induced plantation/seeding of both native tree species and exotics (cultivated forest: CF).

Instead of using the old data from former surveys to classify NBW, data and analysed results from SPI is used to classify forests and other wooded land after the FAO classification.

As in FRA2010 a part of urban areas is defined as; Other land with tree cover. This is an expert estimate based on data from a sample plot inventory conducted by IFI in 2008 in Reykjavík city which is the biggest urban area in Iceland. A mean canopy cover of the whole area was estimated at 9.9 %.

### **Forest area**

There have been two geographical surveys on NBW: one in 1972- 1975 and a second in 1987-1991. Both were based on in-field delineation of polygons with woodland cover connected with optical estimates of mean height classes and canopy cover etc.

In the latter survey some field measurements were done that partially improved the first survey, but it was not a repetition of the former one and can therefore not give any possibilities of time series estimation. A geographical analysis of NBW resulted in 115.4 kha of natural birch woodland. In that figure, CF within NBW was excluded for the first time (4 kha) (Traustason & Snorrason 2008).

The first SPI was conducted in the NBW in 2005-2009. Although it gives the best information about the characteristics of the NBW it didn't cover all woodlands and cannot be used to estimate the area of the NBW. A new mapping of the NBW was started in 2010 and will be finished in 2014. A new analysis of the old data sampled in 1987-1991, the data sampled in SPI and the new mapping of NBW is in manuscript that is intended to be published in peer-reviewed journal. The results from this work are used to estimate the area of forest and other wooded land for the BW. The results have already been used in the 2013 NIR of Iceland to the UNFCCC. See:

[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/7383.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/7383.php)

NBW was in the new analysis estimated to be 131.1 kha in 1989. Mean annual increase in area between 1989 and 2011 was estimated 0.7 kha. Classification of NBW into different FRA2015 land classes can be done through SPI. 7% of the NBW is classified as reaching 5 m height or more at maturity. Natural birch woodland meeting the FRA2015 definition for forest are estimated 9.7 kha in 1990 and 10.7 kha in 2010. Same figures for other wooded land were 122.1 kha and 134.9 kha respectively.

As in FRA2010 SPI was used to estimate the area of CF. Part of the CF cannot be classified as FAO defined forest (equal or higher than 5 m at maturity). In the SPI possible height at maturity is assessed in three classes < 2m, 2-5m and >5 m. In the current SPI (for the period 2008-2012) of CF will not reach FAO-forest definition and instead grow into woodland (2-5 m at maturity).

In the field the age of the plantations in the plots are estimated so it is possible to extract information of different area of CF at different times as requested in Question 1.

A sample plot inventory of trees in the urban area of Reykjavik showed that mean canopy cover of trees was 9.9% of the total urban area of the city. Most of the trees are growing in private gardens in areas defined in the CORINE land classification system as “Discontinuous urban fabric”. It is an expert estimate that in these areas canopy cover will exceed well over 10% and can be defined as Other land with tree cover.

Discontinuous urban fabric was estimated in the new Icelandic CORINE project to be:

8.9 kha in the year 2000 and 9.7 kha in the year 2006.

Reference:

Bjorn Traustason and Arnor Snorrason. Spatial distribution of forest and woodlands in Iceland in accordance with the CORINE land cover classification. *Icelandic Agricultural Science*. 21. p 39-47.

### **Forest expansion, reforestation**

In the NBW forest expansion has occurred in the period 1989 to 2011. Mean annual increase in area from 1989 until 2011 is estimated to 0.5 kha.

In the SPI there is a variable that describes the original status of the land transformed to cultivated forest. So it is rather straight forward to estimate the afforestation and reforestation areas from SPI. No plantation measured in SPI and younger than from 1987 was classified as reforestation so the two reforestation lines in T1b will be zero.

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

### **1.3.1 Adjustment**

No calibration was done on the data.

### **1.3.2 Estimation and forecasting**

#### **Forest area**

For NBW we assumed same annual increase in area as for the period 1989 to 2011. Forecast for 2015 is then 14.5 kha for forest and 134.6 kha for other wooded land.

Thus, the NBW estimates are (in kha):

	1990	2000	2005	2010	2015
Forest	9.7	10.2	10.5	10.7	11.0

OWL	122.1	128.5	131.7	134.9	138.1
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For CF we also use data from SPI and the age of the plantations to estimate the area at different times, that is in 1990, 2000, 2005 and 2010.

To estimate a forecast for 2015 an extrapolation of the mean annual increase in the area between 2005 and 2011 is used as it is a better trend than longer period taking more into count the change in afforestation rate after the final crisis in 2008. (See figures).

Thus, the CF estimates are (in kha):

Year	1990	2000	2005	2010	2015
Forest	6.4	18.6	26.0	32.0	38.2
OWL	0.2	1.5	2.9	4.3	6.1

Other land with tree cover was estimated with interpolation of the area of the Corine class “Discontinuous urban fabric” between year 2000 and 2006. An extrapolation was used to estimate figure for the year 1990. An expert judge is that “Discontinuous urban fabric” has not increased after the financial crisis in 2008 and the 2010 and 2015 figures are therefore estimated equal to the 2006 figure.

### **Forest expansion, reforestation**

For the years 1988-1992, 1998-2002 and 2003-2007 complete series can be extracted from the SPI. For the period 2008-2012 the data are only complete for 2008 - 2011. The mean annual afforestation rate for these 4 years is used as an average for the period 2008-2012.

## 1.3.3 Reclassification

<b>Forest area</b>					
<b>Year</b>	<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>
<b>Forest</b>	<b>16.1</b>	<b>28.8</b>	<b>36.5</b>	<b>42.7</b>	<b>49.2</b>
NBW	9.7	10.2	10.5	10.7	11.0
CF	6.4	18.6	26.0	32.0	38.2
<b>OWL</b>	<b>122.3</b>	<b>130.0</b>	<b>134.6</b>	<b>139.2</b>	<b>144.2</b>
NBW	122.1	128.5	131.7	134.9	138.1
CF	0.2	1.5	2.9	4.3	6.1
<b>OLT</b>	<b>7.6</b>	<b>8.9</b>	<b>9.6</b>	<b>9.7</b>	<b>9.7</b>

## 1.4 Data

Table 1a

<b>Categories</b>		<b>Area (000 hectares)</b>				
		<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>
	Forest	16.1	28.8	36.5	42.7	49.2
	Other wooded land	122.3	130	134.6	139.2	144.2
	Other land	9886.6	9866.2	9853.9	9843.1	9831.6
	... of which with tree cover	7.6	8.9	9.6	9.7	9.7
	Inland water bodies	275	275	275	275	275
	<b>TOTAL</b>	<b>10300.00</b>	<b>10300.00</b>	<b>10300.00</b>	<b>10300.00</b>	<b>10300.00</b>

Table 1b

<b>Categories</b>		<b>Annual forest establishment / loss (000 hectares per year)</b>				<b>...of which of introduced species (000 hectares per year)</b>			
		<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>
	Forest expansion	0.69	1.47	1.5	1.26	0.51	1.02	1.12	0.95

CFRQ	... of which afforestation	0.64	1.42	1.45	1.21	0.51	1.02	1.12	0.95
CFRQ	... of which natural expansion of forest	0.11	0.11	0.1	0.08	0	0	0	0
CFRQ	Deforestation	N/A	N/A	0.007	0.003	N/A	N/A	0.006	0.003
CFRQ	... of which human induced	N/A	N/A	0.007	0.003	N/A	N/A	0.006	0.003
CFRQ	Reforestation	0.12	0.12	0.12	0.12	0	0	0	0
CFRQ	... of which artificial	0	0	0	0	0	0	0	0

## Tiers

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

## 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>	<b>Tier 3</b> : Data sources: Either recent (less than 10 years ago) National Forest Inventory or remote sensing, with ground truthing, or programme for repeated compatible NFIs <b>Tier 2</b> : Data sources: Full cover mapping / remote sensing or old NFI (more than 10 years ago) <b>Tier 1</b> : Other	<b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other

## 1.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trends
Forest	N/A	Since 1990 4-6 million seedling has been planted in various afforestation programs. These activities are the main reason for the increase in forest area.
Other wooded land	N/A	N/A
Other land	N/A	N/A
Other land with tree cover	N/A	N/A
Inland water bodies	N/A	N/A

Forest expansion	N/A	We report for the first time forest expansion in the NBW estimated from current remapping of the NBW.
Deforestation	N/A	Deforestation is thoroughly monitored by the IFI since 2005 as they have to be reported annually to the UNFCCC
Reforestation	N/A	Reforestation is currently very rare as most of the cultivated forest is young.

#### Other general comments to the table

The use of new SPI data resulted in slightly higher area estimates for both forest and other wooded land for the country specific class Cultivated forestry than reported in FRA2010. New area figures for the NBW was the the main reason for the considerable increase in the area estimate for both Forest and OWL. In 1990 the government started the first regional afforestation program on East-Iceland to encourage farmers and private landowners to start afforestation on their lands. At the same time country wide land reclamation afforestation program was launched and has been going on ever since. The actors there are the local forestry associations and municipalities around the country. More regional programs in other regions where started around year 2000 and now five regional programs are ongoing covering all regions in Iceland. That is the explanation of increasing afforestation in Iceland. After the financial crisis in 2008 the governmental funding have been reduced and the afforestation rate has started to decrease.

## 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	New data from the sample plot inventory of forest and woodland in Iceland	Classification and area estimates build on sample plots	2005-2012	Work conducted by IFI. Data from 5 years of the first cycle for NBW and from 5 last years (2008-2011) for CF
2	Remapping of the natural birch woodland (NBW)	Area estimate built on field mapping	2010-2012	Work conducted by IFI.
3	N/A	N/A	N/A	N/A

4	N/A	N/A	N/A	N/A
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### 2.2.2 Classification and definitions

National class	Definition
N/A	N/A

### 2.2.3 Original data

See 2.5. for definition of classes. Of planted forest of introduced species only the area of planted exotics are used (see discussion in 2.5). The area classified by species can be extracted from the NSPI database. Native species are: *Betula pubescens*, *Salix phylicifolia*, *Sorbus aucuparia* and *Populus tremula*.

## 2.3 Analysis and processing of national data

### 2.3.1 Adjustment

### 2.3.2 Estimation and forecasting

See 1.3.2. The proportion of introduced species in plantations in year 2015 is assumed to be the same as in for planted forest in 2011.

### 2.3.3 Reclassification

See 1.3.3.

## 2.4 Data

Table 2a

Categories	Forest area (000 hectares)				
	1990	2000	2005	2010	2015
 Primary forest	0	0	0	0	0

	Other naturally regenerated forest	9.7	10.2	10.5	10.7	11
	... of which of introduced species	0	0	0	0	0
	... of which naturalized	0	0	0	0	0
	Planted forest	6.4	18.6	26	32	38.2
	... of which of introduced species	4.7	14.5	20.1	25	30
TOTAL		16.10	28.80	36.50	42.70	49.20

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
0	0	0	0	0	0	0	0	0

Table 2c

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

## 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 3

## Tier Criteria

Category	Tier for status	Tier for reported trend
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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) <b>Tier 1</b> : 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>
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## 2.5 Comments

Category	Comments related to data definitions etc	Comments on reported trend
Primary forest	Although the natural birch forest originates from primary forest it is drastically affected by humans and not defined as such.	N/A
Other naturally regenerating forest	Natural regeneration of other species than birch is currently rare so here the area of natural birch forest is used	N/A
Planted forest	Almost all CF are planted so the area of CF is used in the class.	N/A
Mangroves	Not applicable	N/A

### Other general comments to the table

It is difficult to define what forest of introduced species is. It is clear that all plantations of exotics are introduced. But what about plantations of native birch? Almost all plantations of native birch are of native but non-local provenances. Only a few provenances from South-east Iceland, that have the best growth, are used all around the country. Use of local provenances is rare because they often are shrubby and grow slowly. Strictly, one can define the native birch plantations as introduced although they are defined not as introduced in this report.

### 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	Data from a sample plot inventory (SPI) of forests and woodlands in Iceland	Area estimates built on sample plots	2005-2012	Work conducted by IFI.
2	Snorrason A & Einarsson S F 2006. Single tree biomass- and stem volume functions for eleven tree species used in Icelandic forestry. Icelandic Agricultural Sciences 19. p 15-24.	stem volume and stem biomass /tree	2001-2002	Used in the calculation of growing stock and biomass of measured plots in the growth potential project

3	Snorrason A., Sigurdsson B.D., Gudbergsson G., Svavarsdottir K., Jonsson Th.H. (2002). Carbon sequestration in forest plantations in Iceland, Icel. Agric. Sci. 15 (2002) 79-91.	root/shoot ratio	1998-2001	Used to estimate root/shoot ratio
4	Sigurdsson, Bjarni D., Borgthor Magnusson, Asrun Elmarsdottir and Brynhildur Bjarnadottir (2005). Effects of afforestation on biomass, carbon stock and composition of ground vegetation: a chronosequence study in Iceland. Annals of Forest Science 62, 881-888.	biomass of other vegetation	2002-2003	N/A
5	Snorrason A., Sigurdsson B.D., Gudbergsson G., Svavarsdottir K., Jonsson Th.H. (2002). Carbon sequestration in forest plantations in Iceland, Icel. Agric. Sci. 15 (2002) 79-91 & Sigurdsson, Bjarni D., Borgthor Magnusson, Asrun Elmarsdottir and Brynhildur Bjarnadottir (2005). Effects of afforestation on biomass, carbon stock and composition of ground vegetation: a chronosequence study in Iceland. Annals of Forest Science 62, 881-888.	C-stock in litter	1998-2003	Research results of C-stock measurements of litter in forest in Iceland.
6	Oskarsson, H., Arnalds, O., Gudmundsson, J. and Gudbergsson, G., 2004 Organic carbon in Icelandic Andosols: geographical variation and impact of erosion. Catena 56, 225–238. & Arnalds, O., 2004. Volcanic soils of Iceland. Catena 56, 3 –20.	C-stock in organic soils	1998-2002	Results of C-stock measurements in organic soils in Iceland.

7	Snorrason A., Sigurdsson B.D., Gudbergsson G., Svavarsdottir K., Jonsson Th.H. (2002). Carbon sequestration in forest plantations in Iceland, Icel. Agric. Sci. 15 (2002) 79-91 & Bjarnadóttir, B. (2009). Carbon stocks and fluxes in a young Siberian larch ( <i>Larix sibirica</i> ) plantation in Iceland. Geografiska Institution. Lund, Lunds Universitet. Ph.D.: 62.	C-stock in inorganic forest soils	2001-2003	Research results of C-stock measurements in inorganic forest soils in Iceland.
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### 3.2.2 Classification and definitions

National class	Definition
Growing stock	National classification is to the FRA2015 classification. Volume over bark of all living trees more than 9.99 cm in diameter at breast height (or above buttress if these are higher). Includes the stem from ground level or stump height up to a top diameter of 0 cm. Branches are excluded
Biomass stock	FRA 2010 default definitions are used. – Same as FRA2015
Carbon stock	FRA 2010 default definitions are used.
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 dead wood -----Carbon in litter	Same as FRA2015
Soil carbon	Organic carbon in mineral and organic soils (including peat) to a 30 cm depth

### 3.2.3 Original data

As mentioned before a new mapping of the NBW was started in 2010 and will be finished in 2014. A new analysis of the old data sampled in 1987-1991, the data sampled in SPI and the new mapping of NBW is in manuscript that is intended to be published in peer-reviewed journal. In addition to new area estimates for NBW this analysis will too give a new estimate off the tree biomass in the NBW in 1987 and 2006 and its net growth ratio. They are in this report used to estimate biomass and C-stock in living trees in NBW. The growth ratio is too used to calculate the growing stock of the NBW in different times and the net annual increment of the NBW.

#### Growing stock

In last submission to FAO (FRA2010) a minimum diameter of 0 at breast height was used. In FRA2015 it was required to use 10 cm as a minimum for  $d_{1.3}$ . All tree data from the SPI was therefore recalculated and trees with  $d_{1.3} \neq 10$  cm were extracted.

**Cultivated forest:** A total growing stock and annual increment of trees with  $d_{1.3} \geq 10$  cm was calculated for all inventory year of the SPI of the CF (2005-2012).

**Natural birch woodland:** A total growing stock and annual increment of trees with  $d_{1.3} \geq 10$  cm was calculated for all inventory year of the SPI of the NBW (2005-2009).

### **Biomass stock**

Annual biomass estimates are conducted to meet the requirements of the carbon reporting of UNFCCC. They cannot be used directly in this report as they follow the country wise (CW) definition of forest that is not equal to the FAO definition. The FAO definition and CW are different only in one point, that is height at maturity. The CW definition uses 2 m as minimum height at maturity instead of 5 m height at maturity as in the FAO definition. In SPI it is possible, as for the area, to break up the data by mature height classes so direct information on biomass stock of trees above ground and below ground can be reported.

Data sources and assessment methods are similar as for T3 with few exceptions. The exceptions are:

1. Instead of stem volume functions, functions for total biomass above ground (stump) are used to estimate the biomass (Snorrason & Einarsson 2006).
2. All trees regardless of size are included in the estimate. No minimum size of trees is used.
3. Country specific root/shoot ratio found in in-country research is used to estimate below ground biomass (Snorrason et.al. 2002). The ratio is: 0.25. Note that fine-roots are excluded and the stump is included in the belowground estimate.
4. Dead wood biomass is excluded. If international definition of dead wood is followed the occurrence is rare. Dead wood has been measured in SPI but not yet estimated.
5. Natural birch woodland with mean height under 2 m (shrubland) is included in the biomass estimation for other wooded land.
6. Above ground biomass of other vegetation than trees is estimated and added to above ground biomass of trees. Average of 12 measurement plots was 3 tonnes/ha (Snorrason et.al. 2002). Other research with ca. 50 measurements gave biomass in other vegetation than trees around 3.6 tonnes/ha (Sigurdsson et.al. 2005). Above ground biomass in other vegetation than trees is estimated to be 3.4 tonnes/ha.

### **Carbon stock**

The same data sources and assessment methods are used as in biomass tables with some additions. They are:

1. Results from in-country research are used to estimate C-stock in litter. An average for 12 measurements for litter was 6.0 tonnes C/ha (Snorrason et.al. 2002). Because the litter is more or less concentrated to the area

below the trees the litter area is decreased at same ratio as the tree-cover area of both NBW and CF. All open areas in forest are excluded. In CF a of the area are without tree growth. Same figure for NBW is

2. The same in-country results give 1.5 tonnes C/ha in other vegetation than trees, a similar mean value as found by Sigurdsson et.al. 2005. They are used to estimate C-stock in other vegetation than trees. A total area of both NBW and CF is used.

3. Inorganic soils of Iceland are mostly volcanic soils (Andosols). The in-country research mentioned before gave 81 tonnes C/ha for 0-30 cm depth although total C-stock down to bedrock was higher or 148 tonnes C/ha (Snorrason et.al. 2002). This figure is similar to extensive measurement of the C-content of various soil types in Iceland (Oskarsson et.al. 2004) where mean value in brown andisols was around 70 tonnes C/ha. Brown andisol is the main type of inorganic soil in Iceland. New research of the C-stock of both BW and CF showed higher figures especially for West Iceland where precipitation is higher than in East Iceland. Mean values for 0-30 cm depth were ca. 150 tonnes C/ha in West Iceland but ca. 80 tonnes C/ha in East Iceland (Sigurdsson et.al. 2008). Here the moderate figure of 81 tonnes C/ha will be used for all inorganic soils of the both BW and CF.

4. A minor part (3%) of CF is on organic soils. C-stock for 0-30 cm depth is estimated to ca. 200 tonnes C/ha according to published research results (Oskarsson et.al. 2004 & Arnalds 2004).

### 3.3 Analysis and processing of national data

#### 3.3.1 Adjustment

#### 3.3.2 Estimation and forecasting

##### **Growing stock**

As the SPI has a cycle of 5 years consisting of permanent plots every 5 years average do cover all sample but each year measurement only 1/5<sup>th</sup> of the sample. A midyear estimates were made for 2006 and 2009 for the CF. Same was done for the NBW for the year 2006 that was measured in years 2005-2009. These mid year estimates were back or forward calculated with the growth rate for each mid year estimate to estimate the growing stock in reporting year (1990,2000,2005,2010 and 2015).

In table 3 b only the six most common species are reported although it was theoretically possible to calculate values for more species. When using SPI, breaking the data down more can lead to false results so it is better not to report species with growing stock estimates less than ten thousand cubic meters.

For the same reason it did not add any information to the table to calculate calibrated figures for year 2000 and 1990.

##### **Biomass stock**

##### **Carbon stock**

Following the IPCC Good Practice Guidance, we calculated the Carbon Stock of AGB and BGB by multiplying biomass values with 0.5.

### 3.3.3 Reclassification

## 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	0.03	0.094	0.166	0.293	0.502	0.027	0.029	0.03	0.032	0.033
	... of which coniferous	0.013	0.051	0.103	0.195	0.354	0	0	0	0.001	0.001
	... of which broadleaved	0.017	0.043	0.063	0.098	0.148	0.027	0.029	0.03	0.031	0.032

Table 3b

Category/Species name			Growing stock in forest (million cubic meters)			
Rank	Scientific name	Common name	1990	2000	2005	2010
1 st	<i>Larix sibirica</i>	Siberian larch	N/A	N/A	0.032	0.059
2 nd	<i>Picea sitchensis</i>	Sitka spruce	N/A	N/A	0.031	0.054
3 rd	<i>Betula pubescens</i>	Downy birch	N/A	N/A	0.045	0.052
4 th	<i>Pinus contorta</i>	Lodgepole pine	N/A	N/A	0.022	0.045
5 th	<i>Populus trichocarpa</i>	Black cottonwood	N/A	N/A	0.013	0.037
6 th	<i>Picea abies</i>	Norway spruce	N/A	N/A	0.011	0.023
7 th	N/A	N/A	N/A	N/A	N/A	N/A
8 th	N/A	N/A	N/A	N/A	N/A	N/A

9 th	N/A	N/A	N/A	N/A	N/A	N/A
10 th	N/A	N/A	N/A	N/A	N/A	N/A
Remaining			N/A	N/A	0.012	0.023
TOTAL			.00	.00	.17	.29

**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)	10	N/A
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	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	0.19	0.35	0.5	0.72	1.08
	... of which coniferous	0.47	0.66	0.95	1.22	1.85
	... of which broadleaved	0.11	0.18	0.2	0.33	0.44

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	0.26	0.35	0.46	0.63	1	1.72	1.85	1.93	2.01	2.1

	Below ground biomass	0.07	0.09	0.11	0.16	0.28	0.43	0.47	0.49	0.51	0.54
	Dead wood	N/A									
TOTAL		.33	.44	.57	.79	1.28	2.15	2.32	2.42	2.52	2.64

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	0.13	0.18	0.23	0.31	0.5	0.86	0.92	0.96	1	1.05
	Carbon in below ground biomass	0.03	0.04	0.06	0.08	0.14	0.22	0.23	0.24	0.26	0.27
	<i>Subtotal Living biomass</i>	0.16	0.22	0.29	0.39	0.64	1.08	1.15	1.2	1.26	1.32
	Carbon in dead wood	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Carbon in litter	0.07	0.14	0.18	0.21	0.24	0.52	0.55	0.57	0.6	0.62
	<i>Subtotal Dead wood and litter</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Soil carbon	1.36	2.44	3.09	3.62	4.16	10.36	11.01	11.41	11.79	12.22
TOTAL		1.59	2.80	3.56	4.22	5.04	11.96	12.71	13.18	13.65	14.16

## Tiers

Variable/category	Tier for status	Tier for trend
Total growing stock	Tier 3	Tier 2
Net annual increment	Tier 3	Tier 2
Above ground biomass	Tier 3	Tier 2
Below ground biomass	Tier 2	Tier 2

Dead wood	N/A	N/A
Carbon in above-ground biomass	Tier 3	Tier 2
Carbon in below ground biomass	Tier 2	Tier 2
Carbon in dead wood and litter	Tier 2	Tier 2
Soil carbon	Tier 2	Tier 2

## 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
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Total growing stock	Decrease in the estimate of growing stock from FRA2010 are mainly caused by the use of minimum d1,3 of 10 cm instead of 0 cm. That is affecting to much higher degree the growing stock of the Other wooded land than of forest.	N/A
Growing stock of broadleaved coniferous	N/A	N/A
Growing stock composition	N/A	N/A
Net annual increment	N/A	N/A
Above-ground biomass	Higher estimates of ABGB than in FRA2010 are mainly explained with new and higher estimates of the area of Natural birch woodland. Biomass of other vegetation than trees are included in the above-ground biomass estimate. See also comment in chapter 3.2.3 in the country report.	N/A
Below-ground biomass	See comment in chapter 3.2.3 in the country report.	N/A
Dead wood	See comment in chapter 3.2.3 in the country report.	N/A
Carbon in above-ground biomass	Carbon in the biomass of other vegetation than trees are included in this category.	N/A
Carbon in below-ground biomass	N/A	N/A
Carbon in dead wood	N/A	N/A
Carbon in litter	N/A	N/A
Soil carbon	N/A	N/A

**Other general comments to the table**

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	New data from the sample plot inventory of forest and woodland in Iceland*	Classification and area estimates build on sample plots	2005-2012	Work conducted by IFI. Data from 5 years of the first cycle for NBW and from 5 last years (2008-2011) for CF.
2	Remapping of the natural birch woodland (NBW)*	Area estimate built on field mapping	2010-2012	Work conducted by IFI.
3	Annual report of domestic Christmas tree production**	Number of trees and mean price	2010	Number of trees of each species is published annually by the Icelandic Forest Association
4	Annual report of wood production**	Volume with bark	1996-2011	Commercial roundwood

#### 4.2.2 Classification and definitions

National class	Definition
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N/A	N/A

#### 4.2.3 Original data

##### **Remarks regarding 4.2.1.**

\* Same references and sources as for Question1

\*\*Published references: Figures for domestic Christmas tree and wood production have been published in the annual journal of the Icelandic Forestry Association with some exceptions (Icelandic name of the journal: Ársrit Skógræktarfélag Íslands (from 1930 to 1991), Skógræktarritið (from 1992 up to day). Until 1987 the figures were included in the annual reports of the Forestry director IFS. From 1994 (for the year 1993) the Forestry Association started to publish figures about Christmas tree production in its annual report of forest activity and have done it up to the present.

##### **Natural birch forests:**

The forest part (reaching 5 m or more in height) of the natural birch woodland are as the other wooded land often not fenced and therefore used for grazing of domestic animals, mostly sheep. In more recent times they are also partially used for recreation and can therefore be classified as woodland for social services. They also play an important role in protection of soil and water and conservation of biodiversity. A part of the natural birch forest, mainly owned by the Iceland state Forest Service (IFS) is selectively cut regularly and the wood sold mostly as firewood for open fireplaces for amenity use. A small part is under natural conservation in national park and there also used for recreation. The conclusion is that NBF are as whole with the designated function multiple use. Although the IFS part can be considered as available for wood supply it can not be considered as a designated function.

##### **Cultivated forest.**

The data variable from the NSPI used to describe the primary designated function of forest is a classification variable that describes the usage of the forest.

### 4.3 Analysis and processing of national data

#### 4.3.1 Adjustment

Table of the relationship between classes for data variable from the Sample Plot Inventory of Cultivated Forest used to describes the usage of the forest and the variable describing the primary designated function of forest in Table 4a, 5a, 5b and 6:

	Pro-duction	Multiple use	Protection of soil and water	Conserv-ation of bio-diversity	Social services	Other	No/un-known
Multiple		x					
Wood producton	x						
Land reclamation			x				
Recreation					x		
Summerhouse					x		
Trial field					x		
Seed production	x						
Cristmaas tree	x						
Shelter forest			x				
Natural conservation				x			
Other						x	
Undefined							x

As available data of wood removals are with bark a constant of 13% subtracted from the data to estimate wood removals volume under bark in Table 4c.

#### 4.3.2 Estimation and forecasting

Area estimate for the multiple use category is as the total for the natural birch forest as reported in chapter 1.3.2.

Natural birch forests:

	1990	2000	2005	2010	2015
kha	9.7	10.2	10.5	10.7	11.0

For Cultivated Forest the figures for 2015 are with the same ratio for the two categories as accumulated figure to 2011.

kha	1990	2000	2005	2010	2015
Production forest	0.55	3.40	4.80	5.86	6.71
Multiple use forest	3.17	8.34	12.21	15.16	17.54

#### NWFP:

Only non wood forest product of significant value in Iceland are Christmas trees. The production of 2010 was estimated to 11,600 trees where 9,600 are reported but an addition of 2,000 trees is an expert estimate of unreported production. The value of each tree can vary as some are big outdoor trees but other are family trees. Estimated mean value of each is an expert estimate.

#### 4.3.3 Reclassification

#### 4.4 Data

Table 4a

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Production forest	0.6	3.4	4.8	5.9	6.7
	Multiple use forest	0	0	0	0	0

Table 4b

Rank	Name of product	Key species	Commercial value of NWFP removals 2010 (value 1000 local currency)	NWFP category
1 st	Christmas trees	Pinus contorta	928000	6
2 nd	N/A	N/A	N/A	N/A

3 rd	N/A	N/A	N/A	N/A
4 th	N/A	N/A	N/A	N/A
5 th	N/A	N/A	N/A	N/A
6 th	N/A	N/A	N/A	N/A
7 th	N/A	N/A	N/A	N/A
8 th	N/A	N/A	N/A	N/A
9 th	N/A	N/A	N/A	N/A
10 th	N/A	N/A	N/A	N/A
TOTAL			928000.00	

2010	
Name of local currency	ISKR

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

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

Table 4c Pre-filled data from FAOSTAT

Year	FRA 2015 category (1000 m <sup>3</sup> u.b.)	
	Total wood removals	...of which woodfuel
1990	3.345	0.972
1991	N/A	N/A
1992	N/A	N/A
1993	N/A	N/A
1994	N/A	N/A
1995	N/A	N/A
1996	0.35	0.133
1997	0.273	0.121
1998	0.268	0.141
1999	0.269	0.138
2000	0.284	0.161
2001	0.249	0.131
2002	0.399	0.137
2003	0.539	0.145
2004	0.467	0.186
2005	0.836	0.2
2006	0.769	0.239
2007	0.558	0.237
2008	1.256	0.461
2009	1.329	0.461

2010	3.641	0.785
2011	3.345	0.972

## 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
Production forest	N/A	N/A
Multiple use forest	N/A	N/A
Total wood removals	Prefilled data are not right	N/A
Commercial value of NWFP	N/A	N/A

## Other general comments to the table

N/A
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## 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	New data from the sample plot inventory of forest and woodland in Iceland	Classification and area estimates build on sample plots	2005-2012	Work conducted by IFI. Data from 5 years of the first cycle for NBW and from 5 last years (2008-2011) for CF.

2	Remapping of the natural birch woodland (NBW)	Area estimate built on field mapping	2010-2012	Work conducted by IFI.
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

### 5.2.3 Original data

#### **Natural birch forests:**

As already described in Chapter 4.2.3 the natural birch forest as all natural birch woodland play an important role in the protection of soil and water. Their management, that is mostly protection by law, is directed to its function to prevent erosion and protect soil together with nature conservation and biodiversity. All natural birch forest is therefore defined as designated to protect soil and water.

#### **Cultivated forest:**

Cultivated forest reported in the NFI as designated to land reclamation and shelter are defined here as designated to protection of soil and water. (See table in chapter 4.3.1).

#### **Ecosystem services:**

Forest as a valuable storage of Carbon and forestry to mitigate Carbon has gained more and more attention in Iceland. Although forest has many other roles the Carbon storage/mitigation function does overwhelm other function. All management of forest in Iceland are affected of this situation.

Here all forest are designated to ecosystem service. Only part of the cultivated forest is designated primarily to recreation (See table in chapter 4.3.1).

## 5.3 Analysis and processing of national data

### 5.3.1 Adjustment

### 5.3.2 Estimation and forecasting

### 5.3.3 Reclassification

## 5.4 Data

Table 5a

Categories		Forest area (1000 hectares)				
		1990	2000	2005	2010	2015
CRQ	Protection of soil and water	10.2	12.1	13.7	15.2	17.1
CRQ	... of which production of clean water	0	0	0	0	0
CRQ	... of which coastal stabilization	0	0	0	0	0
CRQ	... of which desertification control	10.2	12.1	13.7	15.2	17.1
CRQ	... of which avalanche control	0	0	0	0	0
CRQ	... of which erosion, flood protection or reducing flood risk	0	0	0	0	0
CRQ	... of which other (please specify in comments below the table)	0	0	0	0	0

### Other

N/A

Table 5b

Categories	Forest area (1000 hectares)				
	1990	2000	2005	2010	2015
Ecosystem services, cultural or spiritual values	16.1	28.8	36.5	42.7	49.2
...of which public recreation	2	4.6	5.4	6.2	6.5
...of which carbon storage or sequestration	3	8.2	12	14.8	18.3
...of which spiritual or cultural services	0	0	0	0	0
...of which other (please specify in comments below the table)	0	0	0	0	0

## Tiers

Category	Tier for reported trend	Tier for status
Protection of soil and water	Tier 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	N/A	N/A
Production of clean water	N/A	N/A
Coastal stabilization	N/A	N/A
Desertification control	N/A	N/A
Avalanche control	N/A	N/A
Erosion, flood protection or reducing flood risk	N/A	N/A
Other protective functions	N/A	N/A
Ecosystem services, cultural or spiritual values	N/A	N/A
Public recreation	N/A	N/A
Carbon storage or sequestration	As C-seq. and C-storage protection have high governmental priority all other forest than with direct recreation purpose are placed in this category.	N/A
Spiritual or cultural services	N/A	N/A
Other ecosystem services	N/A	N/A

**Other general comments to the table**

N/A

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

Documents for this question:

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

### 6.1 Categories and definitions

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

### 6.2 National data

#### 6.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	New data from the sample plot inventory of forest and woodland in Iceland	Classification and area estimates build on sample plots	2005-2012	Work conducted by IFI. Data from 5 years of the first cycle for NBW.
2	Remapping of the natural birch woodland (NBW)	Area estimate built on field mapping	2010-2012	Work conducted by IFI.
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 6.2.2 Classification and definitions

National class	Definition
N/A	N/A

#### 6.2.3 Original data

Only part of the Natural birch forest can be defined as under conservation (7%). These are forest areas that are in a national parks. Their conservation is not designated primarily for conservation of biological diversity.

## 6.3 Analysis and processing of national data

### 6.3.1 Adjustment

### 6.3.2 Estimation and forecasting

### 6.3.3 Reclassification

## 6.4 Data

Table 6

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Conservation of biodiversity	0	0	0	0	0
	Forest area within protected areas	0.35	0.47	0.6	0.6	0.6

### 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
<ul style="list-style-type: none"> <li>Conservation of biodiversity</li> <li>Forests within protected areas</li> </ul>	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	<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

## 6.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Conservation of biodiversity	N/A	N/A

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Forest area within protected areas	This is the forest area within national parks	N/A
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**Other general comments to the table**

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

Documents for this question:

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

### 7.1 Categories and definitions

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

### 7.2 National data

#### 7.2.1 Data sources

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

#### 7.2.2 Classification and definitions

National class	Definition
N/A	N/A

#### 7.2.3 Original data

No Invasive tree species that affect natural forest do occur in Iceland.

### 7.3 Analysis and processing of national data

#### 7.3.1 Adjustment

## 7.3.2 Estimation and forecasting

--

## 7.3.3 Reclassification

--

## 7.4 Data

Table 7

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

## Tiers

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

## 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	No woody species are invasive in Iceland.	N/A

Other general comments to the table
N/A

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

Documents for this question:

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

### 8.1 Categories and definitions

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

### 8.2 National data

#### 8.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Data from The Icelandic Institute Of Natural History (INH)	Area of wildfires	2006-2013	INH does report wildfires by mapping the area of each fire.
2	New GIS database built on the natural birch woodlands survey and spatial information of CF*	Area of NW and CF	N/A	N/A
3	Digital maps of affected natural birch woodland	Affected NW	N/A	Field assessment (Hallgrímsson et.al. 2006)
4	N/A	N/A	N/A	N/A

#### 8.2.2 Classification and definitions

National class	Definition
N/A	N/A

### 8.2.3 Original data

\*Bjorn Traustason and Arnor Snorrason. Spatial distribution of forest and woodlands in Iceland in accordance with the CORINE land cover classification. Icelandic Agricultural Science. 21. p 39-47.

INH started to register and map all wildfires after a vast fire in 2006. Before that time no systematic registration was carried out. When merging the wildfire maps and the forest area map it is possible to estimate forest and woodland fires. Forest and woodland fires are rare but they do occur. The area burned each time is small. As an example there was a wildfire in an afforestation area in 2008. 9,1 ha of CF was burned in that fire.

Iceland Forest Research does annually monitor outbreaks and damages caused by insect, diseases. Since FRA2010 no severe outbreak of insects and plant diseases has occurred. Although wind-throws are increasing with higher heights of plantations no severe storm damage has still not occurred.

## 8.3 Analysis and processing of national data

### 8.3.1 Adjustment

### 8.3.2 Estimation and forecasting

### 8.3.3 Reclassification

## 8.4 Data

Table 8a

Category		000 ha, number of fires									
		2003		2004		2005		2006		2007	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
	Total land area burned	N/A	N/A	N/A	N/A	N/A	N/A	6.7	1	0.009	1
	... of which forest area burned	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0
Category		2008		2009		2010		2011		2012	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#

	Total land area burned	0.118	2	0	0	0.13	1	0	0	0.016	3
	... of which forest area burned	0.009	1	0	0	0	0	0	0	0	1

Table 8b

Outbreak category	Description/name	Year(s) of latest outbreak	Area damaged (000 hectares)
1	Larvae defoliation leading to dieback and mortality of Betula and Salix species. Insects groups Lepidoptera.	2006	0.02
1	Broom moth (Ceramica pisi) outbreak larvae defoliation leading to dieback and increased mortality of seedlings and small trees (All tree species affected).	2008	N/A
1	Green spruce aphid (Elatobium abietinum) causing defoliation leading to decreased growth and rarely to mortality (species affected (Picea sitchensis, P. glauca, P. engelmannii)).	2003	N/A
2	Poplar rust (Melampsora larici-populina) infestation damage to foliage in late summer leading to poor hardiness and frost damage dieback next winter of black cottonwood (Populus trichocarpa).	2000	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Outbreak category
-------------------

1 Insects
-----------

2 Diseases
3 Severe weather events

## Tiers

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

## 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	N/A	N/A
Insects	N/A	N/A
Diseases	N/A	N/A
Severe weather events	N/A	N/A

## Other general comments to the table

N/A
-----

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

Documents for this question:

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

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

Table 9

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

Tiers

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

Tier criteria

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

Comments

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

Other general comments

No severe canopy cover reduction did occur in this time period. The Icelandic experience of remote sensing of the deciduous woodland is that they are very difficult to track.

## 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	<a href="http://www.althingi.is/lagas/143a/1955003.html">http://www.althingi.is/lagas/143a/1955003.html</a>	General forest act.	1955	N/A
2	<a href="http://www.althingi.is/lagas/143a/2006095.html">http://www.althingi.is/lagas/143a/2006095.html</a>	Special forest act for regional afforestation projects:	2006	N/A
3	<a href="http://www.skogur.is/media/yomislegt/Stefna-skogar.pdf">http://www.skogur.is/media/yomislegt/Stefna-skogar.pdf</a>	National policy for the forest and forestry for the 21th century.	2013	N/A
4	N/A	N/A	N/A	N/A

#### 10.2.2 Classification and definitions

National class	Definition
N/A	N/A

## 10.2.3 Original data

For the first time a national policy for the forest and forestry in Iceland has been set for the 21th century. See: <http://www.skogur.is/media/ymislegt/Stefna-skogar.pdf>

An overall goal is sustainability.

The law system is consisting of general forest act (from 1955): <http://www.althingi.is/lagas/143a/1955003.html>

and special forest act for regional afforestation projects:

<http://www.althingi.is/lagas/143a/2006095.html>

## 10.3 Data

Table 10

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

## 10.4 Comments

Variable / category	Comments related to data definitions etc
Policies supporting sustainable forest management	The national policy and framework plans for regional afforestation programs
Legislation and regulations supporting sustainable forest management	The two forest acts (See original data above)

Other general comments

--

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

Documents for this question:

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

### 11.1 Categories and definitions

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

### 11.2 National data

#### 11.2.1 Data sources

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

Table 11

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

### 11.3 Comments

Category	Comments related to data definitions etc
National stakeholder platform	Private stakeholder can be members in forest NGO's as The forest associations (see: <a href="http://skog.is/forest/">http://skog.is/forest/</a> ) or the forest owner association (see: <a href="http://www.skogarbondi.is/verkefni/frettir/landssamtok-skogareigenda/">http://www.skogarbondi.is/verkefni/frettir/landssamtok-skogareigenda/</a> ) These associations participate actively in policy making with governmental institutions.

Other general comments

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## 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	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

#### 12.2.2 Classification and definitions

National class	Definition
N/A	N/A

#### 12.2.3 Original data

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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

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## 12.3.3 Reclassification

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## 12.4 Data

Table 12

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

## Tiers

Category	Tier for status
Forest area intended to be in permanent forest land use	Tier 1
Permanent forest estate	Tier 1

## 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	Forest is by the general forest act protected against uncontrolled clearcutting but that can vaguely be interpreted as intention of permanent forest coverage. If so, all forest coverage fall into this category.

Permanent forest estate	The forestry act in Iceland does not designate any areas permanently as forest area. So no forests are classified hereunder.
-------------------------	--

Other general comments

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### 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	Snorrason, A. (2010). National Forest Inventories reports: Iceland. National Forest Inventories - Pathways for common reporting. E. Tomppo, T. Gschwantner, M. Lawrence and R. E. McRoberts, Springer: 277-289.	N/A	N/A	Description of the NFI
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

##### 13.2.2 Classification and definitions

National class	Definition
N/A	N/A

**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	2013	yes	no	yes	no	no	yes
Other field assessments	N/A	N/A						
Updates to other sources	N/A	N/A						
Expert estimate	N/A	N/A						

Table 13b

Type of forest reporting used at national scale	Check boxes that apply
1 Criteria and Indicators reporting	no
2 Periodic national state of the forest report	yes
3 Other (please document)	yes
4 None	no

**Other type of forest reporting**

Annual reporting to the UNFCCC

**13.4 Comments**

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

Other general comments

--

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

Documents for this question:

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

### 14.1 Categories and definitions

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

### 14.2 National data

#### 14.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	New data from the sample plot inventory of forest and woodland in Iceland	Classification and area estimates build on sample plots	2005-2012	Work conducted by IFI. Data from 5 years of the first cycle for NBW and from 5 last years (2008-2011) for CF.
2	Remapping of the natural birch woodland (NBW)	Area estimate built on field mapping	2010-2012	Work conducted by IFI.
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 14.3 Data

Table 14a

Forest plan type	Forest area 2010 (000 ha)
Forest area with management plan	33.8
... of which for production	22.68
... of which for conservation	5.1

Table 14b

Indicate which (if any) of the following are required in forest management plans in your country
--

1 Soil and water management	no
2 High conservation value forest delineation	no
3 Social considerations community involvement	no

Table 14c

<b>Percent of area under forest management plan that is monitored annually</b>	<b>20</b>
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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

## 14.4 Comments

Category	Comments
Forest area with management plan	Forest area with management plans include almost all forest areas of the state, the regional forest projects that are managed with long term forestry planning and the forest area of the forestry associations that has also been planned 1800 ha of the natural birch forest are under the regime of the State Forest Serviced and under management plans. They are added to the CF defined under management plans as described above.
N/A	N/A
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
N/A	N/A
N/A	N/A
N/A	N/A

Other general comments

Stakeholders are:
1. private forest owner or landowners with land under afforestation

2. forest associations, either professional staff or voluntary participants
3. state or communal professional staff

In all case stakeholders participate in all phases of forest planning and management.

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

Documents for this question:

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

### 16.1 Categories and definitions

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

### 16.2 Data

Table 16a

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

Table 16b

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

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

## Tier criteria

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

## Tiers

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

## 16.3 Comments

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

## Other general comments

No certification is going on in Iceland
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## 17. How much money do governments collect from and spend on forests?

Documents for this question:

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

### 17.1 Categories and definitions

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

### 17.2 National data

#### 17.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Financial book-keeping of the official forestry institutions	As requested in table	2000, 2005 and 2010	Data sampled through questionnaire to the state owned forest institutions
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 17.3 Data

Table 17

Category	Revenues / expenditures (000 local currency)		
	2000	2005	2010
Forest revenue	101990	129151	274710
Public expenditure on forestry	485460	880030	1052830
	2000	2005	2010
Name of Local Currency	ISKR	ISKR	ISKR

**17.4 Comments**

<b>Category</b>	<b>Comments related to data definitions etc</b>
Forest revenue	All revenue of governmental forest institutions
Public expenditure on forestry	All costs of governmental forest institutions
Other general comments	N/A

Other general comments

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

Documents for this question:

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

### 18.1 Categories and definitions

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

### 18.2 National data

### 18.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Data from a sample plot inventory (SPI) of forests and woodlands in Iceland	Area estimates for cultivated forests are built on sample plot inventory	2005-2012	Work conducted by IFI.
2	Remapping of the natural birch woodland	Area estimate built on field mapping	2010-2012	Work conducted by IFI.
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

### 18.2.2 Classification and definitions

National class	Definition
N/A	N/A

### 18.2.3 Original data

The data variable from the NSPI used to describe the ownership of forest is a classification variable that identifies the authority or guardianship of the forest area.

## 18.3 Analysis and processing of national data

### 18.3.1 Adjustment

Forest area of natural birch woodland (BW) is estimated to 10.7 kha, 60% is owned by Iceland State Forest Service, 20% by municipalities and 20% is privately owned by individuals according to the SPI. These ratios are assumed to be constant over time.

Forest area of cultivated forest (CF) is estimated through data in SPI as already described. The ages of the plantations are used to estimate change in time.

### 18.3.2 Estimation and forecasting

Forest area of birch woodland (BW) is estimated to 3000 ha (T1) 60% is owned by IFS. 20% by municipality and 20% is privately owned by individuals according to the NSPI. These are assumed to be constant over time.

Forest area of cultivated forest (CF) is estimated through data in NSPI as described in 2.2.3. The ages of the plantations are used to estimate change in time.

### 18.3.3 Reclassification

Table describing the relationship between classes for the variable and the T18a classes is shown in the Word format of the report.

The ownership of the forest follows mainly these relations although there are minor exceptions. It is especially the Land reclamation forest project class where the minority of the area is in Public ownership (municipalities) or Private individual ownership (private landowners or farmers).

## 18.4 Data

Table 18a

Categories		Forest area (1000 hectares)			
		1990	2000	2005	2010
	Public ownership	10.5	13.2	14.2	14.5
	... of which owned by the state at national scale	10.5	13.2	14.2	14.5
	... of which owned by the state at the sub-national government scale	0	0	0	0
	Private ownership	5.6	15.6	22.3	28.2
	... of which owned by individuals	3.9	10.8	16.5	21.3

	... of which owned by private business entities and institutions	1.7	4.8	5.8	6.9
	... of which owned by local, tribal and indigenous communities	0	0	0	0
	Unknown ownership	0	0	0	0
TOTAL		16.10	28.80	36.50	42.70

## 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	10.5	13.2	14.2	14.5
Individuals	0	0	0	0
Private companies	0	0	0	0
Communities	0	0	0	0
Other	0	0	0	0
TOTAL	10.50	13.20	14.20	14.50

Category	Tier for reported trend	Tier for status
Public Administration	Tier 3	Tier 3
Individuals	Tier 3	Tier 3
Private companies	Tier 3	Tier 3
Communities	Tier 3	Tier 3
Other	Tier 3	Tier 3

### 18.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Public ownership	N/A	N/A
Private ownership	N/A	N/A
Unknown ownership	N/A	N/A
Management rights	Management right in public forest as practiced abroad is not known in Iceland. On the other hand a minor part of the Forest associations are planted and "managed" by individuals who foster small areas. How big this part is, is unknown.	N/A

#### Other general comments to the table

N/A

## 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	Information from institutions in the forest sector.	No. of person-years	1990, 2000, 2005	IFI sent questions to forestry actors in the country, other than the regional afforestation programs
2	Magnúsdóttir, L. 2013. Economic impact of the Regional Afforestation Programmes in Iceland during 2001-2010. Agricultural University of Iceland. Faculty of Environmental Sciences. MSc. Thesis. 122 p. [In Icelandic with English abstract].	No. of person-years for the regional afforestation programs	2005, 2010	N/A
3	Gunnarsson, E. 2011. Skógræktarárið 2010. (The forest year of 2010). Skógræktarritið 2011 2.tbl. p. 96-101.	No. of person-years in the forest sector	2010	Annual data of forest activities in Iceland gathered by the Icelandic Forest Association
4	N/A	N/A	N/A	N/A

#### 19.2.2 Classification and definitions

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

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

### 19.2.3 Original data

Although IFI sent out a questionnaire but the answers were not fully compatible. Some recalculation of reported employment was necessary to cover all direct forest activities. For the year 2010 data from the forest activity report of the Icelandic Forest Association was used.

Figures were calibrated to the new information from the MSc thesis of Magnúsdóttir (2013).

## 19.3 Data

Table 19

Category		Employment (000 years FTE)			
		1990	2000	2005	2010
	Employment in forestry	0.122	0.116	0.149	0.137
	... of which female	N/A	N/A	N/A	N/A

## 19.4 Comments

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

Other general comments to the table
N/A

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

Documents for this question:

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

### 20.1 Categories and definitions

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

### 20.2 Data

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

Category	Million	Currency	Year for latest available information
Gross value added from forestry (at basic prices)	N/A	ISKR	No information is available

### 20.3 Comments

Category	Comments
N/A	At the Statistics Iceland ( <a href="http://www.statice.is/">http://www.statice.is/</a> ) no information about the GDP of forestry is available.

Other general comments

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## 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	Data from a sample plot inventory (SPI) of forests and woodlands in Iceland	Area estimates for cultivated forests are built on sample plot inventory	2005-2012	Work conducted by IFI.
2	Remapping of the natural birch woodland	Area estimate built on field mapping	N/A	Work conducted by IFI.
3	Prediction model for cultivated forest	Forest area	N/A	Work conducted by IFI.
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	58.8	70

Table 21b

Category	Forest area (000 ha)
	2013
Forests earmarked for conversion	0

### 21.4 Comments

Category	Comments
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Government target/aspiration for forest area	These are BAU projections, not government targets.
Forests earmarked for conversion	No forest is earmarked for conversion to other land use.

Other general comments

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