



**Forestry Department**

**Food and Agriculture Organization of the United Nations**

**GLOBAL FOREST RESOURCES  
ASSESSMENT 2010**

**COUNTRY REPORT**

**SWEDEN**

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## The Forest Resources Assessment Programme

Sustainably managed forests have multiple environmental and socio-economic functions important at the global, national and local scales, and play a vital part in sustainable development. Reliable and up-to-date information on the state of forest resources - not only on area and area change, but also on such variables as growing stock, wood and non-wood products, carbon, protected areas, use of forests for recreation and other services, biological diversity and forests' contribution to national economies - is crucial to support decision-making for policies and programmes in forestry and sustainable development at all levels.

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Programme. This country report forms part of the Global Forest Resources Assessment 2010 (FRA 2010).

The reporting framework for FRA 2010 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes variables related to the extent, condition, uses and values of forest resources, as well as the policy, legal and institutional framework related to forests. More information on the FRA 2010 process and the results - including all the country reports - is available on the FRA Web site ([www.fao.org/forestry/fra](http://www.fao.org/forestry/fra)).

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The Global Forest Resources Assessment Country Report Series is designed to document and make available the information forming the basis for the FRA reports. The Country Reports have been compiled by officially nominated country correspondents in collaboration with FAO staff. Prior to finalisation, these reports were subject to validation by forestry authorities in the respective countries.

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## Introduction

The most important producers of official forestry statistics, in Sweden are the Swedish Forest Agency, the National Forest Inventory at the Swedish University of Agricultural Sciences and Statistics Sweden.

### Swedish Forest Agency

The Swedish Forest Agency (Skogsstyrelsen) is the Government's expert authority on forests and forest policy. Their mission is to work for a sustainable utilisation of the Swedish forests according to the guidelines given by the Parliament and the Government. The SFA (Swedish Forest Agency) is as well responsible for producing Official Statistics of Sweden's forest. Annually, SFA publish a Statistical Yearbook of Forestry. The Statistical Yearbook of Forestry is a compilation of relevant official and unofficial statistics about Swedish forests, forestry and forest industry.

### National Inventory of Landscapes in Sweden

National Inventory of Landscapes in Sweden (NILS) is a nation-wide environmental protection programme, financed by the Swedish Environmental Protection Agency (SEPA), but performed by the Swedish University of Agricultural Sciences (SLU) that monitors the conditions and changes in the Swedish landscape and how these changes influence the conditions for biodiversity. The programme was started in 2003 and finished their first cycle in 2007.

### Swedish Forest Soil Inventory

The Swedish Forest Soil Inventory (SFSI), financed by SEPA, but performed by SLU, carries out long-term monitoring on the permanent sample plots of the Swedish National Forest Inventory. The Programme has been ongoing since 1983.

### National Forest Inventory

The Swedish National Forest Inventory (NFI), financed and performed by SLU, is an annual inventory covering the entire area of Sweden. It is performed as a sampling survey with low sampling fraction. The objective of the inventory is to provide basic data for planning and control of the forest resource at the national and regional level and to give basic data for forest research. The main task is therefore to give information on the state and change of the forest resource and of land use.

The Swedish NFI has been ongoing since 1923. Since 1953, the inventory has covered the entire country every year. Since 1983, the annual sample has consisted of some 17,000 systematically distributed circular plots. Of these, 10,000–11,000 fall on productive forest land. The inventory consists of permanent plots with a radius of 10 m as well as temporary ones with a radius of 7 m. The permanent plots are re-inventoried after 5 years, thus allowing an effective estimation of changes. The main observations on all land are land use category, ownership category, growing stock, growth, tree distribution and recent felling. On productive forest land: terrain conditions, vegetation cover, maturity class, age, site quality, recent and suggested silvicultural measures, the degree of stocking damage and regeneration status (in young stands). From 2003 a modified methodology was introduced in the NFI, where also areas within National parks and Nature reserves were visited in the field. In the NILS-programme also Alpine areas are visited in the field, which is not the case in the NFI. Combining data from NILS and the NFI makes it now possible to report all land area by FRA2010 definitions of Forest, OWL and Other land. Calibration of earlier reported figures for OWL and Other land

(FRA2005) has been made for reporting periods 1990 and 2000 based on proportions on the reporting period 2005.

In all, this has led to an increased area of Forest and Inland waters, and a decreased area of OWL and Other land, i.e. the area of Forest within Alpine areas and National Parks/Nature reserves is now estimated using field data instead of earlier estimates.

The results of the NFI are in most cases unbiased, but may have significant sample errors. To secure a good precision for the estimates usually mean values from several years is used, generally a five year period.

### **Statistics Sweden**

Statistics Sweden bears overall responsibility for coordination and supervising official statistics in Sweden. They also have particular responsibility for official statistics in certain broad social fields for example the labour market, the economy, trade and industry, population and welfare, housing and construction.

The forestry sector benefits especially from the statistics on industrial production and consumption of raw materials, foreign trade with forest- and forest industry products and transports of timber and stocks of timber, chips and sawn wood.

### **Swedish Rescue Services Agency**

The Swedish Rescue Services Agency annually collects turn-out reports from the municipal fire brigades and read them into a national turn-out database from which statistics on forest fire can be drawn.

### **National Data and Transformation/Reclassification**

The detailed information from the National Forest Inventory is annually recorded in a database. National reported statistics are extracted according to national definitions and needs. Original data can be extracted from the database according to the defined query put to the database. Depending on definitions and restrictions entered in the query different primary data can be extracted from the database.

In case of Sweden, when reporting for the FRA 2010, Sweden will in most cases not need to transform or “Reclassify” national forest data to FRA reporting tables with appurtenant classes and definitions. The main bulk of national information for the FRA 2010 global reporting tables can be extracted as primary data from the detailed NFI database using FRA 2010 variables and definitions. Exceptions are data on forest land and OWL-area within the alpine region and the estimates of below ground carbon, which are delivered by the SLU monitoring programmes NILS and SFSI. Additional data on protected land has also been extracted from the Swedish Forest Agency registers.

# 1 Table T1 – Extent of Forest and Other wooded land

## 1.1 FRA 2010 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 <i>in situ</i> . 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 <i>in situ</i> ; 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”.
Other land with tree cover (Subordinated to “Other land”)	Land classified as “Other land”, spanning 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.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.

## 1.2 National data

### 1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
The National Forest Inventory (NFI).	H	Forest, Other wooded land, Other land, Other land of which with tree cover.	NFI-data since 1923. Years applied: 1990: 1988-1992 2000: 1998 – 2002 2005: 2003-2007 2010: Forecast	The current NFI data permit direct calculation of data according to the FRA categories and definitions.
National Inventory of Landscapes in Sweden (NILS)	H	Forest, Other wooded land, Other land within Alpine areas	NILS-data since 2003. 2005: 2003-2007	The current NFI data combined with data from NILS within Alpine areas permit direct calculation of data according to the FRA categories and definitions.

### 1.2.2 Classification and definitions

Information generated from NFI data base to match FRA 2010 definitions. In former NFI (reported for year 1990 and 2000) the national definition of forest excluded large portions of forest according to the international definition. This was dealt with by ad-hoc studies estimating the additional forest area according to the international definition.

Table presented below show definitions used to extract the national data according to FRA 2010 categories.

National class	Definition
Forest	According to FRA 2010 definition.
Other wooded land	According to FRA 2010 definition.
Other land with tree cover	According to FRA 2010 definition. In Sweden these areas mainly consists of power-lanes and agricultural land with occurrence of trees.

### 1.2.3 Original data

Original national data for the reference years is extracted according to FRA 2010 categories and definitions.

FRA Classes	Land area (1000 hectares)		
	1990	2000	2005
Forest <sup>1</sup>	27 308	27 414	28316
Other wooded land <sup>1</sup>	3 217	3 239	3056
Other land <sup>1</sup>	10549	10419	9826
... of which with tree cover	1 371	1 357	532
Total for country	41 074	41 071	41198

<sup>1</sup> Improved method is applied for the assessment 2005

## 1.3 Analysis and processing of national data

### 1.3.1 Calibration

National classes	1990	2000	2005
Land area -Total of national data	41074	41071	41198
Land Area - UN statistical div.	41033	41033	41033
Calibration factor	0.9990018	0.9990748	0.9959950

### 1.3.2 Estimation and forecasting

National data is available for current reporting year. The forecast for 2010 is “no change”.

### 1.3.3 Reclassification into FRA 2010 categories

Not necessary.



## 1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	27281	27389	28203	28203
Other wooded land	3214	3236	3044	3044
Other land	10538	10408	9786	9786
...of which with tree cover	1370	1356	530	530
Inland water bodies	3996	3996	3996	3996
<b>Total for country</b>	<b>45029</b>	<b>45029</b>	<b>45029</b>	<b>45029</b>

## 1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	Due to recent changes in NFI methodology combined with data from NILS, areas according to the international definitions are assessed directly in the field. This improves the quality of the data.	The large change in forest area between 2000 and 2005 are a results of methodological changes in the NFI – when adapting the inventory to better meet demands in international reporting (such as FRA 2010). It has not been possible to make credible changes in historical data for creating a good time series. The expert judgement is that there is a small ongoing increase in forest area.
Other wooded land	All area categories affected by changes in methodology.	No credible trend can be reported
Other land	All area categories affected by changes in methodology.	No credible trend can be reported
Other land with tree cover	All area categories affected by changes in methodology.	No credible trend can be reported
Inland water bodies		

### Other general comments to the table

1. Since 1998 the FRA-definitions are applied in the field.
2. Since 2003 areas within legally protected areas are included in the NFI-fieldwork.
3. Additional areas of Forest and OWL within the alpine region has been estimated using data from the NILS monitoring program 2003-2007.
4. 2010 forecast is identical to 2005, i.e. no forecast except "no change" is made.

Due to changes in NFI methodology between 2000 and 2005, reported figures present a jump in the time series and should therefore not be used as indicator of real trends.

### Expected year for completion of ongoing/planned national forest inventory and/or RS survey / mapping

Field inventory	Ongoing annually
Remote sensing survey / mapping	Land cover map using satellite data and NFI-field data in combination is produced every 5 <sup>th</sup> year

## 2 Table T2 – Forest ownership and management rights

### 2.1 FRA 2010 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.
Private ownership	Forest owned by individuals, families, communities, private co-operatives, corporations and other business entities, private religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
Individuals ( <i>sub-category of Private ownership</i> )	Forest owned by individuals and families.
Private business entities and institutions ( <i>sub-category of Private ownership</i> )	Forest owned by private corporations, co-operatives, companies and other business entities, as well as private non-profit organizations such as NGOs, nature conservation associations, and private religious and educational institutions, etc.
Local communities ( <i>sub-category of Private ownership</i> )	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area. The community members are co-owners that share exclusive rights and duties, and benefits contribute to the community development.
Indigenous / tribal communities ( <i>sub-category of Private ownership</i> )	Forest owned by communities of indigenous or tribal people.
Other types of ownership	Other kind of ownership arrangements not covered by the categories above. Also includes areas where ownership is unclear or disputed.
<b>Categories related to the holder of management rights of public forest resources</b>	
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 institutions	Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities, private co-operatives, private non-profit 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.

## 2.2 National data

### 2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
The National Forest Inventory (NFI). Classification of ownership using the cadastral and land registration authority.	H	Ownership, Forest	Years applied: 2000: 1998-2002 2005: 2003-2007	The NFI data combined with NIS-data, permit direct calculation of data according to the FRA categories and definitions.

### 2.2.2 Classification and definitions

National class	Definition
FRA 2010 classes used	FRA 2010 definition
...of which owned by indigenous / tribal communities	Registration of race is not allowed according to Swedish law
Other types of ownership	Not recorded

### 2.2.3 Original data

The National Forest Inventory (NFI).

FRA Classes	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	5941	5964	6656
Private ownership	20073	20149	21660
...of which owned by individuals	13541	13593	13540
...of which owned by private business entities and institutions	6532	6557	6371
...of which owned by local communities	1295	1300	1749
...of which owned by indigenous / tribal communities			
Other types of ownership			
<b>TOTAL</b>	<b>27308</b>	<b>27413</b>	<b>28316</b>

## 2.3 Analysis and processing of national data

### 2.3.1 Calibration

National classes	1990	2000	2005
Land area -Total of national data	41074	41071	41198
Land Area - UN statistical div.	41033	41033	41033
Calibration factor	0.9990018	0.9990748	0.9959950

### 2.3.2 Estimation and forecasting

Not necessary.

### 2.3.3 Reclassification into FRA 2010 categories

Not necessary. Only regrouping of national categories which are more detailed than the FRA-classes.

## 2.4 Data for Table T2

**Table 2a - Forest ownership**

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	5935	5958	6629
Private ownership	21346	21430	21573
...of which owned by individuals	13527	13580	13486
...of which owned by private business entities and institutions	6525	6551	6345
...of which owned by local communities	1294	1299	1742
...of which owned by indigenous / tribal communities	0	0	0
Other types of ownership	0	0	0
<b>TOTAL</b>	<b>27281</b>	<b>27389</b>	<b>28203</b>

Note: If other types of ownership is reported, please specify details in comment to the table.

Does ownership of trees coincide with ownership of the land on which they are situated?	<input checked="" type="checkbox"/>	Yes
	<input type="checkbox"/>	No
If No above, please describe below how the two differ:		

**Table 2b - Holder of management rights of public forests**

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public Administration	5935	5958	6629
Individuals	0	0	0
Private corporations and institutions	0	0	0
Communities	0	0	0
Other	0	0	0
<b>TOTAL</b>	<b>5935</b>	<b>5958</b>	<b>6629</b>

## 2.5 Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership	Almost all state owned forest in Sweden was in 1992 transferred to a totally state owned forest company [Domän AB] that was later merged with a state owned forest product company into a new company [AssiDomän] that was introduced on the stock exchange, but the state still owned more than 50% of the shares. A new company [Sveaskog AB] was founded and since 2001 this company has bought all shares from [AssiDomän], leading to a fully state owned company today! I.e. the ownership-category of this forestland has shifted during the years.	We have “back-tracked” the area that now is owned by Sveaskog AB giving no trend due to this shift in ownership category. The increase in Public ownership is due to the previous underestimation of forest area on public land in the alpine region.
Private ownership		
Other types of ownership		
Management rights		

### Other general comments to the table

All land within alpine areas is considered as owned by the state, i.e. Public ownership.

### 3 Table T3 – Forest designation and management

#### 3.1 FRA 2010 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.
Protected areas	Areas especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.
<b>Categories of primary designated functions</b>	
Production	Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.
Protection of soil and water	Forest area designated primarily for protection of soil and water.
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.
Social services	Forest area designated primarily for social services.
Multiple use	Forest area designated primarily for more than one purpose and where none of these alone is considered as the predominant designated function.
Other	Forest areas designated primarily for a function other than production, protection, conservation, social services or multiple use.
No / unknown	No or unknown designation.
<b>Special designation and management categories</b>	
Area of permanent forest estate (PFE)	Forest area that is designated to be retained as forest and may not be converted to other land use.
Forest area within protected areas	Forest area within formally established protected areas independently of the purpose for which the protected areas were established.
Forest area under sustainable forest management	To be defined and documented by the country.
Forest area with management plan	Forest area that has a long-term (ten years or more) documented management plan, aiming at defined management goals, which is periodically revised.

#### 3.2 National data

##### 3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
The National Forest Inventory (NFI). Classification of legal protection using GIS-layers from the Swedish Environmental Protection Agency.	H	Designated functions	Years applied: 2000: 1998 – 2002 2005: 2003-2007	The NFI data combined with NILS-data, with additional information on habitat protection and voluntary protection permit direct calculation according to the FRA categories and definitions.
Habitat protection areas	H	Area within	Situation	

and nature conservation agreement areas from the Swedish Forest Agency database		habitat protection and nature conservation agreements sites	1995, 2000, 2005, 2008	
Areas of voluntary protected forests compiled in “Fördjupad utvärdering av Levande skogar”. Skogsstyrelsen 2007, Swedish Forest Agency, Meddelande 4/2007. ISSN 1100-0295	M	Area of forest protected voluntarily by the forest owner.	Situation 2000, 2005	Based on questionnaires to all large forest owners and to a sample of individuals/households owning forests
The polytax multi-purpose inventory. Swedish statistical Yearbook of Forestry. www.svo.se	M	Area of environmental considerations at operations. % of gross-area of op.	1999-2001 and 2004-2006	All final fellings should be notified in advance. A sample of these are visited in the field before and after the felling. The area not affected by the felling of the gross area of the operation is recorded.
Ad-hoc survey of forest management plan production; Ragnar Spross, Swedish Forest Agency.	M	Annual production of Forest management plans	1997-2004	Plans produced mainly for individual/household forest owners. Only large plan producers included

### 3.2.2 Classification and definitions

National class	Definition
Production forest	Productive forest land (national definition) not assigned to other primary function
Protection of soil and water	Small areas mainly for soil stabilization
Conservation of biodiversity	National parks, nature reserves, habitat protection areas, voluntarily protected areas and environmental considerations at forestry operations.
Social services	No specific class since all Forest have public access for social services by law.
Multiple use	Low-productive forest land according to national definition and nature conservation agreement areas
Forest area within protected areas	Forest areas within nature reserves, national parks and habitat protection sites

### 3.2.3 Original data

The National Forest Inventory (NFI). Classification of forest within national park and nature reserves using GIS-layers from the Swedish Environmental Protection Agency. Areas of habitat protection, nature conservation agreements from Swedish forest Agency databases. Environmental considerations at operations from estimates of Polytax (SFA).

	1990	2000	2005	2008
		Forest area (1000 ha)		
National parks <sup>1</sup>			47	
Nature reserves <sup>1</sup>	1137 <sup>2,4</sup>		1299	

Low productive forests outside NR and NP <sup>1</sup>	4000 <sup>4</sup>	4000 <sup>4</sup>	4309	
Voluntary protection (areas)	0	800	950	
Environmental cons. at operation	0	727 <sup>3</sup>	584 <sup>3</sup>	
		Forest Area (ha)		
Habitat protection areas	0	612	14 266	18 820
Nature conservation agreements	0	658	17 740	24 290

<sup>1</sup> Alpine birch forest cannot be distributed between protected and unprotected forest land. In the table above, all alpine birch forest is reported as low productive forest.

<sup>2</sup> Includes both national parks and nature reserves.

<sup>3</sup> Derived from percentage value (2000: 3.4%; 2005: 2.7%) of all forest not designated for cons. of biodiversity, protection of soil and water or multiple use.

<sup>4</sup> Estimate made for FRA 2005.

Management plans covering forest owned by individuals; annual production of management plans by large plan producers 1997-2004 was 560 000 ha (totalling 8 400 000 milj ha assuming 15 years as length of life of plans). Also, the General Forest Inventory carried out by SFA during 1982-1994 covered 96 % of all forests owned by individuals/households.

### 3.3 Analysis and processing of national data

#### 3.3.1 Calibration

National classes	1990	2000	2005
Land area -Total of national data	41074	41071	41198
Land Area - UN statistical div.	41033	41033	41033
Calibration factor	0.9990018	0.9990748	0.9959950

#### 3.3.2 Estimation and forecasting

The forecast for habitat protection areas (21'856) and nature conservation agreements (28'657) are made by linear interpolation using 2005 and 2008 as reference values.

Forecast for National parks and nature reserve made with linear interpolation (and extrapolation for 2010) using year 1990 and 2005 as reference values. Forecast for voluntarily protected areas and environmental considerations at operations are "no change".

Forest management plans for institutional forest owners are assumed to have full coverage. For individuals/household owners, statistics indicate that a large share may have plans from the major producers, also smaller plan producers exists. Many forest owners have the capacity to produce their own management plans. For any remaining share in this owner category not having bought/produced a plan, forestry information is still likely to be available from the General Forest Inventory. The expert estimate is that all (or almost all) forest land is covered by some sort of a management plan.

#### 3.3.3 Reclassification into FRA 2010 categories

All national parks, nature reserves, habitat protection areas and areas set aside voluntarily by the forest owners are classified as belonging to conservation of biodiversity. To this class is also added a percentage value of the forests primary designated for production corresponding to the extent of environmental considerations made at forestry operations.



In the low-productive forest, forestry operations are restricted to a large extent. These areas are not necessarily protected for the conservation of biodiversity and are thus classified as designated for multiple purposes. Also the nature conservation agreement areas are managed with a combination of objectives, and as such classified as designated for multiple use-function. Forests primarily designated for production includes productive forest land according to national definition except such forests with any of the other primary functions.

### 3.4 Data for Table T3

**Table 3a – Primary designated function**

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	22110	20552	20976	20901
Protection of soil and water	35	35	35	35
Conservation of biodiversity	1136	2802	2883	2950
Social services	0	0	0	0
Multiple use	4000	4000	4309	4317
Other (please specify in comments below the table)	0	0	0	0
No / unknown	0	0	0	0
<b>TOTAL</b>	<b>27281</b>	<b>27389</b>	<b>28203</b>	<b>28203</b>

**Table 3b – Special designation and management categories**

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	n.a.	n.a.	n.a.	n.a.
Forest area within protected areas	1137	1286	1360	1435
Forest area under sustainable forest management	27281	27389	28203	28203
Forest area with management plan	27281	27389	28203	28203

### 3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production		The increase between 2000 and 2005 is a result of changes in inventory methodology. The overall trend is a decrease driven by increasing areas with primary designated function “conservation of biodiversity”.
Protection of soil and water		
Conservation of biodiversity		Increase in areas set aside to National parks, Nature reserves, habitat protection sites and voluntary protection.
Social services	All forest land is included in the “right of public access”. However this function has not been considered as the primary function in this context.	
Multiple use	Includes low-productive forests and areas within nature conservation agreements.	The difference in low-productive forest area are strongly affected by the changes in the NFI. The increase in nature-conservation agreement areas are real.
Other		
No / unknown designation		
Area of permanent forest estate	The concept of permanent forest estate does not exist in Sweden. The law does not forbid land use changes from forest to other land use. There are at present no significant conversions of forests to other land use and no such changes can be foreseen.	
Forest area within protected areas	The IUCN category is not registered on the NFI sample plots, though all nature reserves and national parks are classified. Most NP and NR are classified as belonging to categories I-IV. Thus the whole area of forests within NP, NR and habitat protection sites are reported as within protected areas in FRA 2010. The area of alpine birch forest in northern Sweden within and outside protected areas cannot be reported separately. No alpine birch forest is reported here as within protected areas	As there is ongoing work establishing new NP, NR and habitat protection areas, the increase is real. Including forest land in <u>all</u> NR and NP leads to a small overestimation as NP and NR exist that is not classified in category I-IV. An unknown share of the alpine birch forest is within NP and NR. Excluding the alpine birch forest leads to a small underestimation.

<p>Forest area under sustainable forest management</p>	<p>The Swedish model for sustainable forestry assumes a mix of management directions on different areas in the range from no operations in the forests to intensive management for high timber production. The desired mix of areas managed with different objectives may vary over time as new knowledge on sustainability emerges. Also the management methods for different objectives evolves. In this setting, pointing out specific areas as not being managed sustainable has no meaning. Currently, we believe that a change in the mix of management objectives towards increasing the area managed mainly for the conservation of biodiversity is desirable.</p>	
<p>Forest area with management plan</p>	<p>Data represent the whole area of forest land. There is no requirement in Sweden to have a management plan. Forest management plans are though widely used. Considering the existence of data from the General Forest Inventory, plans are assumed to have (almost) complete coverage.</p>	

**Other general comments to the table**

The data for 2005 is generally of a higher quality than previous answers as the national data has a higher degree of consistency with FRA definitions. Data for 1990 and 2000 are mainly the estimates from FRA 2005 but the area of conservation of biodiversity are adjusted to improve consistency between reporting years for this category. The adjustment affect also the area designated mainly for production.

Due to changes in NFI methodology between 2000 and 2005, reported figures present a jump in the time series and should therefore not be used as indicator of real trends.

## 4 Table T4 – Forest characteristics

### 4.1 FRA 2010 Categories and definitions

Term / category	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Introduced species	A species, subspecies or lower taxon, occurring <u>outside</u> 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).
<b>Characteristics categories</b>	
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.
Other naturally regenerated forest of introduced species (sub-category)	Other naturally regenerated forest where the trees are predominantly of introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
Planted forest of introduced species (sub-category)	Planted forest, where the planted/seeded trees are predominantly of introduced species.
<b>Special categories</b>	
Rubber plantations	Forest area with rubber tree plantations.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
Bamboo	Area of forest and other wooded land with predominant bamboo vegetation.

### 4.2 National data

#### 4.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
The National Forest Inventory (NFI).	M	Forest characteristics	Years applied: 2000: 1998-2002 2005: 2003-2007	The NFI data combined with NILS-data permits direct calculation according to the FRA categories and definitions. Forest characteristics is here a combination of stand age, within or outside legally protected areas and the Swedish definitions on land use classes

#### 4.2.2 Classification and definitions

National class	Definition
Primary forest	Includes: -Productive Forestland (national definition) within National parks and Nature reserves with stand age > 120 yrs, -Alpine birch areas -Subalpine spruce and pine forests -Productive Forestland outside National parks and Nature reserves with a high degree of naturalness.
Other naturally regenerated forest	All forests not considered as primary or planted. The regeneration method is not registered in the NFI unless conducted within the last 20 years.
...of which of introduced species	No natural regeneration of introduced species in Sweden (i.e in the NFI database)
Planted forest	Forest that has been silvicultured sometime during the last 20 years before inventory or consisting of planted introduced species.
...of which of introduced species	Proportion of introduced species (i.e. Pinus Contorta in Sweden) at least 10%

#### 4.2.3 Original data

	Forest area (1000 hectares)		
	1990	2000	2005
Primary forest			2619
Other naturally regenerated forest			22069
...of which of introduced species	0	0	0
Planted forest	2330	3560	3628
...of which of introduced species	519	617	642
TOTAL			28316

#### 4.2.4 Calibration

National classes	1990	2000	2005
Land area -Total of national data	41074	41071	41198
Land Area - UN statistical div.	41033	41033	41033
Calibration factor	0.9990018	0.9990748	0.9959950

#### 4.2.5 Estimation and forecasting

The interpreted definition of *primary* forest as implemented in FRA 2010 can not be applied to older data. There is no evidence of any trends and thus the same figure as for 2005 is reported also for 1990 and 2000. Also, the expert judgement for 2010 is no change. This affects also the estimates for other naturally regenerated forest which is used to balance against the total. Only *planted forest* is reported directly from inventory result

#### 4.2.6 Reclassification into FRA 2010 categories

The category “Primary” has been interpreted as defined above. The category planted forests consists of planted forests of introduced species irrespective of when they were planted and recently planted forests of native species. All other forests, i.e. when the regeneration method is unknown is reported in the category other naturally regenerated forests

#### 4.3 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	2609	2609	2609	2609
Other naturally regenerated forest	22344	21223	21981	21981
...of which of introduced species	0	0	0	0
Planted forest	2328	3557	3613	3613
...of which of introduced species	518	616	639	639
<b>TOTAL</b>	<b>27281</b>	<b>27389</b>	<b>28203</b>	<b>28203</b>

Table 4b

FRA 2010 Categories	Area (1000 hectares)			
	1990	2000	2005	2010
Rubber plantations (Forest)	0	0	0	0
Mangroves (Forest and OWL)	0	0	0	0
Bamboo (Forest and OWL)	0	0	0	0

#### 4.4 Comments to Table T4

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest	The characteristic “primary” cannot be directly assessed from NFI and NILS data. We have opted to report the area from portions of the forest land where the forest is <u>very likely</u> to have characteristics matching the definition. For productive forest (national def.), the variable “naturalness” is used to identify primary forests. In low-productive forest, restrictions on forestry operations apply, increasing the likeliness of the forests matching the primary criteria. A few types of low productive forests in remote areas in northern Sweden are included. Also in other types of low-productive forests, primary forests may be found –with a decreasing likeliness to the south of the country. These types of low-productive forests are however not included.	Due to changes in NFI design concerning both variables measured as well as the areas covered. The historical data cannot be adapted to the interpretation of the definition for 2005.
Other naturally regenerating forest	This is forests not reported as primary or planted	
Planted forest	The NFI register silvicultural operations, such as planting, if they have been performed in the last 20 years. In older stands the regeneration method can not be identified with certainty. Thus in this category is reported <u>recently</u> planted forests.	The trend reflects which regeneration methods has been used during a 20 year period ending with the reporting year. Thus it is an

		underestimation as all forests planted more than 20 years before each reporting year is excluded
Rubber plantations		
Mangroves		
Bamboo		

<b>Other general comments to the table</b>

## 5 Table T5 – Forest establishment and reforestation

### 5.1 FRA 2010 Categories and definitions

Term	Definition
Afforestation	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not classified as forest.
Reforestation	Re-establishment of forest through planting and/or deliberate seeding on land classified as forest.
Natural expansion of forest	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).

### 5.2 National data

#### 5.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
The National Forest Inventory (NFI).	H	Forest characteristics	Years applied: 2000: 1998-2002 2005: 2003-2007	The NFI data combined with NILS-data permits direct calculation according to the FRA categories and definitions. Forest characteristics is here a combination of silvicultural measures and previous land use..

#### 5.2.2 Classification and definitions

National class	Definition
Afforestation	Annual successful silviculture on areas where agriculture was the previous land use
Reforestation	annual silvicultured area – reduced by annual afforestation
...of which on areas previously planted	Not possible to assess
Natural expansion of forest	Annual change of previously agricultural land that is now classified as forest but that not has been silvicultured

#### 5.2.3 Original data

The National Forest Inventory (NFI). Data inserted directly into Table 5

### 5.3 Analysis and processing of national data

Not needed



#### 5.4 Data for Table T5

FRA 2010 Categories	Annual forest establishment (hectares/year)			...of which of introduced species <sup>1)</sup> (hectares/year)		
	1990	2000	2005	1990	2000	2005
Afforestation	4910	3182	698	0	0	0
Reforestation	241857	122852	130550	29145	4769	2177
...of which on areas previously planted	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Natural expansion of forest	1000	9600	272	0	0	0

Note: The figures for the reporting years refer to the averages for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively.

#### 5.5 Comments to Table T5

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Afforestation		
Reforestation	Introduced species is Pinus contorta and Larix sp.	The large number for 1990 was partly the result of high harvest levels but more important it reflects that a lot of “catching up” of areas previously not planted were done in this period. The reason for the drop of area planted with P. Contorta is that it’s more out of fashion today.
Natural expansion of forest		

#### Other general comments to the table

Due to changes in NFI methodology between 2000 and 2005, reported figures present a jump in the time series and should therefore not be used as indicator of real trends.

## 6 Table T6 – Growing stock

### 6.1 FRA 2010 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees more than X 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 Y cm, and may also include branches to a minimum diameter of W cm.
Growing stock of commercial species	Growing stock (see def. above) of commercial species.

### 6.2 National data

#### 6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
The National Forest Inventory (NFI).	H	Growing stock and growing stock composition	Years applied: 2000: 1998 – 2002 2005: 2003-2007	The NFI data permit direct calculation of data according to the FRA categories and definitions.
Forest scenario analysis 2008 (SKA-VB 08): Skogliga konsekvensanalyser 2008, Swedish Forest Agency, Rapport 25/2008. ISSN: 1100-0295 (In Swedish)	H	Growing stock and growing stock composition	Years applied: 2010: Forecast	The scenario data is forecasts of NFI data with approx. the same content of variables

#### 6.2.2 Classification and definitions

National class	Definition
Growing stock	All living trees on all Forest areas (see T1) and all living trees on all Other wooded land areas; Growing stock according to terms and definitions FRA 2000. Stem volume above stump of living trees includes bark, excludes branches. Broadleaved: Forests where 75% of basal area consists of broadleaved trees. Coniferous: Forests where 75% of basal area consists of coniferous trees. Mixed: Other forests. Total volume on all land, except volume of alpine birch, directly calculated using NFI-data.

#### 6.2.3 Original data

The National Forest Inventory (NFI). Results from SKA-VB08. Data inserted directly into table 6

### 6.3 Analysis and processing of national data

#### 6.3.1 Calibration

Not needed.

#### 6.3.2 Estimation and forecasting

Estimation is not needed, data is available for current reference years. The forecasting made using results from the long term forest scenario analysis (SKA-VB08), co-operation between the NFI and the Swedish Forest Agency.

#### 6.3.3 Reclassification into FRA 2010 categories

Not needed.

### 6.4 Data for Table T6

Table 6a – Growing stock

FRA 2010 category	Volume (million cubic meters over bark)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Total growing stock	2791.2	3033.6	3234.0	3358.0	34.4	35.8	11.0	11.3
... of which coniferous	2362.9	2548.3	2558.7	2740.0	29.4	30.1	9.0	9.1
... of which broadleaved	428.3	485.3	675.3	618.0	5.0	5.7	2.0	2.1
Growing stock of commercial species	2791.2	3033.6	3234.0	3358.0	34.4	35.8	11.0	11.3

Table 6b – Growing stock of the 10 most common species

FRA 2010 category / Species name			Growing stock in forest (million cubic meters)		
Rank	Scientific name	Common name	1990	2000	2005
1 <sup>st</sup>	<i>Picea abies</i>	Norway spruce	1263.6	1306.1	1238.0
2 <sup>nd</sup>	<i>Pinus sylvestris</i>	Scots pine	1099.3	1206.1	1296.0
3 <sup>rd</sup>	<i>Betula pubescens</i>	Downy birch	217.2	261.3	388.3
4 <sup>th</sup>	<i>Betula pendula</i>	Silver birch	75.2	90.4	99.4
5 <sup>th</sup>	<i>Populus tremula</i>	European aspen	34.6	42.7	55.8
6 <sup>th</sup>	<i>Quercus robur</i>	English oak	24.9	26.7	35.9
7 <sup>th</sup>	<i>Alnus glutinosa</i>	Black alder	19.9	25.8	36.0
8 <sup>th</sup>	<i>Fagus sylvatica</i>	Beech	18.4	17.5	20.4
9 <sup>th</sup>	<i>Salix caprea</i>	Goat willow	10.0	15.9	21.0
10 <sup>th</sup>	<i>Alnus incana</i>	Grey alder	10.0	11.6	11.9
Remaining			18.1	29.5	31.3
<b>TOTAL</b>			<b>2791.2</b>	<b>3033.6</b>	<b>3234.0</b>

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

**Table 6c – Specification of threshold values**

Item	Value	Complementary information
Minimum diameter (cm) at breast height <sup>1</sup> of trees included in growing stock (X)	0	
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	0	
Minimum diameter (cm) of branches included in growing stock (W)	0	
Volume refers to “above ground” (AG) or “above stump” (AS)	AS	

## 6.5 Comments to Table T6

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total growing stock		The growing stock on forest land has increased steadily for the last 100 years. The drop in growing stock on OWL is an effect of changes in inventory methodology. Some of the areas previously (1990, 2000) classified as OWL is now (2005) classified as forest. These areas were among the highest stocked OWL areas.
Growing stock of broadleaved / coniferous		The growing stock on forest land has increased steadily for the last 100 years. The drop in growing stock on OWL is an effect of changes in inventory methodology. Some of the areas previously (1990, 2000) classified as OWL is now (2005) classified as forest. These areas were among the highest stocked OWL areas.
Growing stock of commercial species		The growing stock on forest land has increased steadily for the last 100 years. The drop in growing stock on OWL is an effect of changes in inventory methodology. Some of the areas previously (1990, 2000) classified as OWL is now (2005) classified as forest. These areas were among the highest stocked OWL areas.
Growing stock composition	Volume of <i>Pinus contorta</i> 2005 is 23.1 mill m <sup>3</sup> (8 <sup>th</sup> place) but since the list is defined on the situation year 2000 ( <i>P. contorta</i> 11.5 mill m <sup>3</sup> ) <i>P. contorta</i> is found within Remaining for year 2005	

### Other general comments to the table

Due to changes in NFI methodology between 2000 and 2005, reported figures present a jump in the time series and should therefore not be used as indicator of real trends.

<sup>1</sup> Diameter at breast height (DBH) refers to diameter over bark measured at a height of 1.30 m above ground level or 30 cm above buttresses if these are higher than 1 m.

## 7 Table T7 – Biomass stock

### 7.1 FRA 2010 Categories and definitions

Category	Definition
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 2mm 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.

### 7.2 National data

#### 7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
The National Forest Inventory (NFI).	H	Biomass	Years applied: 2000: 1998 – 2002 2005: 2003-2007 2010: Forecast	
Forest scenario analysis 2008 (SKA-VB 08): Skogliga konsekvensanalyser 2008, Swedish Forest Agency, Rapport 25/2008. ISSN: 1100-0295 (In Swedish)	H	Biomass	Years applied: 2010: Forecast	The scenario data is forecasts of NFI data with approx. the same content of variables

#### 7.2.2 Classification and definitions

National class	Definition
Above-ground biomass	FRA 2010
Below-ground biomass	FRA 2010
Dead wood	FRA 2010 except dead wood in the soil.

#### 7.2.3 Original data

Data for 2005 calculated using the NFI database. Estimates for 1990 and 2000 by applying per ha values for 2005 on area estimates 1990 and 2000 respectively to get the total biomass. The forecasting is made using results from the long term forest scenario analysis (SKA-VB08), co-operation between the NFI and the Swedish Forest Agency.

### 7.3 Analysis and processing of national data

#### 7.3.1 Calibration

See above

#### 7.3.2 Estimation and forecasting

See above

#### 7.3.3 Reclassification into FRA 2010 categories

Not needed

### 7.4 Data for Table T7

FRA 2010 category	Biomass (million metric tonnes oven-dry weight)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Above-ground biomass	1909.6	1917.1	1975.9	2034.7	15.1	15.3	9.1	10.2
Below-ground biomass	446.5	448.2	462.0	475.8	3.2	3.5	2.1	2.2
Dead wood	54.7	54.9	56.6	58.3	0.8	0.8	0.6	0.6
<b>TOTAL</b>	2410.8	2420.2	2494.5	2568.8	19.1	19.6	11.8	13.0

### 7.5 Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass	Minimum dbh 0 cm.	The biomass on forest land has increased steadily for the last 100 years. The drop in biomass on OWL is an effect of changes in inventory methodology. Some of the areas previously (1990, 2000) classified as OWL is now (2005) classified as forest. These areas were among the highest stocked OWL areas.
Below-ground biomass		The biomass on forest land has increased steadily for the last 100 years. The drop in biomass on OWL is an effect of changes in inventory methodology. Some of the areas previously (1990, 2000) classified as OWL is now (2005) classified as forest. These areas were among the highest stocked OWL areas.
Dead wood	Minimum dbh 4 cm for un-decomposed dead wood, minimum dbh 10 cm for decomposed dead wood. Dead wood in the soil not included.	

#### Other general comments to the table

Biomass in alpine birch areas not included.

Due to changes in NFI methodology between 2000 and 2005, reported figures present a jump in the time series and should therefore not be used as indicator of real trends.

## 8 Table T8 – Carbon stock

### 8.1 FRA 2010 Categories and definitions

Category	Definition
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 specified depth chosen by the country and applied consistently through the time series.

### 8.2 National data

#### 8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
The National Forest Inventory (NFI). The National Soil Inventory (NFSI)	H	Carbon	Years applied: 2000: 1998 – 2002 2005: 2003-2007 2010: Forecast	The NFI data combined with the SFSI-data permits direct calculation according to the FRA categories and definitions.
Forest scenario analysis 2008 (SKA-VB 08): Skogliga konsekvensanalyser 2008, Swedish Forest Agency, Rapport 25/2008. ISSN: 1100-0295 (In Swedish)	H	Carbon	Years applied: 2010: Forecast	The scenario data is forecasts of NFI data with approx. the same content of variables

#### 8.2.2 Classification and definitions

National class	Definition
Carbon in above-ground biomass	FRA 2010 definition. Minimum dbh 0 cm. Carbon = 0.5 x Biomass

Carbon in below-ground biomass	FRA 2010 definition. Carbon = 0.5 x Biomass
Carbon in dead wood	FRA 2010 except dead wood in the soil. Un-decomposed dead wood minimum dbh 4 cm. Decomposed dead wood minimum dbh 10 cm. Carbon = 0.5 x Biomass.
Carbon in litter	FRA 2010
Soil carbon	FRA 2010

### 8.2.3 Original data

Data calculated using the NFI and the NFSI databases. Estimates for 1990 and 2000 by applying per ha values for 2005 on area estimates 1990 and 2000 respectively to get the carbon total. The forecasting is made using results from the long term consequence analysis investigation (SKA-VB08), co-operation between the NFI and the Swedish Forest Agency.

## 8.3 Analysis and processing of national data

### 8.3.1 Calibration

Not needed

### 8.3.2 Estimation and forecasting

See above

### 8.3.3 Reclassification into FRA 2010 categories

Not needed

## 8.4 Data for Table T8

FRA 2010 Category	Carbon (Million metric tonnes)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Carbon in above-ground biomass	954.8	958.6	988.0	1017.4	7.6	7.7	4.6	5.1
Carbon in below-ground biomass	223.3	224.1	231.0	237.9	1.6	1.8	1.1	1.1
<b>Sub-total: Living biomass</b>	1178.1	1182.7	1219.0	1255.3	9.2	9.4	5.6	6.2
Carbon in dead wood	27.4	27.5	28.3	29.2	0.4	0.4	0.3	0.3
Carbon in litter	823.2	824.7	828.3	829.0	17.1	17.2	16.2	16.2
<b>Sub-total: Dead wood and litter</b>	850.6	852.2	856.6	858.2	17.5	17.6	16.5	16.5
Soil carbon	2221.5	2209.0	2206.2	2200.9	347.9	350.4	329.9	329.9
<b>TOTAL</b>	4250.2	4243.9	4281.8	4314.4	374.6	377.4	352.0	352.6

Soil depth (cm) used for soil carbon estimates	50
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## 8.5 Comments to Table T8

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Carbon in above-ground biomass	Carbon from alpine birch areas not included	
Carbon in below-ground biomass	Carbon from alpine birch areas not included	
Carbon in dead wood	Carbon from alpine birch areas not included	
Carbon in litter		
Soil carbon	High levels of soil carbon on OWL reflects the high proportion of peat soils in this category.	The small drop in soil carbon between 2000 and 2005 coincide with the change in which analysis laboratory is contracted. This may have affected the results.

Other general comments to the table

## 9 Table T9 – Forest fires

### 9.1 FRA 2010 Categories and definitions

Category	Definition
Number of fires	Average number of vegetation fires per year in the country.
Area affected by fire	Average area affected by vegetation fires per year in the country.
Vegetation fire (supplementary term)	Any vegetation fire regardless of ignition source, damage or benefit.
Wildfire	Any unplanned and/or uncontrolled vegetation fire.
Planned fire	A vegetation fire regardless of ignition source that burns according to management objectives and requires limited or no suppression action.

### 9.2 National data

#### 9.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Turn-out statistics from Swedish fire brigades	H	Number of fires	1996-2007	Swedish Rescue Services Agency has collected and compiled the results
Turn-out statistics from Swedish fire brigades	M	Area affected by fire	1996-2007	Swedish Rescue Services Agency has collected and compiled the results
Swedish national forest inventory	H	Forest area	1998-2007	

#### 9.2.2 Classification and definitions

National class	Definition
Forest	Land which is suitable for timber production
Other wooded land	Land with a thin tree cover unsuitable for timber production

#### 9.2.3 Original data

Turn-out statistics from Swedish fire brigades: data from turn-out reports from the municipal fire brigades are sent to the Swedish Rescue Services Agency and read into a national turn-out database. A few small brigades are unable to supply data, but this account for well under 1% of the total number of turn-outs and do not significantly affect the national statistics. The collection of data started in 1996.

### 9.3 Analysis and processing of national data

#### 9.3.1 Calibration

Underreporting of the number of fires by the fire brigades is not considered a significant problem. However many brigades find it difficult to work out the area affected by the fire. In one detailed study carried out ten years ago in one region it was apparent that areas were often overestimated.

### 9.3.2 Estimation and forecasting

Turn-out statistics are based on summing a comprehensive survey so there is no estimation involved.

### 9.3.3 Reclassification into FRA 2010 categories

Not necessary

## 9.4 Data for Table T9

Table 9a

FRA 2010 category	Annual average for 5-year period					
	1990		2000		2005	
	1000 hectares	number of fires	1000 hectares	number of fires	1000 hectares	number of fires
Total land area affected by fire	n.a.	n.a.	1.44	4606	2.85	5172
... of which on forest	n.a.	n.a.	0.59	529	1.61	643
... of which on other wooded land	n.a.	n.a.	0.29	1752	0.58	1936
... of which on other land	n.a.	n.a.	0.56	2372	0.66	2695

Table 9b

FRA 2010 category	Proportion of forest area affected by fire (%)		
	1990	2000	2005
Wildfire	n.a.	100	100
Planned fire	n.a.	n.a.	n.a.

Note: The figures for the reporting years refer to the averages of annually affected areas for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively

### 9.5 Comments to Table T9

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Area affected by fire	May be overestimated by fire brigade	Very variable due to weather conditions.
Number of fires		Very variable due to weather conditions.
Wildfire / planned fire	All fires reported through the turn-out statistics are wildfires. Planned fires turning into wildfires are included thou.	Very variable due to weather conditions.

Other general comments to the table

## 10 Table T10 – Other disturbances affecting forest health and vitality

### 10.1 FRA 2010 Categories and definitions

Term	Definition
Disturbance	Damage caused by any factor (biotic or abiotic) that adversely affects the vigour and productivity of the forest and which is not a direct result of human activities.
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.
Category	Definition
Disturbance by insects	Disturbance caused by insect pests.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as bacteria, fungi, phytoplasma or virus.
Disturbance by other biotic agents	Disturbance caused by biotic agents other than insects or diseases, such as wildlife browsing, grazing, physical damage by animals, etc.
Disturbance caused by abiotic factors	Disturbances caused by abiotic factors, such as air pollution, snow, storm, drought, etc.

### 10.2 National data

#### 10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
The National Forest Inventory (NFI).	M	Other (i.e. storm etc.)	Years applied: 2000: 1998 – 2002 2005: 2004-2007	The NFI data permits direct calculation according to the FRA categories and definitions.

#### 10.2.2 Classification and definitions

National class	Definition
FRA 2010 categories applied	Information generated according to FRA 2010 definitions.

#### 10.2.3 Original data

Data calculated using the NFI database.

### 10.3 Analysis and processing of national data

#### 10.3.1 Calibration

Not needed

#### 10.3.2 Estimation and forecasting

Not done

#### 10.3.3 Reclassification into FRA 2010 categories

Not needed

### 10.4 Data for Table T10

**Table 10a – Disturbances**

FRA 2010 category	Affected forest area (1000 hectares)		
	1990	2000	2005
Disturbance by insects	26	42	42
Disturbance by diseases	181	296	314
Disturbance by other biotic agents	611	654	1777
Disturbance caused by abiotic factors	553	541	1233
<b>Total area affected by disturbances</b>	<b>1371</b>	<b>1533</b>	<b>3366</b>

Notes: The figures for the reporting years refer to the averages of annually affected areas for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively.

The total area affected by disturbances is not necessarily the sum of the individual disturbances as these may be overlapping.

**Table 10b – Major outbreaks of insects and diseases affecting forest health and vitality**

Description / name	Tree species or genera affected (scientific name)	Year(s) of latest outbreak	Area affected (1000 hectares)	If cyclic, approx. cycle (years)
Gremminiella spp	<i>Pinus silvestris</i>	2003	484	
Ips typografus	<i>Picea abies</i>	2006	18	
Peridermium spp	<i>Pinus silvestris</i>	2008	33	

Note: Area affected refers to the total area affected during the outbreak.

**Table 10c – Area of forest affected by woody invasive species**

Scientific name of woody invasive species	Forest area affected 2005 (1000 hectares)
<b>Total forest area affected by woody invasive species</b>	

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

### 10.5 Comments to Table T10

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Disturbance by insects		Extensive windthrows in 2005 (and 2007) has resulted in increased populations of some insects, notably <i>Ips Typhografus</i> .
Disturbance by diseases		
Disturbance by other biotic agents		
Disturbance caused by abiotic factors		A major storm in January 2005 cause severe windthrow in southern Sweden, especially middle-age and old spruce stands.
Major outbreaks		
Invasive species		

#### Other general comments to the table

The NFI modified the methods for recording data on disturbances in 2003. The new methods detects disturbances in a much better way than historical data (i.e. data for 1990 and 2000). The new method together with the severe disturbance by the storm in 2005 makes trend-analysis quite impossible.

## 11 Table T11 – Wood removals and value of removals

### 11.1 FRA 2010 Categories and definitions

Category	Definition
Industrial roundwood removals	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel).
Woodfuel removals	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

### 11.2 National data

#### 11.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Swedish Forest Agency. Statistical Yearbook of Forestry 2008. Jönköping.	H	All variables	1990, 2000 and 2005	Figures in table T11 can not be found in the Yearbook since the classification of FRA 2010 categories is not the same as in the Yearbook. The figures in the Yearbook and in table T11 are, due to its aggregated nature, based on a large number of inventories and statistical surveys done by both Swedish Forest Agency and others. All inventories and surveys cover the whole country and all years (1988-2007).

#### 11.2.2 Classification and definitions

National class	Definition
	National bark factor for conversion from volume under bark to volume over bark is 1.14.
	National statistics regarding wood fuel removals are given in cubic metres. No conversion factor has therefore been used.

#### 11.2.3 Original data

### 11.3 Analysis and processing of national data

Total volume of removals is based on figures in table 7.10 in Swedish Statistical Yearbook of 2008. The figures are based on two methods: The Swedish Forest Agency's gross felling model and on the stump enumeration according to Swedish National Forest Inventory (NFI).

The Swedish Forest Agency's (SFA's) gross felling model is based on industrial production of sawn softwood and wood pulp. Wood consumption figures are assumed with the help of consumption factor to produce different products. Addition for consumption of broad-leave sawlogs, wood in board industry, fuelwood and other wood are made. The figures are then adjusted from the foreign trade of roundwood and chips, together with the changes in the stocks of roundwood and chips. The gross felling is finally computed by adding the volumes of cut whole trees, left in the forest. Felling by assortment is shown in table 7.10.

At present we are working with the revision of the SFA's gross felling model. In the new model data used on roundwood consumption is according to the Wood Measurement Societies. The NFI estimates the annual gross felling by recording the stumps from the latest finished felling year. A felling year is the period between two consecutive buddings (the time when the buds are opening in the spring). One of the variables measured is occurrence of the fresh stems on the plots. Stumps with diameter equal to five centimetres or exceeding five centimetres are included in the inventory. The recent precision of the estimated forest data from the National Forest Survey (NFS) was for the period 1983–1987. The relative standard errors for NFI estimates of annual gross felling are 7 to 8%. Precision in estimates has deteriorated due to reduction of sample plots. This was mainly due to economic measures. The SFA awaits NFI's analysis on possible measures to improve the fellings statistics based on the stump enumeration. Therefore, SFA has decided not to publish any felling statistics from NFI. Measurement and scaling of roundwood is almost exclusively carried out by three independent societies. Volume and quality class selection are calculated in the tables 7.13a, 7.13b and 7.14 but the volumes are not to be mistaken for the volume of felled trees, as imported wood is also included in the measurement.

Unit value is based on price statistics shown partly in tables 13.3 through 13.5 in Swedish Statistical Yearbook and are calculated by SDC, which is owned by the forestry industry in Sweden as economic association/industry consortia. SDC provides IT services to companies involved in the wood supply chain. The absolute majority of all information sharing in Sweden regarding wood sales and purchases, wood accounting and wood supply chain management is processed by SDC as an independent actor. The price statistics is based on a total survey. Calculations done by SDC are based on roundwood quantities and values, and certain selection criteria. Selection conditions for the statistics are:

- Only the first purchase price is used, i.e. the business transaction between the forest owner and the first buyer.
- Only prices for delivery logs are included.
- All quality classes are included (except refused logs).
- Quantities are based on measure at industry.
- Prices are basic price with addition and deduction included.
- All types of prices are included which means that prices for a whole year (twelve months) will be based on larger share of end prices compared to the quarters.

The prices are shown for three geographic regions. Geographic felling place decide which regions prices are shown. In the northern part of Sweden information on felling place hardly don't exist. Therefore selections of volumes for Region Nord lack this information but are still measured by the timber measurement association (VMF) in region Nord.



## 11.4 Data for Table T11

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990	2000	2005	1990	2000	2005
Total volume (1000 m <sup>3</sup> o.b.)	56476	64729	75539	3602	6726	10826
... of which from forest	56476	64729	75539	3602	6726	10826
Unit value (local currency / m <sup>3</sup> o.b.)	270	290	290	207	142	188
Total value (1000 local currency)	15249210	18780815	21918486	745475	954519	2037909

Note: The figures for the reporting years refer to the averages of annually affected areas for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively.

	1990	2000	2005
Name of local currency	Swedish kronor (SEK)	Swedish kronor (SEK)	Swedish kronor (SEK)

## 11.5 Comments to Table T11

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total volume of industrial roundwood removals	Reported figure exclude removals from non-forest land but volume is assessed to be insignificant compared with the removals from forest	Removals have increased for each year since 1988 with exception of 2006 and 2007. This exception is, however, due to the extensive windstorm in 2005 which resulted in extraordinary high removals.
Total volume of woodfuel removals		Removals of woodfuel have increased quite a lot due to higher demand from the energy sector.
Unit value	Unit value refers to prices for standing timber sales (1988-2002) and delivery log sales (1988-2007). After 2005 all forms of purchases are included.	Weighted average of prices for 2005 is affected by the storm in 2005 which resulted in falling prices (ca. -20%).
Total value		Total value has increased over the period (1988-2007). The main reason for this is higher removals. Prices have not contributed to higher value. On the contrary, prices have declined especially when recalculated to constant prices.

Other general comments to the table

## 12 Table T12 – Non-wood forest products removals and value of removals

### 12.1 FRA 2010 Categories and definitions

Term	Definition
Non-wood forest product (NWFP)	Goods derived from forests that are tangible and physical objects of biological origin other than wood.
Value of NWFP removals	For the purpose of this table, value is defined as the market value at the site of collection or forest border.

### NWFP categories<sup>0</sup>

Category
<b><u>Plant products / raw material</u></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><u>Animal products / raw material</u></b>
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Wild meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

### 12.2 National data

#### 12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Paulmann, Linda. 2002. <i>Julgransodlingar i Sverige - utbud, efterfrågan och lönsamhet</i> . SLU, Sweden.	M	Christmas trees	2002	
Hörnsten, Lisa 2002. <i>Bär och svamp</i> . In <i>Statsskogsutredningen. SOU 2002:40</i> . Sweden	M	Wild berries	2002	
Lindhagen, A & Hörnsten, L. 1997. Unpublished information about harvesting of wild berries for local	M	Wild berries	1997	

consumption. SLU, Sweden.				
<b>Statistiska centralbyrån</b> 1999. <i>Skogsräkenskaper - en delstudie avseende fysiska räkenskaper.</i> Statistiska centralbyrån 1999:3. Sweden.	M	Wild berries and bush meat	1999	
<b>Jordbruksstatistisk årsbok 2008, table 15.6.</b>	H	Bush meat	2008	

## 12.2.2 Classification and definitions

National class	Definition
FRA2010 classes	FRA2010 classes used

## 12.2.3 Original data

## 12.3 Analysis and processing of national data

Not needed.

## 12.4 Data for Table T12

Rank	Name of product	Key species	Unit	NWFP removals 2005		NWFP category
				Quantity	Value (1000 local currency)	
1 <sup>st</sup>	Bush meat	Moose, Roe deer	Ton	15700	487 000	12
2 <sup>nd</sup>	Berries and mushroom	Bilberry, cowberry	Ton	35875	301 000	1
3 <sup>rd</sup>	Christmas trees	Picea abies	1000 psc.	2800	112 000	6
4 <sup>th</sup>						
5 <sup>th</sup>						
6 <sup>th</sup>						
7 <sup>th</sup>						
8 <sup>th</sup>						
9 <sup>th</sup>						
10 <sup>th</sup>						
All other plant products						
All other animal products						
<b>TOTAL</b>					<b>900 000</b>	

	2005
Name of local currency	Swedish crown

## 12.5 Comments to Table T12

Variable / category	Comments related to data, definitions, etc.
10 most important products	
Other plant products	Christmas trees are harvested both on forest land and agriculture land. The share coming from the forest is not known.
Other animal products	
Value by product	The values of the goods are ruff estimations. The value of bush meat and berries of mushrooms are unfortunately not directly corresponding to the quantity.
Total value	

Other general comments to the table
<p>The reported figures are based on best available special studies rather than consistent national statistics. The data quality is therefore not as good as in other tables in this report.</p> <p>Only three kinds of goods are reported. Other NWFP are very marginal.</p>

## 13 Table T13 – Employment

### 13.1 FRA 2010 Categories and definitions

Category	Definition
Full-time equivalents (FTE)	A measurement equal to one person working full-time during a specified reference period.
Employment	Includes all persons in paid employment or self-employment.
Paid employment	Persons who during a specified reference period performed some work for <u>wage or salary</u> in cash or in kind.
Self-employment	Persons who during a specified reference period performed some work for <u>profit or family gain</u> in cash or in kind (e.g. employers, own-account workers, members of producers' cooperatives, contributing family workers).

### 13.2 National data

#### 13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Statistics Sweden, Labour Force Survey(LFS)	H	Employment in primary production of goods	1990,2000,2005	

#### 13.2.2 Classification and definitions

National class	Definition
02	Forestry
20	Wood products
21	Pulp, paper & paper products

#### 13.2.3 Original data

National class 02 (forestry) + National class 20 (Wood products) + National class 21 (Pulp, paper & paper products)

1990 (33700+50500+60100=144300)

2000 (17300+39400+40200=96900)

2005 (20000+38000+37000=95000)

Only class **02** Forestry is reported in table T13

**13.3 Data for Table T13**

FRA 2010 Category	Employment (1000 years FTE)		
	1990	2000	2005
Employment in primary production of goods	33,7	17,3	20,0
...of which paid employment	n.a.	n.a.	n.a.
...of which self-employment	n.a.	n.a.	n.a.
Employment in management of protected areas	n.a.	n.a.	n.a.

**13.4 Comments to Table T13**

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Employment in primary production of goods	No of employed (fulltime or part-time) in industrial branch 02. Possible to present by gender if necessary.	2005 not typical due to heavy storm early 2005. Number of employees has decreased continuously last decades mainly due to mechanisation in forestry.
Paid employment / self-employment		
Employment in management of protected areas		

**Other general comments to the table**

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## 14 Table T14 – Policy and legal framework

### 14.1 FRA 2010 Categories and definitions

Term	Definition
Forest policy	A set of orientations and principles of actions adopted by public authorities in harmony with national socio-economic and environmental policies in a given country to guide future decisions in relation to the management, use and conservation of forest and tree resources for the benefit of society.
Forest policy statement	A document that describes the objectives, priorities and means for implementation of the forest policy.
National forest programme (nfp)	A generic expression that refers to a wide range of approaches towards forest policy formulation, planning and implementation at national and sub-national levels. The national forest programme provides a framework and guidance for country-driven forest sector development with participation of all stakeholders and in consistence with policies of other sectors and international policies.
Law (Act or Code) on forest	A set of rules enacted by the legislative authority of a country regulating the access, management, conservation and use of forest resources.

### 14.2 Data for Table T14 (BMe)

Indicate the existence of the following (2008)			
<b>Forest policy statement with national scope</b>	<input checked="" type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Year of endorsement	1993, 2008	
	Reference to document	Governmental bill: 1992/93: 226 “En ny skogspolitik”, 2007/08:108 “En skogspolitik i takt med tiden” <a href="http://www.sweden.gov.se/sb/d/10157/a/108452">www.sweden.gov.se/sb/d/10157/a/108452</a>	
<b>National forest programme (nfp)</b>	<input checked="" type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Name of nfp in country	n.a.	
	Starting year	n.a.	
	Current status	<input type="checkbox"/>	In formulation
		<input checked="" type="checkbox"/>	In implementation
		<input type="checkbox"/>	Under revision
<input type="checkbox"/>		Process temporarily suspended	
Reference to document or web site	<a href="http://www.skogsstyrelsen.se/forlag/enbok.asp?Produkt=1731">www.skogsstyrelsen.se/forlag/enbok.asp?Produkt=1731</a> <a href="http://www.skogsstyrelsen.se/episerver4/templates/SNormalPage.aspx?id=18033">www.skogsstyrelsen.se/episerver4/templates/SNormalPage.aspx?id=18033</a>		
<b>Law (Act or Code) on forest with national scope</b>	<input checked="" type="checkbox"/>	Yes, specific forest law exists	
	<input type="checkbox"/>	Yes, but rules on forests are incorporated in other (broader) legislation	
	<input type="checkbox"/>	No, forest issues are not regulated by national legislation	
If Yes above, provide:	Year of enactment	1979	
	Year of latest amendment	2008	
	Reference to document	SFS 1979:429 <a href="http://www.notisum.se/rnp/sls/lag/19790429.HTM">www.notisum.se/rnp/sls/lag/19790429.HTM</a> <a href="http://www.skogsstyrelsen.se/episerver4/templates/SNormalPage.aspx?id=11303">www.skogsstyrelsen.se/episerver4/templates/SNormalPage.aspx?id=11303</a>	

In case the responsibility for forest policy- and/or forest law-making is decentralized, please indicate the existence of the following and explain in the comments below the table how the responsibility for forest policy- and law-making is organized in your country.		
<b>Sub-national forest policy statements</b>	<input type="checkbox"/>	Yes
	<input checked="" type="checkbox"/>	No
If Yes above, indicate the number of regions/states/provinces with forest policy statements		
<b>Sub-national Laws (Acts or Codes) on forest</b>	<input type="checkbox"/>	Yes
	<input checked="" type="checkbox"/>	No
If Yes above, indicate the number of regions/states/provinces with Laws on forests		

### 14.3 Comments to Table T14

Variable / category	Comments related to data, definitions, etc.
Forest policy statement with national scope	
National forest programme (nfp)	
Law (Act or Code) on forest with national scope	
Sub-national forest policy statements	
Sub-national Laws (Acts or Codes) on forest	

Other general comments to the table



## 15 Table T15 – Institutional framework

### 15.1 FRA 2010 Categories and definitions

Term	Definition
Minister responsible for forest policy-making	Minister holding the main responsibility for forest issues and the formulation of the forest policy.
Head of Forestry	The Head of Forestry is the Government Officer responsible for implementing the mandate of the public administration related to forests.
Level of subordination	Number of administrative levels between the Head of Forestry and the Minister.
University degree	Qualification provided by University after a minimum of 3 years of post secondary education.

### 15.2 Data for Table T15

Table 15a – Institutions

FRA 2010 Category	2008	
Minister responsible for forest policy formulation : please provide full title	Mr Eskil Erlandsson, Minister for Agriculture, Ministry of Agriculture	
Level of subordination of Head of Forestry within the Ministry		1 <sup>st</sup> level subordination to Minister
	X	2 <sup>nd</sup> level subordination to Minister
		3 <sup>rd</sup> level subordination to Minister
		4 <sup>th</sup> or lower level subordination to Minister
Other public forest agencies at national level	Swedish Forest Agency.	
Institution(s) responsible for forest law enforcement	Swedish Forest Agency.	

Table 15b – Human resources

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	1000	n.a.	1329	25%	1006	32%
...of which with university degree or equivalent	n.a	n.a	n.a	n.a	n.a	n.a

Notes:

1. Includes human resources within public forest institutions at sub-national level
2. Excludes people employed in State-owned enterprises, education and research, as well as temporary / seasonal workers.

### 15.3 Comments to Table T15

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Minister responsible for forest policy formulation		
Level of subordination of Head of Forestry within the Ministry		
Other public forest agencies at national level		
Institution(s) responsible for forest law enforcement		
Human resources within public forest institutions	Data on level of education is not available	

Other general comments to the table
<p>15a The name of a Minister tends to change over time. It would therefore be more useful to identify the responsible Ministry, in addition to the Minister in charge. Moreover, it would be interesting to see if there is a trend in which Ministries are appointed as responsible for forest policy issues, i.e. if there is a shift away from one to another type of Ministry.</p> <p>15b Figures refers only to staff of the Swedish Forest Agency.</p>

## 16 Table T16 – Education and research

### 16.1 FRA 2010 Categories and definitions

Term	Definition
Forest-related education	Post-secondary education programme with focus on forests and related subjects.
Doctor's degree (PhD)	University (or equivalent) education with a total duration of about 8 years.
Master's degree (MSc) or equivalent	University (or equivalent) education with a total duration of about five years.
Bachelor's degree (BSc) or equivalent	University (or equivalent) education with a duration of about three years.
Technician certificate or diploma	Qualification issued from a technical education institution consisting of 1 to 3 years post secondary education.
Publicly funded forest research centers	Research centers primarily implementing research programmes on forest matters. Funding is mainly public or channelled through public institutions.

### 16.2 National data

#### 16.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Statistics from National Register of Higher Education. ISCED field of education 623 and part of 543. (SCB)	H	Education	2000,2005,2008	
Data from Statistics Sweden (SCB)	H	Research	2000,2005,2008	

### 16.3 Data for Table T16

FRA 2010 Category	Graduation <sup>1)</sup> of students in forest-related education					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Master's degree (MSc) or equivalent	77	31	84	20	90	31
Bachelor's degree (BSc) or equivalent	52	12	50	30	31	10
Forest technician certificate / diploma	6	0	0	0	2	100
FRA 2010 Category	Professionals working in publicly funded forest research centres <sup>2)</sup>					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Doctor's degree (PhD)	n.a.	n.a.	184	16	155	27
Master's degree (MSc) or equivalent	n.a.	n.a.	95	48	72	40
Bachelor's degree (BSc) or equivalent	n.a.	n.a.	16	37	15	20

Notes:

1. Graduation refers to the number of students that have successfully completed a Bachelor's or higher degree or achieved a certificate or diploma as forest technician.
2. Covers degrees in all sciences, not only forestry.

## 16.4 Comments to Table T16

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Graduation of students in forest-related education	<p>2000 refers to academic year 2000/2001, 2005 refers to academic year 2005/2006 2008 refers to academic year 2007/2008</p> <p><i>SLU has the by far largest number of students. In 2000/01 there were six other universities reporting forestry related graduates (Gammelkroppa skogsskola, Högskolan Dalarna, Linköping, Karlstad, Växjö och Mittuniversitetet. In 2005/06 there were SLU, Gammelkroppa, Luleå, Linköping, Göteborg, Växjö och Mittuniversitetet. In 2007/08 there were SLU, Luleå, Linköping, Göteborg, Växjö och Mittuniversitetet.</i></p>	
Professionals working in public forest research centres	<p>Data for year 2000 is not available 2005 refers to academic year 2005/2006 2008 refers to academic year 2007/2008</p> <p>All personnel in colleges and universities dealing with forests and forestry are included as long as they educate or do research. A number of different colleges and universities do have professionals working with research.</p>	

### Other general comments to the table

Education: It's not always clear what should be considered to be a "forest-related" education. Educations on paper and pulp are not included in table T16. The Swedish University of Agricultural Sciences is the by far greatest school for forest related educations.

Research: -

## 17 Table T17 – Public revenue collection and expenditure

### 17.1 FRA 2010 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, forest products include: roundwood; sawnwood; wood-based panels; pulp and paper; and non-wood forest products. As far as possible, this should include revenue collected by all levels of government (i.e. central, regional/provincial and municipal level), but it should exclude the income of publicly owned business entities.
Public expenditure	All government expenditure on forest related activities (further defined below).
Operational expenditure (sub-category to Public expenditure)	All government expenditure on public institutions solely engaged in the forest sector. Where the forest administration is part of a larger public agency (e.g. department or ministry), this should only include the forest sector component of the agency's total expenditure. As far as possible, this should also include other institutions (e.g. in research, training and marketing) solely engaged in the forest sector, but it should exclude the expenditure of publicly owned business entities.
Transfer payments (sub-category to Public expenditure)	All government expenditure on direct financial incentives paid to non-government and private-sector institutions, enterprises communities or individuals operating in the forest sector to implement forest related activities.
Domestic funding	Public expenditure funded from domestic public financial resources, including: retained forest revenue; forest-related funds; and allocations from the national budget (i.e. from non-forest sector public revenue sources).
External funding	Public expenditure funded from grants and loans from donors, non-governmental organisations, international lending agencies and international organisations, where such funds are channelled through national public institutions.

### 17.2 National data

#### 17.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Statistics Sweden, National Accounts.	H	Forest revenue	2000 and 2005	
Government appropriation directions to Swedish Forest Agency.	H	Operational expenditure	2000 and 2005	Regards means for Swedish Forest Agency from the Government and EU.
Statistics Sweden, National Accounts.	H	Transfer payment	2000 and 2005	Refers to Forest Industry sector, i.e. not forestry.
Government budget bill, volume 11, year 2006, expenditure area 23.	H	Transfer payment	2005	All storm related transfer payment.

## 17.2.2 Classification and definitions

National class	Definition
Forest revenue	Includes all taxes from production in forestry, industry for wood and wood products, industry for pulp and papers and land transport of all wood products. VAT is not included since this is transferred to end consumer.

## 17.2.3 Original data

Only the major funds are included in operational expenditure. There are some small funds to for example some University and public institution but difficulties in getting the relevant data made it impossible to include these. Data filled in are therefore an underestimation.

## 17.3 Analysis and processing of national data

Not needed.

## 17.4 Data for Table T17

**Table 17a - Forest revenues**

FRA 2010 Categories	Revenues (1000 local currency)	
	2000	2005
Forest revenue	22376797	26771249

**Table 17b - Public expenditure in forest sector by funding source**

FRA 2010 Categories	Domestic funding (1000 local currency)		External funding (1000 local currency)		Total (1000 local currency)	
	2000	2005	2000	2005	2000	2005
Operational expenditure	503 584	552 839	28 650	47 800	532 234	600 639
Transfer payments	466 290	1 047 623	0	0	466 290	1 047 623
<b>Total public expenditure</b>	969 874	3 504 962	34 650	56 300	1 004 524	3 561 262
If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.	<input type="checkbox"/>	Reforestation				
	<input checked="" type="checkbox"/>	Afforestation				
	<input checked="" type="checkbox"/>	Forest inventory and/or planning				
	<input checked="" type="checkbox"/>	Conservation of forest biodiversity				
	<input type="checkbox"/>	Protection of soil and water				
	<input type="checkbox"/>	Forest stand improvement				
	<input checked="" type="checkbox"/>	Establishment or maintenance of protected areas				
	<input type="checkbox"/>	Other, specify below				

**17.5 Comments to Table T17**

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest revenue		Forest revenues have increased because of higher activities in the forest sector due to higher market demand and the storm in 2005.
Operational expenditure		Operational expenditure has increased which is expected. This expenditure tends to follow the general economic trend.
Transfer payments	Refers only to direct subsidies to broad-leaved forest management and reforestation in some storm areas in 2005. Also some direct subsidies in forest industries.	Transfer payment has increased from 2000 to 2005. The increase can, be explained by the storm in 2005 leading to a relatively extensive Government aid program to forest owners. As a rule the Government policy is not to have transfer payment for production measures in forestry, only for environmental measures. The data for 2000 is therefore more representative and in line with a “normal” year.

**Other general comments to the table**

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