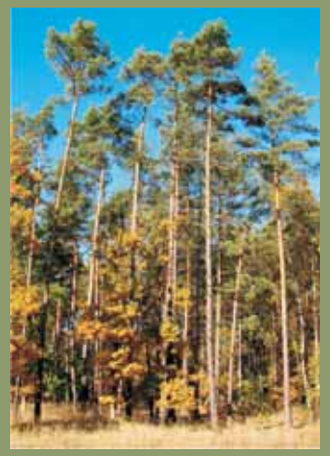
MINISTRY
of AGRICULTURE
of the SLOVAK REPUBLIC



REPORT ON THE STATUS OF FORESTRY IN THE SLOVAK REPUBLIC 2009

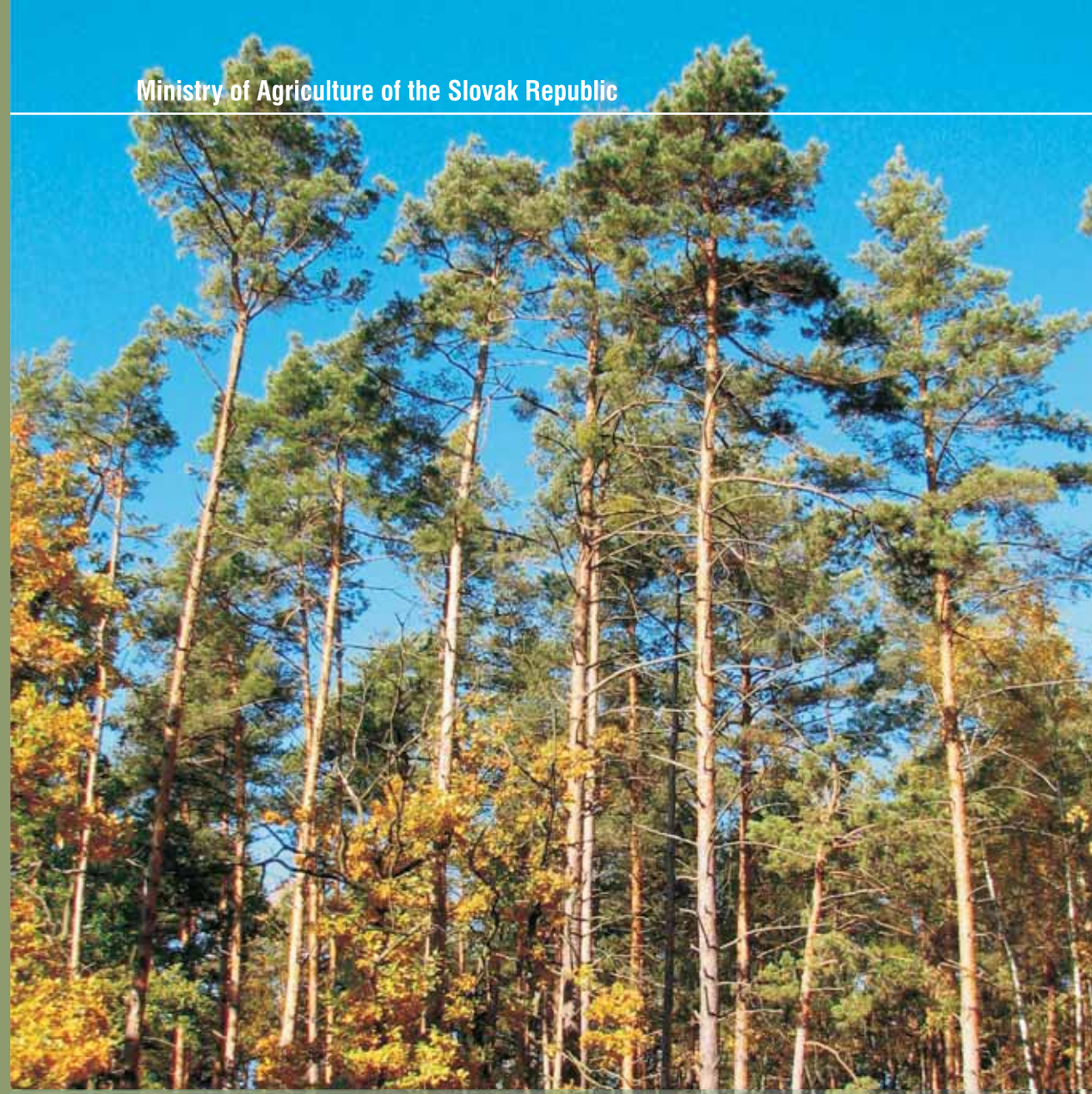
GREEN REPORT

2009

GREEN REPORT

ISBN 978 - 80 - 8093 - 099 - 8

Ministry of Agriculture of the Slovak Republic



REPORT ON THE STATUS OF FORESTRY IN THE SLOVAK REPUBLIC 2009

GREEN REPORT

Bratislava, November 2009

Ministry of Agriculture of the Slovak Republic

REPORT ON THE STATUS OF FORESTRY IN THE SLOVAK REPUBLIC 2009

GREEN REPORT

Bratislava
2009

MINISTERSTVO
PÔDOHOSPODÁRSTVA
SLOVENSKEJ REPUBLIKY

REPORT ON THE STATUS OF FORESTRY IN THE SLOVAK REPUBLIC 2009

GREEN REPORT

Published by: Ministry of Agriculture of the Slovak Republic in cooperation with the National Forest Centre - Forest Research Institute Zvolen
First edition

300 copies

143 pages
Not for sale

Printed by National Forest Centre

ISBN 978 - 80 - 8093 - 099 - 8

CONTENTS

Acknowledgments

The Green Report 2009 represents a major effort of the National Forest Centre and other contributing partners. More than 50 people have been directly involved in the process. Special thanks go to M. Moravčík, the editor, who coordinated the efforts and compilation of the Report.
Writing, editing and reviewing of the report involved the following NFC and the Ministry of Agriculture personnel: Marián Radocha, Jozef Tutka, Jozef Konôpka, Karol Burgan, Peter Hrbáľ, Peter Kaštier, Bohdan Konôpka, Miroslav Kovalčík, Andrej Kunca, Roman Longauer, Valéria Longauerová, Ľudmila Marušáková, Milan Oravec, Pavel Pavlenda, Milan Sarvaš, Zuzana Sarvašová, Matej Schwarz, Miriam Sušková, Roman Svitok, Milan Zúbrik, Mária Žiaková, Vladimír Čaboun, Július Novotný, Pavel Toma, Pavol László, Marián Ondrejčák, Katarína Šimová, Juraj Balkovič, Boris Greguška, Jozef Hlásnik, and Eva Hušťáková.
The formatting, graphics and design were done by Ľuboš Frič and Ľubica Pilná.
The translation was done by Zuzana Kmeťová.
NFC is grateful for the support of all contributors and experts inside and outside the organization that have made the Green Report 2009 possible.

FOREWORD

Dear readers,

The Ministry of Agriculture annually publishes the Report on the Status of Forestry in the Slovak Republic, popularly known as the Green Report. The Report provides forestry professionals, general public and commercial sphere with the insight into the latest developments in the forest sector. The 17th annual Report contains a concise overview of economic, social and environmental aspects of Slovak forestry in the past year and suggests future trends in crucial areas of sustainable forest management.

Forests represent priceless national heritage reflecting state and societal development at national, European and global levels. The ever growing accentuation of the bond between mankind and nature fuels the efforts for a detailed understanding of the impact of mankind on nature and the way the nature influences us. Forests and other wooded communities constitute inherent components of a multifunctional landscape and provide wealth of services and benefits vital for ecological stability of terrestrial ecosystems and sustainable development of modern societies. Forests represent the most important source of renewable raw materials and thanks to their multiple services they play an important role in the creation and conservation of particular components of the natural environment.

The current situation in the sector largely reflects the ongoing changes in forests the most momentous of which is the general forest decline most apparent in spruce forests and forests where spruce forms over 50% of the mixture. The decline has far-reaching economic implications including the increased cost of forest protection. Recent bark beetle outbreaks request timely and expert implementation of protection and defence measures to prevent further spreading and mass dieback of spruce forests.

As the Green Report and its content clearly show, the efforts of forest managers and practitioners primarily concentrate on the conservation of existing forest resources and their biodiversity.
I sincerely trust that the presented publication will prove that our forests are expertly looked after. At the same time, I trust that the information provided in the Report will be of good use to forestry professionals and general public alike.

Vladimír Chovan
Minister of Agriculture

Acronyms and Abbreviations

ACS	Agricultural Consulting System
AFC	Air Fire Service
AFSE	Association of Forest Sector Employers
AFMP	Aggregated Forest Management Plan
AFEA	Aggregated Forest Economic Account
ANFO	Associations of Non-state Forest Owners
AP	Action Plan
APA	Agricultural Paying Agency
APVV	Agency for Research and Development Support
ARDS	Agency for Research and Development Support
ARD – SOP	Sectoral Operational Programme Agriculture and Rural Development
AS	approved stands
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CEGA	Cultural and Educational Grant Agency
CEN	European Centre for Normalization
CFE	Centre for Further Education
CEPF	Confederation of European Forest Owners
CNFOA	Council of the Non-state Forest Owner Associations
COFO	Committee on Forestry (FAO)
DFO	District Forest Office
EAFRD	European Agricultural Fund for Rural Development
EAGGF	European Agricultural Guidance and Guarantee Fund
ECE	Economic Commission for Europe
EFC	European Forestry Commission (FAO)
CFE	Centre for Further Education
EN	European Norms
EFICP	European Forest Information and Communication Platform
EFICS	European Forest Communication and Information System
EU	European Union
FACE	Federation of Associations for Hunting and Conservation of the EU
FAE Ulič, s.e.	Forests and Estates Ulič, state enterprise
FAO	Food and Agriculture Organization of the United Nations
FC	Forestry College
FCI	International Cynological Association
FCL	forest crop land
FE	Forest Enterprise
FF TU Zvolen	Faculty of Forestry of the Technical University Zvolen
FI	furniture-making industry
FIS	Forestry Information System
FITASC	Federation Internationale de Tir Aux Armes Sportives de Chasse
FP	forest area (plots)
FPS	Forest Protection Service
FR	Forest Record
FRB	Fire and Rescue Brigade
FRM	forest reproductive material
FSC	Forest Stewardship Council
FS IS	Forest Sector Information System
GAV	gross added value
GDP	gross domestic product
GIS	Geographical Information System
GP	gene pool
IAESTE	International Association for the Exchange of Students for Technical Experience
IAF	International Association for Falconry
IAWA	International Association of Wood Anatomists
IAWS	International Academy of Wood Science
ISA	International Society of Arboriculture
ISHS	International Society for Horticultural Science
ISTA	International Seed Testing Association
IEEAF	Integrated Environmental and Economic Account for Forests

IFE SAS	Institute of Forest Ecology of the Slovak Academy of Sciences in Zvolen
IFSA	International Forestry Students' Association
KEGA	Cultural and Educational Grant Agency
LR	land reform
MA SR	Ministry of Agriculture of the Slovak Republic
MCPFE	Ministerial Conferences on the Protection of Forests in Europe
MD SR	Ministry of Defence of the Slovak Republic
ME SR	Ministry of the Environment of the Slovak Republic
MFE SR,s.e.	Military Forests and Estates of the Slovak Republic, state enterprise Pliešovce
NFC	National Forest Centre
NFC- FRI	National Forest Centre – Forest Research Institute
NFC-IFCE	National Forest Centre – Institute for Forest Consulting and Education
NFC-IFRI	National Forest Centre – Institute for Forest Resources and Information
NFP	National Forest Programme
NGO	Non-governmental Organization
NIML	National Forest Inventory and Monitoring
NNM	National Nature Monument
NNR	National Nature Reserve
NP	National Park
NR	Nature Reserve
ODA	Official Developmental Assistance
PA	protected area
PEFC	Programme for the Endorsement of Forest Certification Schemes
PFI	Permanent Forest Inventory
pH	soil reaction
PLA	Protected Landscape Area
PMS	Partial Monitoring System on Forests
PP	Nature Monuments
pSCI	Proposed Site of Community Importance
PPI	pulp & paper-making industry
RDP	Rural Development Programme
RFO	Regional Forest Office
RS	research station
RSM	Research Station and Museum of SF TANAP
SAFGM	State Administration on Forestry and Game Management
SCI	Site of Community Importance
SFCA	Slovak Forest Certification Association
SFCH	Slovak Forestry Chamber
SF TANAP	State Forests of TANAP
SHU	Slovak Hunting Union
SR	Slovak Republic
SRP	sub-restoration programme
SNC SR	State Nature Conservancy of the Slovak Republic
SOP	Sectoral Operational Programme
SPA	Special Protection Area
SSPA	small-scale protected area
STN	Slovak Technical Norm
SUTN	Slovak Institute of Technical Normalization
TANAP	Tatra Mountains National Park
TC	Timber Committee
TC UNECE	Timber Committee of the United Nations Economic Commission for Europe
TCI	total current increment
TI	timber industry
TSMSF	Thematic State Map Set on Forests
TU Zvolen	Technical University Zvolen
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFF	United Nations Forum on Forests
UNFCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
VEGA	Scientific and Grant Agency
WPI	wood-processing industry

1. INTRODUCTION

1.1 Overview of the most important facts on Slovak forests and forestry

The area of forest holdings annually increased by 840 ha. At the same time, the area of forest crop land increased by 649 ha to 1 934 000 ha. The forest cover was some 40.9%.
In tree species composition, gradual decline of conifer species offset by deciduous species increase was observed. The trend is considered largely beneficial improving the structural stability of Slovak forests. The conifers covered 40.3% of forest land. The remaining 59.7% were covered by broadleaf forests. Spruce decline attributed to bark beetle reached a scale at which both timber production and environmental services are becoming affected. The reported decline in fir was considered largely undesirable. On the other hand, the observed increase in beech and noble hardwoods (sycamore, maple, ash, lime) were seen as beneficial.
The growing stock in Slovak forests continued to rise and reached 452 million m^3 of timber over 7 cm inside bark. The average ha stock was estimated at 234 m^3. The rising stock was attributed to an imbalanced increment to felling ratio associated with the subnormal presence of mature stands and abnormal presence of 50 – 100 year-old stands.
The total area of regenerated forest (natural and planting) increased by 1 704 ha of which natural processes accounted for 747 ha or more than 35%. The non-stocked forest land area increased by 2 846 ha compared to the 998 ha increase in 2007.
The volume of felling was 9 467 100 m^3 which represented an annual increase of 1.1 million m^3. Of the total volume, the incidental felling accounted for 64.6%; in conifer forests, the aforementioned felling formed a staggering 87.5% of total volume. With such volume, the planned annual allowable cut was topped by 25.9%.
Treatment to remove shrubs and unwanted tree vegetation from young forest covered 10 732 ha. Preventive measures against game damage were implemented on 31 532 ha of which 271 ha were fenced off plantations (106 km). In addition, weed control measures were employed on 40 214 ha of plantations. The volume of cleaning operations annually fell by 3 026 ha; at 16 765 ha, the slump in thinning operations was even greater. At 55% of planned thinning, the decline was most felt in the category of non-state forests. Lower thinning volumes were a consequence of the attempt to postpone planned treatment due to abnormal incidental felling.
Abiotic agents contributed to 2.8 million m^3 of damaged timber of which 89% was removed.; 11% (or 333 000 ha) remained unremoved. Bark beetle and wood borers damaged 3.6 million m^3 of timber. At 817 000 m^3, the volume of unremoved timber was almost twice that of 2007; grave concerns were raised about the possible scale of bark beetle damage in 2009.
No less than 86% of total damage was attributed to European spruce bark beetle. The implemented suppression measures included the installation of 48 000 pheromone traps and setting up 16 000 trap trees. Insecticides were applied to treat 477 000 m^3 of timber.
Phyto-pathogenic micro organisms damaged 291 000 m^3 of timber of which 89% was removed (or 260 000 m^3). Of the total volume, 81% was damaged by honey fungus. After the period of temporary decline, the forest damage attributed to game started to grow

again due to increased deer stocks. Statistical figures for the 16 most affected districts confirmed a substantial annual increase of game damage.
Air pollutants were the underlying cause for 103 696 m^3 of damaged timber.
The economic performance and gross domestic product (GDP) of forest sector were from mid-2008 onwards significantly impacted by global financial crisis. The reduced demand for timber and timber-based products contributed to the imbalance between demand and supply and resulted in a fall of average prices per m^3 of timber. Falling prices in return fuelled timber sales and increased felling – year-to-year timber sales were up by 13%. The average price of m^3 of timber annually fell by 12%. The sectoral GDP given in current prices rose by 1.18%; however, sectoral contribution to national GDP was at 0.42% 0.04% down on 2007 and the trend is expected to continue in 2009.
Despite lower average timber prices and fall of other earnings and revenue, the sector ended the 2008 fiscal year with profit of 941 million SKK. The sum included also 19 million SKK worth of forest operations performed in public interest. The investments into forest properties and production annually rose by 10%.
The sectoral workforce annually rose by 10.73% to form 1.06% of the total national workforce. Some 13 000 other workers were employed by commercial enterprises either as self-employed or regular employees. The average nominal monthly earnings annually grew by 8.1%. Still, at 3.2%, the average real monthly earnings grew at a much slower rate. At a national level, the difference between average national and sectoral monthly earnings annually rose from 8.39% to 12.6%.

1.2 INTERNATIONAL FOREST POLICY

The **United Nations Forum on Forests** *(UNFF)* is an intergovernmental policy forum promoting the management, conservation and sustainable development of all types of forests on the planet. UNFF is an advisory body of the Economic and Social Council of the United Nations (ECOSOC) which, following intense negotiations, adopted the landmark Non-Legally Binding Instrument on All Types of Forests on 28 April 2007. On 17 December 2007, the Instrument was adopted by the UN General Assembly (Resolution 62/98).
The **Food and Agriculture Organization of the United Nations** *(FAO)* acts FAO acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policy. FAO helps developing countries and countries in transition modernize and improve agriculture, forestry and fisheries practices. The FAO Forestry Department helps nations manage their forests in a sustainable way. The Department has three divisions: Forest Economics and Policy Division; Forest Products and Industry Division; and Forest Management Division.
The highest FAO Forestry statutory body is the **Committee on Forestry** (COFO). The biennial sessions of COFO serve to identify emerging policy and technical issues, to seek solutions and to advise FAO and others on appropriate action.
The **European Forestry Commission** (EFC) is one of six Regional Forestry Commissions established by FAO to provide a policy and technical forum for countries to identify and address forest issues in Europe and aid COFO sessions.

The **United Nations Economic Commission for Europe** (UNECE) is one of five regional commissions of the UN. Its major aim is to promote pan-European economic integration. The UNECE **Timber Committee** meets once a year. It follows the Strategic Plan of the UNECE/FAO Integrated Programme of Work on Timber and Forestry 2008–2013 (approved in 2008) defining objectives, strategy, actions and programme trends reflecting national priorities and needs. The actions focus on five work areas: Forest Products Markets; Forest Resources: Outlook; Social / Cultural; and Forest Policies / Cross-sectoral.

Ministerial Conferences on the Protection of Forests in Europe (MCPFE) formulate strategic objectives of European forestry and attempt to implement these objectives into practice. The Ministers responsible for forests decide on common issues of strategic importance related to forests and forestry. The Commitments (Declarations & Resolutions) are not legally binding. They are, nonetheless, still considered a political commitment of signatory countries. Since 1990, nineteen Resolutions in total have been adopted at five Ministerial Conferences.

The primary framework of the European Community and European Union Law, which is formed by the Treaty establishing the European Community and the Treaty on European Union do not establish common forestry policy. Compliant with the subsidiary principle, the implementation of effective strategies and policies on sustainable forest management is fundamentally the commitment of particular Member States. On the other hand, sustainable management of forests represents an important objective of the Common Agriculture Policy (CAP), particularly with respect to rural development and other common sectoral policies with a direct impact on forests and forestry (environment, economic and customs, research, internal market, health, consumer protection and rights, development cooperation, industry, energy). There is a set of legally binding and non-binding documents implemented by EU regulating forestry issues of which the EU Forestry Strategy is the most important one representing a framework for common European approach to forest protection.

Within the European Commission, a number of specialised committees and work groups has been set up to evaluate forestry policy options of which the **Standing Forestry Committee**, attached to the Directorate General for Agriculture and Rural Development, acts as an advisory and management committee for specific forestry measures. Other EC structures involved in forestry are the Advisory Committee on Forestry and Cork and the Advisory Committee on Community Policy Regarding Forestry and Forestry-based Industries.

The legislative process requires a direct involvement of the Council of the European Union and the European Parliament. At the Council level, forestry issues are dealt by the **Working Group on Forests**.

The most important regional event of 2008 was the **European Forest Week** (EFW) co-organized by the European Commission, the Food and Agriculture Organization of the United Nations, the Ministerial Conference on the Protection of Forests in Europe and the United Nations Economic Commission for Europe, in close collaboration with the Presidency of the Council of the European Union, France. The event was officially announced at the 5th MCPFE by the ministers responsible for forestry and was held during the week of October 20–24. The objectives of the European Forest Week were to:

- Increase the visibility of the forest based-sector and its contribution to development of economy and society in Europe.
- Raise awareness about its important contributions to mitigating climate change, providing freshwater and protecting the environment.
- Engage other sectors in a participatory dialogue on forest related issues.

The event was held under the message: *Europe's forests enrich our lives and help save the planet*. During the week, a series of meetings and events was organized in Brussels, Rome and across the entire Europe to achieve its objectives

1.3 NATIONAL FOREST POLICY

The objectives and priorities of the national forest policy are defined in the **National Forest Programme** (hereinafter only NFP). The document was approved by the Decision of the Slovak Government No 549 from 27 June 2007. The National Council of SR acknowledged NFP by the Decree No 531 from 20 September 2007 and instructed the Government to develop its Action Plan (AP) to include detailed sources of funding for particular priorities. AP was completed in 2008 for the years 2009–2013 to correspond with the EU programming period. Among other issues, the document also pays attention to the development of NFP framework objectives into particular measures.

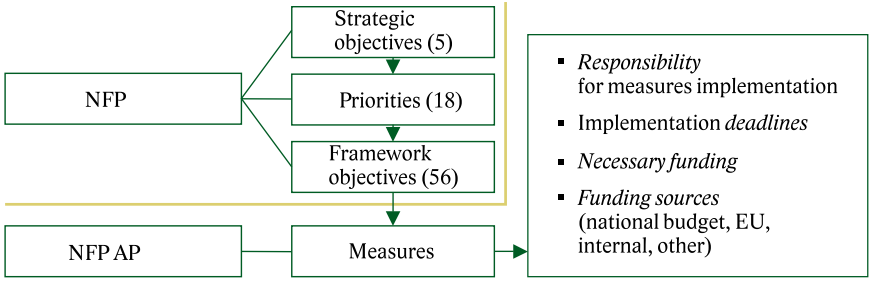


Figure 1.3-1 Structure of NFP and its AP.

The development of AP was coordinated at a sectoral level with a direct involvement of forestry affiliated sectors and major stakeholders including owners and managers of state and non-state forests, forestry agencies, forestry associations and other forestry entities. The proposed measures were based on a detailed analysis of current political situation and sectoral economic indicators and/or trends. At the same time, the measures were designed to take due account of European principles and global influences impacting the implementation of NFP/AP.

Based on the outcomes of the 9th Session of the Ministry of Agriculture Steering Committee, the National Forest Centre developed the **Forestry Development Strategy** later approved by the Ministry. The document specifies and explains objectives, intentions and development direction of forestry in relation to 18 priorities of Slovak NFP based on quantitative and qualitative outlook for 2025 available in the document *Outlook and Visions of Slovak Forestry*. The Strategy details processes, instruments and implementation means to achieve desired results.

The most important funding instrument currently available for the accomplishment of forest policy objectives and priorities is the **Rural Development Programme of the Slovak Republic 2007–2013** (RDP SR). The document emphasises the importance of ecological forms of land management, quality of life in rural areas, economic diversification and rural employment. Together with AP and the Forestry Development Strategy, the Programme constitutes a key instrument of the NFP implementation.

1.4 MACRO-ECONOMIC SITUATION

The dynamics of the growth of national GDP annually decreased to 6.4% expressed in pegged prices (Table 1.4-1). The GDP generation was influenced by improved productivity and interannual employment growth. The inflation rate rose to 4.6%. The foreign demand expressed by export fell to 3.2%. The domestic consumption remained unchanged and reached 20.2%. The deficit in foreign trade balance reached 49.4 billion SKK, or 2.4% of GDP.

Table 1.4-1 Key macroeconomic indicators by country and sector

Indicator	Unit	2005	2006	2007	2008	2009 Outlook
GDP in current prices	billion SKK	1 440	1 636	1 852	2 028	2 015
Forestry		8.4	8.5	8.5	8.6	7.3
GDP growth in pegged prices of 1995	%	6.1	8.3	10.4	6.4	-0.45
Investments in current prices	million SKK	376 736	432 084	503 565	526 159	450 000
Forestry		932	1 174	1 161	1 277	384
No of people in employment	1000 persons	2 216	2 301	2 357	2 434	2 400
Forestry		13**	12**	12**	12**	12**
Average monthly earnings	SKK	17 274	18 761	20 146	21 782	22 000
Forestry		15 543	17 232	18 455	19 044	19 900
Inflation rate	%	2.7	4.5	2.8	4.6	3.0
Unemployment rate		16.2	13.3	11.0	9.6	12.0
Foreign trade balance	billion SKK	-76.0	-91.6	-8.7	-49.4	-90.0
Central budget balance		-33.89	-31.7	-23.5	-21.2	-35.0
Discount rate	%	3.2	3.7	4.25	3.75	3.0
Interest rate*	%/%	1.62/6.56	2.12/6.2	2.19/7.84	1.9/6.57	2.0/6.5
Exchange rate (central)	SKK/USD	31.0	29.7	24.7	21.35	23.0
Exchange rate (central)	SKK/EUR	38.6	37.2	33.8	31.29	30.126
Growth in average nominal earnings	%	9.2	8.0	7.2	8.1	4.5
Growth in average real earnings		6.5	6.1	4.3	3.3	1.0

Source: NFC-FRI Zvolen, Statistical Office of SR (SO SR).
*Note: *Ø interest rate on deposits / Ø interest rate on credits.*
***Some 13 000 persons were in 2008 in addition employed or self-employed by non-state forestry subjects and suppliers.*

The employment rose by 3.3% despite economy manifesting the first signs of recession. The unemployment rate fell to 9.6%, the lowest since 1994. The average nominal monthly earnings annually grew by 8.1%. At 3.2%, the growth of average real earnings was much slower than expected, chiefly due to higher inflation figures.
All factors supporting the fast pre-2008 growth of Slovak economy were affected by global financial crisis; they were either restricted or altogether eliminated. The priorities for the immediate future are to stabilise employment and long-term investments.

1.5 FORESTRY LEGISLATION

The following forestry associated regulations were endorsed and came into effect in 2008:

- Regulation No 499/2008 Coll on conditions for providing subsidies under Rural Development Programme.
- Decree No 878/2008 Coll from 3 December 2008 on proposal of legislative, institutional and economic measures to mitigate and gradually halt mass outbreak of bark beetle in Slovak spruce forests.
- Joint Guidance of the MA SR and ME SR on implementation of measures following § 28, Sec. 3 of the Act No 326/2005 Coll on forests in the wording of the pursuant regulations.
- Guidance No 1837/2008 on application for issuance of certified forest manager licence for certificate holders.
- Decision of the MA SR No 4022/2008-710 on introduction of measures on protection of spruce forests.

In connection with the occurrence and control of swine plague, the Forestry Department of MA SR decided on the following:

- adjusting 2008 approval procedure on wild boar management plans (No 953/2008-720/14);
- granting exception from the legal period of hunting wild boar (No 953/2008-720/14).

2 FOREST CONDITION AND ITS CHANGES

2.1 FOREST AREA

Since 1950, both the forest holdings area (FH) and forest crop land (FCL) have been steadily increasing. Table 2.1-1 shows changes in forest holdings area (hereinafter only forest area) based on the forest management plan data. In addition, there is a certain per cent of agricultural and other land covered by forest vegetation. These areas are known as white plots. According to monitoring and forest inventory data these plots presently cover some 275 000 ha (± 3.7%) – several fold more than previously estimated.
There are three different forest cover estimates available in Slovakia. The first, given at 44.3 ± 0.4%, is based on the forest inventory data (National Forest Inventory and Monitoring – NFIM). The second estimate is derived from the area of forest holdings and at 40.9% is 3.4% lower than the inventory estimated cover. The third is derived from the recorded area of forest crop land and at 39.4% is 4.9% lower than the inventory one.

Table 2.1-1 Changes in forest area and forest crop land

Type	1950	1960	1970	1980	1990	2000	2007	2008
	ha / area (ha) and% of change compared to 1950							
FH	1 771 166	1 775 644	1 918 571	1 952 656	1 976 538	1 997 961	2 006 601	2 007 441
	—	+4 478	+147 405	+181 490	+205 372	+226 795	+235 435	+236 275
	—	+0,25	+8,3	+10,2	+11,6	+12,8	+13,3	+13,3
FCL	1 763 056	1 769 012	1 826 564	1 861 642	1 921 705	1 921 414	1 932 942	1 933 591
	—	+5 956	+63 508	+98 586	+158 649	+158 358	+169 886	+17 0536
	—	+0,33	+3,6	+5,6	+9,0	+9,0	+9,6	+9,7

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009; National Forest Inventory 1949–1953; Forest Inventory, 1960.
Prepared by: NFC-FRI Zvolen.

2.2 BASIC FOREST CHARACTERISTICS

2.2.1 Tree species composition

Slovak forests are known to have rather a high diversity of tree species. The most abundant tree species include beech (31.4%), spruce (25.7%) and oaks (13.3%).

Table 2.2.1-1 Main tree species of Slovak forests

Tree species /%									
Spruce	Pine	Fir	Larch	Dwarf pine	Σ C	Beech	Oak	Hornbeam	Turkey oak
25.7	7.1	4.0	2.4	1.1	40.3	31.4	10.8	5.8	2.5
Sycamore/ Maple	Black locust	Ash	Birch	Alder	Hybrid poplars	Domestic poplars	Lime tree	Other broad-leaf	Σ B
2.1	1.7	1.5	1.4	0.8	0.5	0.4	0.4	0.4	59.7

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.
Note: Σ C – total conifers; Σ L – total broadleaves.

Table 2.2.1-2 Changes in tree species composition

Tree species	1970	1980	1990	2000	2007	2008
	%					
Conifer	41.3	42.5	42.3	41.9	40.5	40.3
Broad-leaf	58.7	57.5	57.7	58.1	59.5	59.7
Spruce	26.0	26.4	27.3	26.8	25.9	25.7
Fir	6.2	5.8	5.0	4.3	4.0	4.0
Pine	6.7	7.5	7.0	7.5	7.1	7.1
Beech	30.1	29.5	29.8	30.3	31.2	31.4
Oak + Turkey oak	14.4	14.4	14.2	13.6	13.4	13.3
Hornbeam	6.2	5.7	5.6	5.7	5.8	5.8

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

Table 2.2.1-2 clearly shows a gradual decline in the presence of conifer species in favour of more resilient broad-leaf species, beech and noble hardwoods (sycamore, maple, ash, lime tree) in particular. The ongoing mass decline of spruce forests caused by uncontrollable spreading of bark beetle have reached the extent at which both timber production and environmental services provided by forests are affected. The gradual decline of fir associated with poor regeneration and spreading of invasive tree species is compromising natural diversity of future stands (Table 2.2.1-4).
In addition, Slovak forests feature a number of introduced tree species presence of which remains largely constant. The most common alien species is black locust; recently, box elder and tree-of-heaven have increased in presence raising concerns about their possible impact on natural forest communities.

Tabule 2.2.1-3 Introduced tree species on forest land

Species	%
Black locust *	1.66
Populus x euroamericana (Robusta + I-214)	0.47
Black pine	0.47
Other conifer: Douglas fir; grand fir; eastern white pine	0.07
Other broad-leaf: Northern red oak; black walnut; horse chestnut; box elder*; tree-of-heaven*	0.18

Source: Forestportal: www.forestportal.sk.
Prepared by: NFC-FRI Zvolen.
**invasive species.*

Diversity of tree species (Tables 2.2.1-5; 2.2.1-6) to a certain degree indicates stability and resilience of a particular forest. At 19%, the presence of genuine mixed stands, in which the percent of conifer and broad-leaf species is above 25%, is higher than the presence of pure monocultures (17.1%). Of the latter percent, part is formed by so-called natural monocultures (natural one species stands such as, e.g., dwarf pine communities). The majority of Slovak forests are formed by 2 to 4 conifer or broad-leaf, tree species. From a point of view of forest stability, these mixtures are also much favoured.

Tabule 2.2.1-4 Area of conifer, broad-leaf and mixed forest stands

Conifer stands		Broad-leaf stands		Genuine mixed stands	Non-stocked forest land for planting	Total
+91%	75–90%	+91%	75–90%			
ha / %						
460 497	126 492	823 751	145 485	366 443	10 923	1 933 591
23.8	6.5	42.6	7.5	19.0	0.6	100

Table 2.2.1-5 Area of forest stands by No of tree species

No of tree species in particular stands									
1	2	3	4	5	6	7	>8	Non-stocked forest land	Total
ha / %									
331 468	438 359	491 912	342 676	183 443	83 031	34 489	17 288	10 923	1 933 591
17.1	22.7	25.4	17.7	9.5	4.3	1.8	0.9	0.6	100

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

2.2.2 Age structure

Sustainable and balanced timber production, delivery of other forest services and stable economic conditions for continual forest production cannot be granted unless the age structure of available forests is favourable (particular age classes are roughly evenly represented). Appropriateness of the actual age structure is assessed against a so-called normal area of age classes. At present, the area of medium (6–10) and the highest (15+) age class forests is abnormal. The latter is mostly down to overmature protection forests with an extended rotation period (Table 2.2.2-1).

Table 2.2.2-1 Actual age structure by country and main species groups

Actual age structure		Age class							
		Non-stocked forest land	1	2	3	4	5	6	7
Total	ha	10 923	138 328	151 649	153 175	139 377	124 336	175 887	202 727
	%	0.5	7.2	7.9	7.9	7.2	6.4	9.1	10.5
Conifers	ha	—	54 113	65 677	68 178	63 149	51 195	60 317	71 722
	%	—	2.8	3.4	3.5	3.3	2.6	3.1	3.7
Broad-leaves	ha	—	84 215	85 972	84 998	76 228	73 141	115 570	131 005
	%	—	4.4	4.5	4.4	3.9	3.8	6.0	6.8
Age class		8	9	10	11	12	13	14	15+
Total	ha	191 464	182 325	164 233	114 535	64 169	38 195	26 735	55 531
	%	9.9	9.4	8.5	5.9	3.3	2.0	1.4	2.9
Conifers	ha	71 372	71 268	70 302	45 780	25 019	16 199	12 378	28 918
	%	3.7	3.7	3.6	2.4	1.3	0.9	0.6	1.5
Broad-leaves	ha	120 092	111 057	93 931	68 755	39 150	21 997	14 357	26 613
	%	6.2	5.7	4.9	3.5	2.0	1.1	0.8	1.4

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

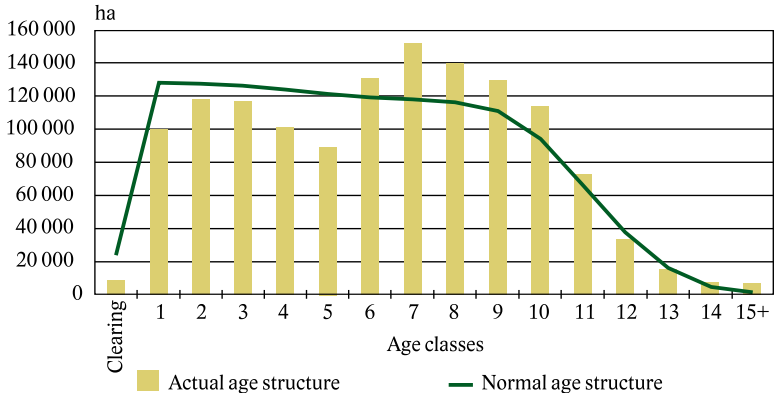


Figure 2.2.2-1 Age structure of commercial forests (actual and normal).

The average age of all main tree species is on an increase (Table 2.2.2-2). This trend is nonetheless only temporary and is caused by actual uneven distribution of age classes. It is expected that due to a high volume of incidental felling in spruce forests the decrease in the average age of the species will readily manifest as early as in the following decade.

Table 2.2.2-2 Trends in average age of particular tree species

Year	Tree species								
	Spruce	Fir	Pine	Larch	Oak	Beech	Hornbeam	Sycamore/ Maple	Ash
	Age								
2000	66.2	76.1	60.8	44.9	72.1	70.1	62.5	51.7	51.8
2001	66.1	76.0	60.8	45.1	72.4	69.8	62.5	51.3	51.4
2002	66.4	76.0	61.7	45.7	73.3	70.3	63.3	51.6	52.0
2003	66.6	76.3	62.7	46.3	74.4	70.6	63.7	51.7	52.4
2004	67.1	76.8	63.4	47.2	74.9	70.8	63.8	51.8	52.4
2005	67.6	76.8	63.8	47.7	75.4	71.0	64.1	51.8	52.6
2006	68.1	77.3	64.3	48.1	75.8	71.1	64.2	51.9	52.9
2007	67.9	77.2	64.5	48.2	76.4	71.3	64.2	51.7	53.2
2008	68.4	77.7	65.2	49.0	77.1	71.5	64.3	52.0	53.7

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

2.2.3 Spatial structure

From a viewpoint of age and spatial diversity, Slovak forests are primarily composed of single-storey stands (78%). Three- and multi-storey stands cover only 2.5% of the forest crop land (Table 2.2.3-1). The spatial structure is assessed using stocking as its main indicator. This indicator determines a relative level of forest density (occupation of forest area and its production space by trees). Maintenance of the optimum stocking is crucial for both forest production and delivery of multiple environmental services. The indicator mildly falls in the initial stages of forest development (young stand up to the 8th age class), becomes even in premature stands (9–11 class) and falls again in mature stands. The average stocking of Slovak forests is 0.8 (Table 2.2.3-2).

Table 2.2.3-1 Area of single-, two-, and multi-storey stands by forest category

Functional forest category	Forest crop land	Single-storey stands		Two-storey stands		Three- and multi-storey stands	
	ha	ha	%	ha	%	ha	%
Commercial	1 333 491	1 055 205	79.1	248 840	18.7	29 445	2.2
Protection	330 350	242 164	73.3	78 163	23.7	10 023	3.0
Special-purpose	269 750	212 557	78.8	49 149	18.2	8 045	3.0
Total	1 933 591	1 509 926	78.0	376 152	19.5	47 513	2.5

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

Table 2.2.3-2 Stand density by age class

Year	Age class														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
2000	0.88	0.90	0.87	0.83	0.81	0.78	0.77	0.76	0.75	0.76	0.75	0.74	0.71	0.70	0.69
2001	0.88	0.89	0.87	0.83	0.81	0.79	0.77	0.76	0.76	0.76	0.75	0.74	0.72	0.70	0.69
2002	0.88	0.89	0.87	0.83	0.81	0.79	0.77	0.76	0.76	0.76	0.76	0.75	0.72	0.70	0.70
2003	0.89	0.89	0.87	0.83	0.81	0.79	0.77	0.76	0.76	0.76	0.76	0.75	0.72	0.70	0.70
2004	0.89	0.89	0.86	0.83	0.81	0.79	0.78	0.77	0.76	0.77	0.77	0.76	0.73	0.71	0.70
2005	0.88	0.89	0.86	0.83	0.81	0.79	0.78	0.77	0.76	0.77	0.77	0.76	0.73	0.71	0.70
2006	0.88	0.89	0.86	0.83	0.81	0.79	0.78	0.77	0.76	0.77	0.77	0.76	0.73	0.71	0.70
2007	0.86	0.89	0.86	0.83	0.81	0.79	0.78	0.77	0.77	0.77	0.77	0.76	0.74	0.71	0.70
2008	0.87	0.89	0.86	0.83	0.81	0.80	0.78	0.77	0.77	0.77	0.77	0.76	0.74	0.71	0.70

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

2.3 GROWING STOCK AND INCREMENT

Recent figures suggest a gradual increase in growing stock. In the year to end-December 2008, the growing stock of Slovak forests reached 452 089 163 m^3 of timber inside bark. The average stock was 234 m^3 ha^{-1} of timber inside bark (Table 2.3-1).

Table 2.3-1 Growing stock 1970–2008

Growing stock	1970	1980	1990	2000	2007	2008
	million m^3					
Total	313.3	324.0	348.5	410.0	445.9	452.1
Scale and % of growth compared to 1970	—	+10.7	+35.2	+96.7	+132.6	138.8
	—	+3.4%	+11.2%	+30.9%	+42.3%	44.3
Increment	m^3. ha^{-1}					
Conifer	225	237	235	249	209	211
Broad-leaf	140	156	163	190	237	241
Average	176	191	193	215	232	234
Stock in forests available for timber production	Total				413.2	419.3
	Of which			Conifer	192.2	194.1
				Broad-leaf	221.0	225.2

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

The increase in available growing stock is associated with a disproportionate development of increment and felling volumes chiefly resulting from subnormal presence of mature stands and abnormal area and volume of 50–100 years old, mostly premature stands (Chapter 2.2).

Table 2.3-2 Growing stock by age class

Growing stock		Age class							
		1	2	3	4	5	6	7	8
Total	1000 m^3	114	2 327	13 458	21 167	25 101	42 733	56 965	60 214
	%	0.0	0.5	3.0	4.7	5.6	9.4	12.6	13.3
Per ha	m^3	1	15	88	152	202	243	281	314
Age class		9	10	11	12	13	14	15+	Total
Total	1000 m^3	62 712	61 053	43 872	23 530	13 307	8 664	16 872	452 089
	%	13.9	13.6	9.7	5.2	2.9	1.9	3.7	100.00
Per ha	m^3	344	372	383	367	348	324	304	234

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

The actual volume of growing stock accrued in forests over a certain period of time, e.g. one year, is called the total current increment (TCI). Maximum TCI is observed in forests with a high presence of high increment age classes (3–6). The TCI volume cannot be used as a felling indicator since it depends on the forest age structure. It is generally agreed that no more than 60% of TCI should be felled each year. Both the total and average TCI per ha continue to grow. The growth is associated with the actual age structure and development of growing stock in Slovak forests (Table 2.3-3). It is expected that owing to a gradual shift of growing stock towards higher classes with lower increment, the TCI will culminate at around 2020 to fall afterwards.

Table 2.3-3 TCI 1980–2008

Indicator		1980	1993	2000	2003	2007	2008
TCI	1000 m^3	8 842	10 008	11 204	11 452	11 665	11 786
TCI per ha	m^3	4.75	5.19	5.83	6.03	6.14	6.20

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

Table 2.3-4 TCI by forest category, group and main tree species

	TCI 1000 m^3			TCI $m^3 ha^{-1}$		
	2003	2007	2008	2003	2007	2008
ΣTCI for all forests	11 451	11 665	11 786	6.03	6.14	6.20
For functional forest category						
Commercial	7 911	8 373	8 567	6.20	6.39	6.46
Special-purpose	2 058	1 772	1 686	6.47	6.26	6.30
Protection	1 482	1 520	1 533	4.87	4.95	4.97
For main tree species						
ihličnaté	5 530	5 619	5 652	7.15	7.42	7.49
listnaté	5 921	6 046	6 134	5.26	5.29	6.35
Spruce	3 980	4 031	4 045	7.83	8.11	8.17
Fir	531	537	540	6.67	6.91	6.98

Table 2.3-4 – contd.

	TCI 1000 m³			TCI m³ ha⁻¹		
	2003	2007	2008	2003	2007	2008
For main tree species						
Pine	800	817	824	5.71	5.97	6.05
Beech	3 458	3 584	3 639	5.87	5.97	6.03
Oak	947	950	953	4.50	4.56	4.58
Hornbeam	617	631	638	5.63	5.69	5.75

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

2.4 FACTORS INFLUENCING FOREST CONDITION AND ITS CHANGES

2.4.1 Climate

In the recent decade, Slovak forests have been affected by a number of extreme weather events including droughts, flooding, and windstorms. The year 2008 was temperature and precipitation abnormal. Above usual precipitation attenuated ongoing warming (pests outbreaks, drought stress), yet at the same time contributed to flooding, particularly in July.

2.4.2 Air pollution

The total amount of emissions released into the environment last year averaged the most recent yearly totals. The emissions of all major solid and gaseous pollutants since the early 1990s considerably decreased and nowadays they are either stabilised or further fall. The annual loads critical for vegetation protection were not exceeded at any of the regional weather stations. Recent reductions in emissions observed Europe-wide have already been reflected in improved pH of precipitation in Slovakia. In addition, reduced levels of emissions have lessened the toxic burden on tree species and forest communities.
The situation is rather different in the category of tropospheric ozone concentrations of which continue to rise, particularly in higher altitude locations. Owing to the above average number of cloudy days in 2008, the impact of increased ozone levels was less than average felt.
The condition of Slovak soils is still being influenced by air pollution from previous decades. The widespread acidification of soils in higher mountain locations and regions with large sources of acid emissions appears to be a long-term problem now. The pH analyses indicate that an estimated 25% of forest soils belonged to a very acid reaction band (pH < 4.5), 40% to acid (pH 4.5–5.5), 17% to moderately acid (pH 5.5–6.5), 5% to neutral (pH 6.5–7.2), and 13% to a moderately alkaline band (pH 7.2–8.0).
Concerns still persists over the local and regional contamination of soils by heavy metals and alkaline pollutants, especially around large industrial sources.

2.4.3 Climate change and forests

The Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC), released in 2007, acknowledges existence of global warming. The statement is based on the current level of scientific knowledge and suggests some impacts of climate change irreversible.
It is expected that extreme weather events will contribute to increased incidence of large-scale natural disturbances in forests. The predictions suggest climate change will magnify the extent of bark beetle outbreaks already considered a serious threat to the integrity of forest ecosystems. Furthermore, forest pathogens are anticipated to spread into previously unaffected areas and affect natural ecosystems worldwide. Flooding, soil erosion, avalanches and landslides are expected to become a serious threat to infrastructure and urban settlements. Hence, the protection functions of forests are likely to significantly gain on importance.

2.5 COLLECTION OF FOREST DATA

2.5.1 Detailed survey of forest stands

The detailed survey at a stand level is one of the methods of forest data collection. It is performed as a part of forest planning process to gather credible updated data for forest management measures and their implementation in forestry practice.
The aggregated survey data are used to compile the Compendium of Slovak Forestry Statistics. In the past, the document used to be the only source of data on forest condition and its changes. Despite its comprehensive character and permanent update, the document comprises data of uncertain accuracy and different time relevance for the survey annually gathers data only for 1/10 of available forest land. In 2008, the survey covered 196 200 ha of forest.

2.5.2 National Inventory and Monitoring of Forests

The National Inventory and Monitoring of Forests (NIMF) is based on selective statistical survey methods. The data are collected from a grid of sample inventory plots. The method is generally considered more appropriate for the national assessment of forest condition than the detailed survey at a stand level. The first cycle of NIMF was performed in 2005–2006 and covered also forest vegetation on non-forest land. The inventory results put the area of forests on non-forest land at 275 000 ha ± 3.7%.
The year 2008 saw the continuation of the processing of first cycle data and the publication of summary document giving basic facts on the first NIMF cycle including the strategic objectives, selected aggregated data, and guidelines on data collection & processing. Other outputs and more complex analyses are to be gradually provided in the following years. Under way is the preparation of the second inventory cycle data from which will provide for comparative trend analyses of measured forest parameters.

2.5.3 Comprehensive Survey of Forest Condition

The Comprehensive Survey of Forest Condition (CSFC) is a statistical method based on the collection of ecological data from a grid of sample forest plots. The collected data include various site and forest health characteristics. In addition, updated site conditions and forest category data are obtained (area of afforested non-forest land, ownership identification, management claims). CSFC is performed in a 10-year cycle routinely one year prior to FMP review and provides data only for registered forest holdings.
The CSFC currently provides the following outputs: management models for framework planning; updated forest site type and soil type maps; updated area of functional forest categories; and proposed zones of air pollution affected forests. The mentioned outputs provide baseline documents for the regular FMP review.

3. MANAGEMENT OF FOREST RESOURCES

3.1 EXPLOITATION OF FOREST FUNCTIONS

Sustainable exploitation of forest services and benefits currently ranks high on the agenda of the most important international for a and initiatives on forests. The rising profile of forests in international policies and initiatives on sustainable development contributed to the adoption of the EU Forest Action Plan in which the European Commission and Member States formulated a common vision of European forestry: "Forests for society: long-term multifunctional forestry that fulfils present and future societal needs and fosters existence/livelihood dependent on forestry."

3.1.1 Production functions

The production of high grade timber without compromising other important ecological and socio-economic functions represents the primary management objective in forests designated for production of timber and other forest products (commercial forests). At present, these forests cover 1 333 500 ha, or 68.9% of the total forest crop land (Table 3.1.4-1). The majority of these forests are naturally multifunctional and are managed to provide a range of environmental and socio-economic services and benefits. The delivery of multiple services is secured through the implementation of particular measures of integrated forest management. At present, only a fraction of forests (6.5%) are designated as strictly production forests.

3.1.2 Ecological functions

All forests regardless their type provide environmental services and benefits. The forests in which these services are paramount are declared protection forests. Functional typing of these forests is limited by their natural conditions. The primary management objective in these forests is to ensure sustainable delivery of environmental services, most importantly those ensuring effective protection of soil, water resources, biodiversity and infrastructure. At present, these forests cover 330 300 ha, or 17.1% of the total forest crop land (Table 3.1.2-1).

Table 3.1.2-1 Protection forests and their functional types

Function	Area	
	ha	%
Erosion control	248 006	12.8
Water management	72 621	3.8
Avalanche control	4 011	0.2
Streamside protection	2613	0.1
Deflation control	3 098	0.2
Total	330 349	17.1

Compendium of Slovak Forestry Statistics, NFC-INFI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.
Note: Percentage of particular functional types was calculated from the total forest area.

3.1.3 Socio-economic and cultural functions

Socio-economic functions are the primary management objective in forests declared special-purpose forests. Delivery of benefits associated with these functions might significantly impact and/or restrict a range of available management options. Particular options are chosen to enhance one or more selected functions, e.g. water protection, recreation, nature conservation, spa & wellness, education & research, etc. At present, these forests cover 269 800 ha, or 14.0% of the total forest crop land. (Table 3.1.3-1).

Table 3.1.3-1 Special-purpose forests and their functional types

Function	Area	
	ha	%
Water purification	13 104	0.7
Recreation	28 531	1.5
Spa & wellness	2 499	0.1
Nature conservation	33 175	1.7
Air pollution mitigation*	96 141	5.0
Game husbandry	20 916	1.1
Education & research	72 193	3.7
Conservation of gene resources	3 192	0.2
Σ special-purpose forests	269 751	14.0
Σ forest crop land	1 933 591	100.0

Source: Compendium of Slovak Forestry Statistics, NFC-INFI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.
Note: Percentage of particular functional types was calculated from the total forest area.
**cancelled in 2005.*

3.1.4 Forests by their prevailing functions

The Act No 326/2005 Coll. On forests divides forests according to their prevailing functions into three main categories – commercial, protection and special-purpose forests. Compared to the past, the air pollution affected forests have now been excluded from the category of special-purpose forests and thus the area of these forests is annually decreasing as management plans are being reviewed. As for commercial forests, their area was last year 2.2% down on 1990, but 2.6% up on 2000 and continues to steadily rise. The area of protection forests remains rather stable.

Table 3.1.4-1 Forests by category and forests available for timber production

Category of forest	1980		1990		2000		2007		2008	
	1000 ha /%						ha /%			
Commercial	1 439.1	77.3	1 367.1	71.1	1 273.8	66.3	1 318 094	68.2	1 333 491	68.9
Protection	183.8	9.9	258.5	13.5	306.7	16.0	329 530	17.0	330 349	17.1
Special-purpose	187.6	10.1	230.9	12.0	340.9	17.7	285 318	14.8	269 751	14.0
Land planned for afforestation	51.1	2.7	65.2	3.4	—	—	—	—	—	—
Total	1 861,6	100	1 921,7	100	1 921,4	100	1 932 942	100	1 933 591	100

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

3.2 GENE POOL AND REPRODUCTIVE MATERIAL

3.2.1 Inspection and management of reproductive material

In 2008, the experts from the Centre for Inspection of Forest Reproductive Material (CIFRM) oversaw and monitored the following:

- management of seed sources;
- implementation of rules for horizontal and vertical transfer of forest reproductive material (115 subjects);
- production of forest reproductive material (52 subjects inspected on seed collection and storage; 159 subjects inspected on planting material production);
- seed quality [specialised seed laboratory accredited by the International Seed Testing Association (ISTA) performed the following tests: seed germination – 264 samples; seed purity – 144 samples; seed vitality – 94 samples; water content – 8 samples; pre–sowing treatments – 5 samples].

In addition, the Centre continued to administer the following national registers: register of seed sources; register of certified FRM handlers; register of reproductive material producers; and the reproductive material register.

In 2008, the Centre also held the 7th annual workshop Contemporary Aspects of Forest Nursery, Seed Management and Artificial Forest Regeneration 2008. The event was attended by 107 representatives of forestry practice, research and various forestry authorities.

3.2.2 Sources of forest reproductive material

At present, the recognized sources of forest reproductive material (FRM) include the following: seed trees and clones; seed orchards; category A and B approved stands; and other identified sources. Their number and area by particular tree species to end-December 2008 are shown in Tables 3.2.2-1 and 3.2.2-2.

Table 3.2.2-1 Number and area of main sources of forest reproductive material

Tree species	Seed trees		Seed orchards			Seed stands	
	No	%	No	ha	%	ha	%
Norway spruce	203	4.8	3	4.0	2.6	281.6	36.2
Silver fir	154	3.7	1	2.3	1.5	90.5	11.6
Scots pine	822	19.5	17	37.8	24.4	55.4	7.1
European larch	921	21.8	29	87.2	56.3	46.7	6.0
Black pine	0	0.0	2	7.0	4.5	—	—
Arolla pine	54	1.3	4	6.3	4.1	—	—
Other conifers	266	6.4	1	0.3	0.2	—	—
Oak species	510	12.1	2	3.0	1.9	120.3	15.5
Common beech	38	0.9	—	—	—	183.6	23.6
Sycamore	137	3.2	2	1.7	1.1	—	—
European ash	206	4.9	3	1.8	1.2	—	—
Common alder	161	3.8	1	1.0	0.6	—	—
Small-leaved lime	102	2.4	1	1.5	1.0	—	—

Table 3.2.2-1 – contd.

Tree species	Seed trees		Seed orchards			Seed stands	
	No	%	No	ha	%	ha	%
Wych elm	137	3.2	—	—	—	—	—
Silver birch	—	—	1	0.4	0.3	—	—
Other broad-leaves	506	12.0	1	0.5	0.3	—	—
Total	4 217	100.0	68	154.8	100.0	778.1	100.0

Source: NFC-FRI Zvolen, 2009

Table 3.2.2-2 Area of approved stands by category and tree species

Tree species	Category area ha		Total
	A	B	
Norway spruce	2 800	15 585	18 385
Silver fir	380	4 176	4 556
Scots pine	154	3 019	3 173
European larch	161	1 139	1 300
Oak species	496	7 590	8 086
Common beech	2 204	23 307	25 511
Other tree species	97	1 364	1 461
Total	6 292	56 180	62 472

Source: NFC – FRI Zvolen, 2009.

The number of gene reserve forests (GRF) increased by 25 (from 101 in 2007 to 126 the year later). Their area for the same period grew from 29 821 ha to 35 080 ha. The national Forest Seed Bank (FSB) stored last year 97.56 kg of seed comprising of 21 samples of three conifer species (Norway spruce – 88 kg, European larch – 4.95 kg, and Scots pine – 4.61 kg).

3.2.3 Management of forest seed stock

The majority of forest seeds are treated and stored by the Forest Enterprise (FE) Semenoles Liptovský Hrádok, the specialised unit of the Forests of the Slovak Republic, s.e. Banská Bystrica. Table 3.2.3-1 shows the seed stock of main forest species available to end-December 2008 including information on optimum and available stock.

Table 3.2.3-1 Available seed stock (kg)

Indicator	Tree species					
	Spruce	Larch	Pine	Fir	Beech	Oak species
Stock owned and stored by FE Semenoles	359	685	411	2 677	55 904	4 356
Stock stored by FE Semenoles through leasing contracts	489	209	189	123	510	—
Stock owned by other subjects	181	93	12	2 603	32 616	2 962
Σ stock	1 029	987	612	5 403	89 030	7 318
Optimum stock	2 037	1 163	1 591	5 580	61 660	unspecified
Difference between available and optimum stock	-1 008	-179	-979	-177	+27 370	

Source: NFC-FRI Zvolen; Forests of the Slovak Republic, s.e. Banská Bystrica, FE Semenoles Liptovský Hrádok.

The existing stock for main conifer species (spruce, larch, pine) is largely insufficient due to poor harvest from 2003 onwards. The beech and fir stock improved after good harvest in the 2007/2008 season. The harvest of oak seeds was poor; the available stock will thus preferably be used for direct sowing.

3.2.4 Forest nurseries

The area of state forest nurseries and their production plots continued to fall last year. The decrease is partially associated with changes in forest management practices (a higher rate of natural regeneration, limited need for nursery material) and the implementation of more effective nursery technologies (container planting material, improved seed treatment, etc.).
In the non-state sector, the area available for nursery production has been on an increase since 2006. The growth has primarily been associated with an increased volume of beech material from seed and forest lifted beech seedlings grown in nurseries.
Having observed general decline in spruce forests and the scale of natural disturbances, the production area of nurseries is predicted to increase in the near future.

Table 3.2.4-1 Forest nurseries overview

Indicator	Year							
	2001	2002	2003	2004	2005	2006	2007	2008
Total nursery area (ha)								
State sector	484	600	521	520	485	453	425	394
Non-state sector	626	198	167	160	138	170	184	177
Total	1 110	798	688	680	623	623	609	571
Production area (ha)								
State sector	329	381	360	350	343	315	291	269
Non-state sector	435	151	116	119	100	123	133	140
Total	764	532	476	469	443	438	424	409
Transplant production (1000 pieces)								
State sector	113 802	149 731	120 232	111 582	91 649	85 364	80 618	95 062
Non-state sector	73 895	64 816	50 538	61 027	59 751	67 947	97 392	94 561
Total	187 697	214 547	170 770	172 609	151 400	153 311	178 010	189 623

Source: NFC-FRI Zvolen, 2009.

3.3 SILVICULTURE

3.3.1 Forest regeneration

Tables 3.3.1-1, 3.3.1-2 and 3.3.1-3 show the scale, type and changes in the area of regenerated forest. The total area of regenerated forest annually grew by 1 704 ha of which natural regeneration accounted for 747 ha, or over 35% of the regenerated area. The difference in the area of non-stocked forest land between end-December 2007 and early 2008 is associated with the improved estimate based on the FMP review. At 2 846 ha, the area of non-stocked forest land grew faster than in 2007 (998 ha).

Table 3.3.1-1 Forest regeneration 2008 (ha)

	State subjects	Non-state subjects	Total
Non-stocked forest land in early 2008	14 377	8 215	22 592
Σ of 2008 area increase	11 090	7 387	18 477
– felling	8 552	6 386	14 938
– failed regeneration	967	779	1 746
– area defined by § 6, Sec.7 of Forest Act	151	30	181
– extreme weather events	144	72	216
– natural regeneration on other than felled areas	1 138	85	1 223
– other causes	211	35	172
Σ of 2008 area decrease	8 783	6 847	15 630
– artificial regeneration	5 520	4 464	9 984
– natural regeneration	3 052	2 366	5 418
– other causes (District Forest Office decision)	211	17	228
Non-stocked forest land in end-December 2008	16 684	8 755	25 439
– of which granted exceptions	1 312	625	1 937

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

Table 3.3.1-2 Forest regeneration type (ha)

Decrement of non-stocked forest land	New regeneration		Repeated regeneration	Total
	Planting & sowing	Under planting & under sowing		
Artificial regeneration	7 867	137	1 980	9 984
Natural regeneration	5 338	48	32	5 418
Total	13 205	185	2 012	15 402
Other causes (District Forest Office decision)	194	9	25	228
Total	13 399	194	2 037	15 630

Prepared by: NFC-FRI Zvolen.

Table 3.3.1-3 Trends in forest regeneration 1990–2008 (ha)

Type	Year				
	1990	2000	2005	2007	2008
Artificial regeneration	15 500	12 923	8 922	9 027	9 984
Natural regeneration	3 464	2 134	4 582	4 671	5 418
Total	18 964	15 057	13 504	13 698	15 402
% of natural regeneration	18.2	14.2	33.9	34.1	35.2

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

3.3.2 Treatment of young forests

Brush cutting and cleaning were implemented last year on the total area of 10 731 ha of which 7 320 ha were state forests; the remaining 3 411 ha were forests of non-state subjects. Measures to prevent game damage to forests were implemented on some 31 532 ha. As a part of prevention, 271 ha of plantations were fenced off (106 km). Weed control measures were applied on additional 40 213 ha of plantations.

The data on preventive and protection measures against bark beetle, wood borers and other secondary pests are given in Chapters 4.4.2 and 4.4.3.

3.3.3 Cleaning

The negative trend in the volume of performed cleaning operations continued for the fourth consecutive year. In 2008, performed operations were 3 026 ha short of the planned volume. The ongoing trend is highly undesirable since cleaning restrictions might have a detrimental and irreversible impact on further development of forest stands..

Table 3.3.3-1 Cleaning operations 2008 (ha)

Cleaning	State subjects	Non-state subjects	Total
Planned	16 160	12 204	28 364
Performed	17 441	7 897	25 338
% of planned	107.9	64.7	89.3

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

3.3.4 Thinning

The volume of performed thinning was, similarly to previous years, 16 765 ha lower than planned. The situation is becoming critical especially in non-state forests with only 55% of planned thinning performed last year (Table 3.3.4-1). The trend is associated with frequent postponement of planned intermediate felling due to abnormal incidental felling in both premature and mature forest stands. The volume of felling in premature stands long-term exceeds planned amounts (Table 3.3.4-2.).

Table 3.3.4-1 Thinning operations 2008

Thinning		State subjects	Non-state subjects	Total
Planned	ha	31 929	25 586	57 515
Performed		26 662	14 088	40 750
% of planned	%	83,5	55,1	70,9
Planned	m^3	771 237	549 306	1 320 543
Performed		1 160 854	787 175	1 948 029
% of planned	%	150.5	143.3	147.5

Source: Compendium of Slovak Forestry Statistics, NFC-INFI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

Table 3.3.4-2 Thinning operations 1990–2008

Thinning		Year				
		1990	2000	2005	2007	2008
Planned	ha	63 397	61 111	58 318	57 233	57 515
Performed		37 143	53 938	46 070	42 513	40 750
% of planned	%	58,6	88,2	79,0	74,3	70,9

Table 3.3.4-2 – contd.

Thinning		Year				
		1990	2000	2005	2007	2008
Planned	m^3	1 190 418	1 220 469	1 284 554	1 283 701	1 320 543
Performed		1 896 279	1 926 010	2 163 218	1 932 858	1 948 029
% of planned	%	159.3	157.8	168.4	150.6	147.5

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

3.3.5 Silvicultural systems

The clearcut area fell in 2008 to 29.5% of the total felled area; at the same time, the planned rate of shelterwood and selection systems increased by 2% and 0.1%, respectively (Table 3.3.5-1).

Table 3.3.5-1 Silvicultural systems and their forms

System	Forms	Year							
		1990		2000		2007		2008	
		Felling area	Σ stand	Felling area	Σ stand	Felling area	Σ stand	Felling area	Σ stand
		%							
Clearcut	Small-scale	55,5	52,1	26,9	28	22,2	23,5	20,5	21,8
	Large-scale	9,2	7,9	2,2	2,4	8,0	5,3	7,8	5,0
	Transformation	0,9	1,2	0,7	0,6	0,5	0,4	0,5	0,4
	Conversion	2,3	2,1	0,3	0,4	0,8	0,6	0,7	0,5
	Shelterwood-clearcut combination	16,6	15,6	—	—	—	—	—	—
	Total	84,5	78,9	30,1	31,4	31,5	29,8	29,5	27,7
Shelterwood	Small-scale	7,1	6,1	49,2	41,3	45,8	41,4	47,9	43,7
	Large-scale	0,8	0,7	8	8,1	10,2	8,8	10,6	9,2
	Over storey removal cut	6,2	8,8	10,9	11,9	9,7	11,1	9,0	10,4
	Total	14,1	15,6	68,1	61,3	65,7	61,3	67,5	63,3
Selection and purpose cut	Tree and group selection	1.4	5.5	1.8	7.3	2.8	8.9	3.0	9.0

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.
Note: Σ stand – a number of stands with a particular silvicultural system.

Table 3.3.5-2 Silvicultural systems by forest category (%)

Silvicultural system	Forest category					
	Commercial		Protection		Special purpose	
	Felling area	Σstand	Felling area	Σstand	Felling area	Σstand
Clearcut	28.9	29.1	15.2	5.6	27.2	26.5
Shelterwood	70.9	70.4	14.0	9.8	65.6	58.9
Selection and purpose cut	0.2	0.5	70.8	84.6	7.1	14.6

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.
Note: Σ stand – a number of stands with a particular silvicultural system.

The observed positive trend also favourably influenced silvicultural systems planned in forests of particular functional categories.

3.4 FELLING OPERATIONS

3.4.1 Timber felling

The total volume of timber felled last year reached 9 467 100 m³ which represented an annual increase of 1.1 million m³. At 64.6%, the majority of timber sourced from incidental felling; in case of conifer species, the percentage climbed to a staggering 87.5% (Table 3.4.1-1).

Table 3.4.1-1 Timber felling 1990–2008

Felling (1000 m³)		Year				
		1990	2000	2005	2007	2008
Conifers	Total	2 777.0	3 245.0	6 927.4	5 344.2	6 354.5
	Incidental	1 838.0	2 012.0	6 152.7	4 271.8	5 559.4
	% of incidental	66.2	62.0	88.8	79.9	87.5
Broad-leaves	Total	2 499.0	2 973.0	3 263.1	3 022.9	3 112.6
	Incidental	766.0	1 010.0	380.3	429.0	555.8
	% of incidental	30.7	34.0	11.7	14.2	17.9
Total	Total	5 276.0	6 218.0	10 190.5	8 367.1	9 467.1
	Incidental	2 604.0	3 021.0	6 533.0	4 700.8	6 115.2
	% of incidental	49.3	48.6	64.1	56.2	64.6

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

The volume of timber felled in state forests amounted to 5 405 000 m³ (57%). Of this volume, 63% was timber of conifer and 37% timber of broadleaf species. In non-state forests, the volume amounted to 4 062 000 m³ (43%) – 72% to 28% in favour of conifer species (Table 3.4.1-2).

Table 3.4.1-2 Timber felling by type

Managed forests	Main groups	Felling									
		Deforesta-tion	Regeneration			Intermediate			Total		
			Performed	Incidental		Performed	Incidental		Performed	Incidental	
		1000 m³ of timber >7 cm			%	1000 m³ of timber >7 cm		%	1000 m³ of timber >7 cm		%
State subjects	I	9.2	2 787.8	2 534.5	90.9	629.8	475.0	75.4	3 426.8	3 009.5	87.8
	L	8.7	1 438.5	277.6	19.3	531.0	85.7	16.1	1 978.2	363.3	18.4
	Σ	17.9	4 226.3	2 812.1	66.5	1 160.8	560.7	48.3	5 405.0	3 372.8	62.4
Non-state subjects	I	9.0	2 414.6	2 114.4	87.6	504.1	435.5	86.4	2 927.7	2 549.9	87.1
	L	9.1	842.2	131.0	15.6	283.1	61.5	21.7	1 134.4	192.5	17.0
	Σ	18.1	3 256.8	2 245.4	68.9	787.2	497.0	63.1	4 062.1	2 742.5	67.5

Table 3.4.1-2 – contd.

Managed forests	Main groups	Felling									
		Deforesta-tion	Regeneration			Intermediate			Total		
			Performed	Incidental		Performed	Incidental		Performed	Incidental	
		1000 m³ of timber >7 cm			%	1000 m³ of timber >7 cm		%	1000 m³ of timber >7 cm		%
Total	I	18.2	5 202.4	4 648.9	89.4	1 133.9	910.5	80.3	6 354.5	5 559.4	87.5
	L	17.8	2 280.7	408.4	17.9	814.1	147.2	18.1	3 112.6	555.8	17.9
		36.0	7 483.1	5 057.5	67.6	1 948.0	1 057.7	54.3	9 467.1	6 115.2	64.6

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.
Note: I – conifers; L – broadleaves.

3.4.2 Actual felling and growing stock

The high volume of incidental felling contributed last year to overfelling of 26% above planned figures (Table 3.4.2-1).

Table 3.4.2-1 Trends in annual allowable cut, actual and incidental felling and total current increment (TCI)

Indicator	1990	1995	2000	2005	2007	2008
	1000 m³, %					
Annual allowable cut	5 160	4 930	5 325	6 821	7 228	7 522
Actual felling	5 276	5 323	6 184	10 190	8 367	9 467
Of which incidental felling	2 604	2 986	3 021	6 533	4 701	6 115
	49.3	56.1	48.6	64.1	56.2	64.6
Volume exceeding allowable cut	116	393	859	3 369	1 139	1 945
	2.2	8.0	16.1	49.4	15.8	25.9
Total current increment	9 739*	10 350*	11 204	11 584	11 665	11 786
Felling volume out of TCI	54.2	51.4	55.5	88.0	71.7	80.3

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.
*Note: *data interpolated from TCI figures available for 1980, 1993 and 2000.*

3.4.3 Timber transportation – skidding and haulage

The volume of skidded timber annually grew by 977 000 m³. The growth corresponded with the increased volume of felled timber. At 85%, the majority of skidding operations were outsourced (Table 3.4.3-1).
The volume of timber haulage annually increased by 416 000 m³. The growth corresponded with the increased felling volume. The majority of haulage operations (77%) were outsourced. The difference between the volume of skidded and hauled timber (1.847 million m³) represents the timber stored at timber depots and timber sold at forest haulage points (Table 3.4.3-2).

Table 3.4.3-1 Timber skidding (1000 m³)

Subject		1990	2000	2005	2007	2008
State	Under MA SR	4 728	3 509	5 889	4 377	4 850
	Other ministries	469	345	397	379	396
	Total	5 197	3 854	6 286	4 756	5 246
Non-state subjects		0	Data unavailable	3 019	3 274	3 761
Total		5 197	3 854	9 305	8 030	9 007

Source: Analytical standards; Statistics of MA SR; Les (MA SR) 5-01.
Prepared by: NFC-FRI Zvolen.

Table 3.4.3-2 Haulage operations 1990–2008 (1000 m³)

Subject		1990	2000	2005	2007	2008
State	MA SR	4 266	3 167	6 278	3 961	4 321
	Other ministries	469	345	490	261	273
	Total	4 735	3 512	6 768	4 222	4 594
Non-state subjects		0	Data unavailable	2 519	2 522	2 566
Total		4 735	3 512	9 287	6 744	7 160

Source: Analytical standards; Statistics of MA SR; Les (MA SR) 5-01; Les (MA SR) 7-01.
Prepared by: NFC-FRI Zvolen.

3.4.4 Forest road network

The average density of forest roads remained unchanged. Certain improvements were reported in the category of main paved forest roads with year round use (1L), the length of which annually increased by 44 km. The length of main partially paved forest roads with seasonal use (2L) increased by 2 km; at the same time, the length of unpaved earth forest roads (3L) and permanent skidding roads (PSR) increased by 13 km (Table 3.4.4-1).

Table 3.4.4-1 Forest road network

Forest road category		2007		2008	
		Length	Density (m.ha^{-1})	Length (km)	Density (m.ha^{-1})
Roads owned by forestry subjects	1L – main paved forest roads	6 356	3.2	6 400	3.2
	2L – main partially paved forest roads	14 842	7.4	14 844	7.4
	3L – unpaved earth forest roads + permanent skidding roads	15 908	8.0	15 921	8.0
	Total	37 106	18.6	37 165	18.6
Other 1L roads		3 212	1.6	3 212	1.6
Σ own + other		40 318	20.2	40 377	20.2

Source: Statistics of MA SR; Les (MA SR) 9-01; NFC survey.
Prepared by: NFC-FRI Zvolen.
Notes: 1L – main paved forest road with year round use;
2L – main partially paved forest road with seasonal use;
3L – unpaved earth forest road with the parameters of main forest road allowing for timber haulage under favourable geological and weather conditions; PSR – permanent skidding earth road with maximum longitudinal gradient of 20%.

3.5 FOREST CERTIFICATION

3.5.1 PEFC certification

By end-December 2008, 1 220 577 ha of Slovak forests, or 64%, were certified under the Programme for the Endorsement of Forest Certification (PEFC) scheme. The scheme is nationwide administered by the Forests of the Slovak Republic, s.e. The Chain of Custody Certification (CoC) certificates have so far been awarded to 18 Slovak subjects.
At present, there are approximately 4 million m^3 of timber sourced from PEFC certified forests available on the domestic market.

Table 3.5.1-1 Area of PEFC certified forests

Region	Area (ha)
West	310 646.62
North	213 276.51
Central	341 735.10
East	354 918.30
Total	1 220 576.53

Source: Slovak Forest Certification Association, 2009.

3.5.2 FSC certification

By end-December 2008, 174 083 ha of Slovak forests were certified under the Forest Stewardship Council (FSC) certification scheme. Furthermore, there were 7 holders of the certificate of sustainable forest management (Table 3.5.2-1) and 33 holders of CoC certificates belonging to state, municipal, church, and community subjects.

Table 3.5.2-1 Area of FCS certified forests

Certificate holder	Area (ha)
Regional Association of Non-state Forest Owners Gemer	36 501
Forests of SR, FE Považská Bystrica	30 529
Forests of SR, FE Trenčín	41 503
Forests of SR, FE Prešov	39 978
Union of Diocese Forests	19 989
Municipal Forests Bratislava	3 022
Forests of Ľubica village	2 561
Total	174 083

Source: Slovak Forest Certification Association, 2009

3.6 SECTORAL STANDARDIZATION

In 2008, the Technical Committee TC 6 – Forestry reviewed a number of adopted European standards:

- STN EN 1927 – 1 Qualitative classification of softwood round timber – Part 1: Spruces and firs.
- STN EN 1927 – 2 Qualitative classification of softwood round timber – Part 2: Pines.
- STN EN 1927 – 3 Qualitative classification of softwood round timber – Part 3: Larches and douglas firs.

The reviews included consulting and language and/or author editing. The process was completed on the new standard STN 48 0030 Multi-operational technologies; the standard was submitted to the Slovak Standards Institute (SUTN) for approval. The planned review of the standard STN 73 6108 – Forest road network was aborted due to budgetary constraints. The TC 6 Session, held on 21 November 2008, approved a strategic statement of the Committee, the 2009 Standardization Plan, and addressed the Committee's personal changes.

4. FOREST DISTURBANCES AND PROTECTION

4.1 ABIOTIC DISTURBANCES

The losses on forest production attributed to various abiotic disturbances reached last year 2.8 million m^3 of timber, 89% of which was removed. The remaining 11%, or 333 000 m^3, remained unsalvaged (Table 4.1-1).

Table 4.1-1 Forest damage by agent 2008

Agent	Volume of damaged timber m^3		
	Damaged	Removed	Pending removal
Wind	2 639 197	2 330 586	308 611
Snow	24 050	19 557	4 493
Rime	6 606	6 606	0
Early frost	2 342	2 339	3
Drought and sunstroke	141 022	122 380	18 642
Flooding	21	21	0
Spruce decline	10 353	8 919	1 434
Other	7 636	7 636	0
Total	2 831 227	2 498 044	333 183

Source: Form L116, NFC-FRI Zvolen, 2009.

4.2 BIOTIC DISTURBANCES

Bark beetles and wood borers

Bark beetles and wood borers caused considerable damage last year, particularly in conifer forests. The total volume of timber affected by these pests was estimated at 3.6 million m^3, of which 77%, or 2 827 153 m^3, was removed. The remaining 23%, or 817 000 m^3, represents a potential threat to surviving and often weakened forests (Table 4.2-1).

More than 86% of the total volume of damaged timber was attributed to European spruce bark beetle, the most notorious forest pest last year. The year recorded the largest volume of timber removed owing to pests‘ damage since 1993. Despite this fact, the volume of unremoved timber was almost twofold compared to 2007, which is particularly worrying with respect to 2009 outlook figures (Table 4.2-1).

Table 4.2-1 Main forest pests 2008

Agent	Volume of damaged timber m^3		
	Damaged	Removed	Pending removal
European spruce bark beetle	3 179 090	2 446 323	732 767
Pine bark beetle	211 237	156 310	54 927
Conifer ambrosia beetle	620	620	0
For bark beetle	1 799	1 793	6
Pine shoot beetle and other similar species	4 577	4 525	52
Large larch bark beetle	4 186	4 106	80

Table 4.2-1 – contd.

Agent	Volume of damaged timber m³		
	Damaged	Removed	Pending removal
European oak bark beetle	4 036	3 914	122
Other bark beetle species	239 391	209 562	29 829
Total	3 644 936	2 827 153	817 783

Source: Form L116, NFC-FRI Zvolen, 2009.

Leaf-eating and sucking insect

The leaf-eating species were in a dormant stage in 2008 (Table 4.2-2). Their gradation is predicted for 2013 the earliest.

Table 4.2-2 Leaf-eating and sucking insect 2008 (ha)

Species	Mild occurrence	Abundant occurrence	Total
Asian gypsy moth	577	0	577
Mottled umber, winter moth	10	0	10
Total	587	0	587

Source: Form L116, NFC-FRI Zvolen, 2009.

Phytopathogens

Various groups of phytopathogens affected 308 000 m³ of timber, of which 89%, or 274 927 m³, were removed to prevent infection spreading into the remaining stands (Table 4.2-3). The most serious damage was caused by honey mushroom to which 76% of the phytopathogens affected timber was attributed (Table 4.2-3). The total volume of affected timber annually slightly increased (Figure 4.2-3).

Table 4.2-3 Phytopathogenic fungi and diseases 2008

Agent	Volume of damaged timber m³		
	Damaged	Removed	Pending removed
Needle cats	1 490	1 490	0
Blights	24	24	0
Grey mould	7	7	0
Other foliage diseases	372	372	0
Canker	112	112	0
Necrosis	11	11	0
Honey mushroom	235 340	204 084	31 256
Annosus root disease	2 834	2 834	0
Rots	16 157	15 812	345
Root rots	17 601	15 682	1 919
Other fungi	29 226	29 131	95
Fungus-borne vascular diseases	5 494	5 368	126
Total	308 668	274 927	33 741

Source: Form L116, NFC-FRI Zvolen, 2009.

Game

The scale of forest damage by game annually rose. According to data available for 16 most

affected districts, the extent of damage significantly exceeded damage from 2007. After a temporary decline in the 1990s, game attributed forest damage has been on an increase for the 10th consecutive year now due to improved deer stock.
Game damage varies regionally. In the Prešov region, the most affected districts include Poprad (State Forests TANAP – site Podspády) and Kežmarok (Military Forests and Estates Kežmarok; Land Association Ľubica). In the Košice region, most damage was reported from the Jasov Forests, LtD and Municipal Forests Košice, s.c. In the Liptovský Mikuláš distict, the forests of the Land Owner Association Hybe were most affected. In the area of Horná Nitra and the Strážovské vrchy Mts., the most damage was reported from the districts of Partizánske, Prievidza and Topoľčany (FE Prievidza - FD Bojnice, Partizánske and HA Cígeľ). In the Banská Bystrica region, the districts of Zvolen (FE Kriváň, FD Vígľaš – PPD Poľana, MFE Pliešovce),Banská Bystrica and Rimavská Sobota (FE Rimavská Sobota, FD Rimavská Sobota) were most affected. In the Nitra region, a substantial loss of forest revenue (over 2.6 million SKK) was reported by Sipox Rossi, s.c., from the Zlaté Moravce district.

4.3 ANTHROPOGENIC DISTURBANCES

The volume of timber affected by anthropogenic factors annually decreased by almost 50%.

Table 4.3-1 Anthropogenic factors 2008

Factor	Volume of damaged timber m^3		
	Damaged	Removed	Pending removal
Air pollution	103 696	89 074	14 622
Forest fires	2 137	2 137	0
Theft	5 127	5 127	0
Other	3 478	3 478	0
Total	114 438	99 816	14 622

Source: Form L116, NFC-FRI Zvolen, 2009.

Air pollution
Air pollutants were by far the commonest anthropogenic cause of forest damage last year. Their negative impact on forest health and vitality has now become permanent particularly in industrial areas with ore and magnesite industries and chemical or energy production. The most affected were the regions of Kysuce and Orava. At a municipal level, the worst situation was in Spišská Nová Ves, Kežmarok and Gelnica. The pollution has the most detrimental impact on spruce, fir and beech forests.
A considerable amount of pollutants is of a transboundary origin. As elsewhere in Europe, the amount of main pollutants in the atmosphere (solid particles, SO_2, NO_x, CO) has been on a steady decrease. One of the signs of improved air quality is also the reduction of pollution associated incidental felling. Despite these changes, pollution still remains a major determinant of health and vitality of Slovak forests.

Forest fires

The Fire Appraisal Institute in Bratislava. registered 182 forest fires last year. It was more than two-fold fewer than in 2007 when a total of 460 forest fires were recorded. The number of fires in Slovak forests strongly depends on the weather development and a number of rain- free days, especially in spring and summer months. 118 ha of forest in total was burnt down in last year's fires. As for casualties, no fatalities and only 2 injured were reported last year.

The largest fire destroying 24 ha of forest was reported from the Galanta district (Váh Watershed Authority, s.e., FE Piešťany, Dolný Váh Authority). The costliest fire (approximately 250 000 SKK) burnt down forest in the cadastre area Lučivná (Forests of SR, s.e. Banská Bystrica). The largest number of fires was reported from the districts of Čadca (36), Poprad (10) and Žilina (8). The commonest fire causes included illegal wildfires (44), grass burning (30), and waste burning (20).

4.4 FOREST PROTECTION

4.4.1 Forest Protection Service

The Forest Protection Service (FPS) is a leading authority on forest protection in Slovakia. Affiliated to NFC-FRI Zvolen, it is based in Banská Štiavnica. Its staff (16 experts, 5 technicians) covers all major aspects of forest protection including advising forest owners and managers on best protection practices, strategies and monitoring of forest health. The Service is also responsible for the monitoring of forest nurseries, sampling and identification of forest pests and pathogens. In addition, it also issues recommendations to prevent and/or mitigate pest outbreaks. Last year, the staff performed 191 forest protection related inspections.

4.4.2 Preventive measures

Ing young forests, preventive and control measures against weed, game and cattle grazing were implemented including brush cutting and cleaning (see Chapter 3.3. for more details).

To prevent bark beetle and wood borer outbreaks and spreading, the efforts were concentrated on timely removal of windthrow and snow damaged trees and appropriate forest hygiene. The health of Slovak forests is also being compromised by lax sanitation and untimely removal of infested standing trees.

The new forest planning guidelines introduced in 2008 now also include the guidelines for the designation of air pollution zones in forests and estimation of pollution impact on forests.

4.4.3 Protection and defence

To prevent further bark beetle spreading, 48 000 pheromone traps and 16 000 trap trees were set up in 2008. Compared to 2007, the number of traps and trap trees mildly increased. The majority of traps and trap trees were set up to control populations of European spruce bark beetle (Table 4.4.3-1). This form of bark beetle control was chiefly implemented in the Žilina region. From a long-term point of view, a shift to a wider use of pheromone traps has been recorded.

Insecticides were used to treat 477 000 m^3 of timber and their application has been continually rising. As for removal of infested timber, at around 50% the figures are largely unsatisfactory. Debarking of beetle infested timber was absent altogether.

In forest nurseries, 194.3 ha of production plots were treated by insecticides, 195.3 ha by fungicides and 429 ha by herbicides.

Table 4.4.3-1 Protection and defence measures 2008

Pest	Pheromone traps				Trap trees				Insecticides	
	Moderate	Medium	Strong	Total	Moderate	Medium	Strong	Total	ha	m^3
European spruce bark beetle	1 586	4 880	6 350	12 816	5 477	9 528	22 620	37 625	648	455 758
Pine bark beetle	739	884	620	2 243	3 496	3 455	3 152	10 103	0	20 874
Conifer ambrosia beetle	0	0	0	0	106	53	65	224	0	1 100
Pine shoot beetle and other similar species	0	20	20	40	0	0	0	0	0	0
Large larch bark beetle	0	0	0	0	20	0	0	20	0	0
European oak bark beetle	58	254	825	1 137	0	0	0	0	0	0
Other bark beetle species	0	0	0	0	276	153	165	584	0	0
Total	2 383	6 038	7 815	16 236	9 375	13 189	26 002	48 566	648	477 732

Source: Form L116, NFC-FRI Zvolen, 2009.

Note: Moderate – moderate degree of imago trapping; medium – medium degree of imago trapping; strong – strong degree of imago trapping (STN 48 2711).

4.4.4 Revitalization of forests impacted by air pollution

In 2008, the NLC-FRI Zvolen experts completed 16 revitalization projects for the Forests of SR, s.e. Banská Bystrica and 5 projects for various non-state subjects. These projects were based on the results of chemical and soil analyses carried out as a part of last forest inventory and the data from forest monitoring, forest mapping, forest typing, soil classification, and visual assessment of forest tree health.

The projects recommended liming affected forest stands with ground dolomitic limestone (2.5–4 tonnes ha^{-1}) and the application of fertilizers to improve nutrient content in soils (magnesium, selected micro-nutrients).
Liming was implemented on 2 469 ha of forests managed by the Forests of SR, s.e. Banská Bystrica (FE Žilina, Čadca, Liptovský Hrádok, Košice) with the estimated cost of 59 661 000 SKK. Fertilizers were applied on the total area of 3 500 ha (FE Námestovo, Beňuš, Čierny Balog, Slovenská Ľupča, Rožňava) with the estimated cost of 9 502 000 SKK. The projects were consulted with appropriate nature conservation and environment authorities before being implemented in the third quarter of 2008. The measures were implemented by the Forests of SR, s.e. Banská Bystrica and particular non-state subjects (Municipal Forests Spišská Nová Ves, Jasov Forests, Land Association Bobrov, Land Association Vlachovo, etc.). In case of the latter, liming covered 1 301 ha of forest. Fertilizers were applied on additional 1 865 ha of forest. On some areas of forest, both measures were implemented putting the total treated area at 2 637 ha; the overall cost of treatment was estimated at 92 947 000 SKK.

4.4.5 Forest fire prevention

In 2008, the NLC Zvolen in joint cooperation with the Forests of SR, s.e. and ICZ Slovakia, Ltd., pilot tested an stationary camera based automatic early warning system for the detection of forest fires. The system is currently managed by the Forests of SR, s.e. (FE Kriváň) on a pilot area Poľana. The pilot area of more than 60 000 ha of forest is monitored with 3 cameras. During the testing period, the system detected 178 forest fires of which 139 were reported.
Fire indices were updated daily on the website of the Slovak Hydrometeorological Institute Bratislava. The air monitoring covered the period 24 April – 20 October 2008, during which 970 controlled and 50 uncontrolled fire epicentres were reported to the Fire and Rescue Brigade.
Terrestrial monitoring was the obligatory responsibility of particular forest owners and lessees. The fires were reported to the Fire and Rescue Brigade and self-managed prior to their arrival.

4.4.6 Forest fire education

The Programme of Forest Fire Education 2008–2013 was developed to improve public awareness on forest fire prevention. The document meet the obligations defined by the Government Decree No 663/2007 and lists the tasks of the Forestry Department of MA SR and the Fire and Rescue Brigade Headquarters.
In 2008, the aforementioned authorities published a leaflet and booklet informing public on legislation regulating forest fire prevention. These materials were distributed among public and suitably displayed in frequently visited forests. The special episode of the TV Halali serial was shot to enlarge on risks and consequences of forest fires.
In the state sector, different subjects published or broadcast 210 articles and radio/TV broadcasts on the protection against forest fires. In addition, 151 school events were held

to raise awareness among schoolchildren. Further 35 different information materials were published by district authorities of the Fire and Rescue Brigade. Lastly, 262 information and awareness panels and pictographs were installed on existing nature trails.
The Fire and Rescue Brigade Headquarters last year focused on the implementation of 9 measures associated with forest fire prevention. They included various educational programmes, children competitions, broadcasts, articles, 320 fire prevention events and 477 youth talks on safe behaviour in forests. The majority of organized events targeted the group of 6–15 years old.
A number of events was held in joint cooperation with the Police Force, the Volunteer Fire Protection Brigade and the District Forest Offices

4.5 FOREST HEALTH

The assessment of forest health and vitality was based on the level I and II monitoring plots, both of which are included in the European network of monitoring plots. Forest monitoring is currently performed in 39 countries across Europe.
At present, the assessment is based on the evaluation of forest crown condition using a number of parameters the most important of which is defoliation. Defoliation is estimated visually and reported in per cent of lost foliage rounded to 5%. Particular trees are classed within 5 defoliation classes (0–4). From the forest health point of view, classes 2–4 are considered decisive since they group trees with defoliation 25% and over. Trees with lower defoliation are considered healthy (Table 4.5-1).

Table 4.5-1 Tree species by defoliation class 2008

Defoliation class	0	1	2	3	4	2+3+4	Total*
% of defoliation	0–10 %	11–25 %	26–60 %	61–99 %	100 %		
Beech	21,1	65,0	13,8	0,1	0,0	13,9	1 337
Oak	0,6	69,6	29,6	0,2	0,0	29,8	520
Hornbeam	15,8	62,1	22,1	0,0	0,0	22,1	240
Other broadleaves	11,7	52,6	30,0	5,7	0,0	35,7	283
Σ broadleaves	15,0	64,2	20,0	0,8	0,0	20,8	2 380
Spruce	2,7	58,2	37,6	1,5	0,0	39,1	1 052
Fir	3,2	49,8	45,9	1,1	0,0	47,0	185
Pine	3,8	52,0	42,7	1,5	0,0	44,2	393
Larch	2,7	60,3	37,0	0,0	0,0	37,0	73
Σ conifers	3,0	55,9	39,7	1,4	0,0	41,1	1 703
Total	10,0	60,7	28,2	1,1	0,0	29,3	4 083

Source: PAVLENDA P. et al. (2009). Monitoring of forests and environmental interactions (Forest Focus, BioSoil, ČMS Lesy). NFC-FRI Zvolen.
*Note: *number of assessed trees.*

The most affected tree species include oak, spruce, larch and fir. On the other hand, beech and hornbeam are considered most resistant. The observations suggest a gradual improvement of forest health over the last 12-year period during which average defoliation fell below 25%. Annual values of defoliation observed since 1996 fluctuate more in the group of broadleaves whilst in the conifer group they remain rather constant (26.2–28.3%).

4.6 FOREST DECLINE STRATEGY

In 2008, the SR Ministry of Agriculture issued the document *Information on the Implementation of Timely Measures to Prevent Further Decline of Forests*. The document was approved by the Government on 1 April 2009.

The document addresses major issues associated with forest decline, defines priorities and draws conclusions for the improvement of forest health. Timely removal of bark beetle infested timber and felling residue is necessary in spruce prevalent areas should the bark beetle spreading be contained. Due to financial crisis, the majority of timber companies limited their demand for bark beetle infested spruce timber and pressurised suppliers to decrease market prices for such timber. The pressure resulted in lower revenue for forest owners and managing subjects. The generated earnings were largely insufficient to cover the cost of timely removal of damaged timber, subsequent forest establishment and the implementation of effective defence measures to halt further infestation. Further restrictions were imposed by the Act No 543/2002 Coll on nature and landscape protection which prohibits removal of bark beetle infested timber from zones under the strictest level of protection.

The assessment of incidental felling for 2008 shows that 46.8% from the total of 5 559 400 m^3 of incidental conifer felling were damaged by bark beetle. The figure fully confirmed the ongoing decline of spruce forests in Slovakia – the annual increase of the area affected by bark beetle increased by 18.5% with more than 3 179 000 m^3 of timber infested. Of this volume, more than 2 446 000 m^3, or 77%, was removed. The remaining 733 000 m^3 was left in forests – 57% more than in 2007. Figures 4.6-1 and 4.6-2 show the volume of removed and unremoved timber infested by bark beetles and wood borers in 2008.

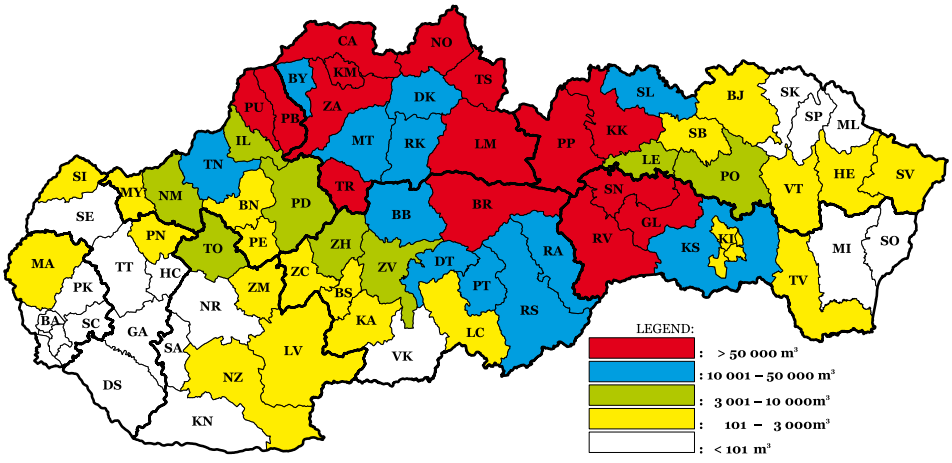


Figure 4.6-1 Volume of infested timber removed to end-December 2008 by district.

The predictions for 2009 suggest around 3 500 000 m^3 of timber infested by bark beetle and wood borers. This timber is considered a threat and should thus be timely removed. The majority of damage is predicted to be caused by European spruce bark beetle.

In order to control European spruce bark beetle spreading, 12 816 trap trees were set

up of which 49.5% were strongly (1 insect boring/dm^2) and 38.1% moderately attacked. In addition to trap trees, 37 625 pheromone traps were installed of which 60.1% were strongly and 25.3% moderately attacked.

Some forest areas were also treated by bark beetle sensitive insecticides (aerial and terrestrial spraying). Table 4.6-1 shows defence measures implemented in particular regions in 2008. The majority of these measures were against European spruce bark beetle.

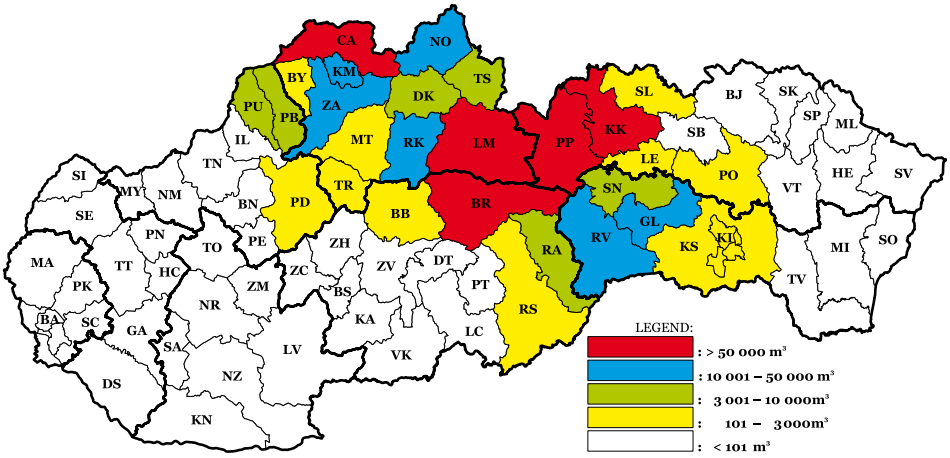


Figure 4.6-2 Volume of infested timber unremoved to end-December 2008 by district.

Table 4.6-1 Defence measures against bark beetles and wood borers by region 2008

Region	Trap trees				Pheromone traps				Insecticides	
	Light	Moderate	Strong	Total	Light	Moderate	Strong	Total	ha	m^3
Banská Bystrica	60	150	171	381	5424	5307	9750	20 481	0	115 461
Košice	162	747	938	1 847	570	976	1 611	3 157	0	50 856
Nitra	115	372	883	1 370	89	62	13	164	0	286
Prešov	110	472	560	1 142	789	2 784	7 577	11 150	684	36 479
Trenčín	494	1 007	636	2 137	384	566	884	1 834	0	5 900
Žilina	1 442	3 290	4 627	9 359	2 119	3 494	6 167	11 780	0	268 750
Total	2 383	6 038	7 815	16 236	9 375	13 189	26 002	48 566	648	477 732

Source: Incidence of Harmful Agents in Slovak Forests in 2008 and Outlook for 2009, FPS Banská Štiavnica, NFC-FRI Zvolen.

4.7 RESTORATION OF AREAS AFFECTED BY CATASTROPHIC WINDTHROW 2004

The restoration of the High Tatra forests destroyed by windthrow continues with the implementation of the project *Restoration of the High Tatras Mts. Forest Ecosystems Affected by 19 November 2004 Windthrow*. The main objective of this project is to restore close-to-nature structure of local forests as well as ecological links and natural processes

to create stable ecosystems able to provide multiple societal services and benefits. The project aims to achieve the following objectives: long-term forest regeneration; enhancement of natural processes; site appropriate tree species composition based on local proveniences; and site appropriate regeneration methods.

Newly established naturally regenerated forests are formed by spruce (40%), rowan (21%) and birch (19%). The conifer species form around 44% of regenerated forests; the remaining 56% are various broadleaf species. The planted areas are dominated by conifer species (93% of the total area) such as spruce (33%), larch (27%) pine (20%) and fir (14%). Regeneration of affected areas is hampered by carpet-like spread of overgrown weed. Planted species secondary to the area are frequently damaged by game. Stump remnants are often attacked by dry rot. In addition, some restored sites are infested by the large pine weevil *Hylobius abietis* which causes considerable damage on spruce and pine.

Restoration efforts in the Low Tatras Mts. and forests of Orava, Kysuce, Gemer and Spiš regions aimed to maximise the area of naturally regenerated forest. The main objective on large-scale clearings was to achieve tree species mixture close to natural composition of restored forests. In order to accomplish this objective, a special attention was paid to the appropriate presence of stabilising species and species of the preliminary stage forest. To maximise the successfulness of planting, a higher than usual percentage of container material and looser irregular spacing supporting natural regeneration were chosen.

Despite the fact that the area of certain large-scale clearings in spruce forests is growing in size due to secondary damage caused by biotic disturbances, bark beetle in particular, the regeneration progress is generally considered promising.

5. TIMBER TRADE

Proceeds from timber sale, which constitute around 80% of the total sectoral earnings and revenue, represent the most important source of funding for sustainable development of forest resources and retention of sectoral employment.

5.1 TIMBER SUPPLY

In 2008, forestry subjects supplied domestic market with 8.8 million m^3 of timber – one of the largest market supplied volume of timber on records. The volume by 500 000 m^3 exceeded the volume supplied in 2005 when the excess supply was associated with the November 2004 catastrophic windthrow. The increase observed last year was chiefly generated by improved growing stock in older forests and a high volume of incidental felling. To equal earnings from 2007, more timber had to be supplied to compensate for falling prices.

The log grade structure of supplied timber has worsened. The volume of softwood and hardwood saw logs annually fell to 57.9% and 41.6% of the total supply. The production of most valuable grades for veneer almost ceased. The production of softwood and hardwood logs of the I and II grade fell to 0.104% and 0.9%, respectively, because of low demand for these grades on domestic and foreign markets.

Table 5.1-1 Log grade structure of raw timber supply

Grade	2007 (m^3)				%
	Slovakia	Export	Own consumption	Total	
Softwood					
I grade logs	445	77	3	525	0.01
II grade logs	10 416	1 122	15	11 553	0.2
III A, B, C grade logs	3 016 635	34 673	84 290	3 135 597	62.4
Paper-pulp & abrasive timber	4 697	—	1	4 698	0.1
Mining timber	8 284	963	8 691	17 938	0.4
Thin poles	10 007	0	283	10 291	0.2
Pulpwood	935 112	184 530	14 275	1 133 918	22.6
Energy wood	71 393	—	5 748	77 141	1.5
Fuelwood	118 910	84	11 364	130 358	2.6
Stumpage	139 577	—	368	139 946	2.8
Raw trunks	357 431	1 404	4 340	363 176	7.2
Total	4 672 908	222 853	129 379	5 025 140	100.0
Hardwood					
I grade logs	3 576	2 372	—	5 948	0.2
II grade logs	24 998	10 878	—	35 876	1.2
III A, B, C grade logs	1 238 746	42 600	11 884	1 293 230	41.6
Mining timber	3 087	—	34	3 121	0.1
Thin poles	—	—	180	180	0.0
Pulpwood	1 514 739	4 462	1 523	1 520 724	49.0
Energy wood	48 339	—	2 452	50 791	1.6
Fuelwood	123 143	1 515	6 686	131 344	4.2

Table 5.1-1 – contd.

Grade	2007 (m³)				%
	Slovakia	Export	Own consumption	Total	
Stumpage	32 772	—	569	33 341	1.1
Raw trunks	30 434	53	1 304	31 791	1.0
Total	3 019 835	61 880	24 632	3 106 347	100.0
Σ Softwood + hardwood	7 692 743	284 733	154 011	8 131 487	—
Softwood lumber	30 733	1 278	1 813	33 824	—
Hardwood lumber	4 538	1 841	244	6 623	—
Chipwood	122 775	15 454	199	138 428	—
2008 (m³)					
Softwood					
I grade logs	90	156	0	246	0.004
II grade logs	6 883	756	0	7 639	0.1
III A, B, C grade logs	3 426 402	92 376	84 553	3 603 331	57.9
Paper-pulp & abrasive timber	8 610	0	0	8 610	0.1
Mining timber	17 320	3 083	0	20 403	0.3
Thin poles	18 011	5	357	18 373	0.3
Pulpwood	1 233 942	147 440	20 817	1 402 199	22.5
Energy wood	58 962	0	2 978	61 940	1.0
Fuelwood	197 590	324	15 185	213 099	3.4
Stumpage	204 339	0	1 640	205 979	3.3
Raw trunks	635 602	45 544	1 579	682 725	11.0
Total	5 807 751	289 684	127 109	6 224 544	100.0
Hardwood					
I grade logs	1 179	1 192	0	2 371	0.1
II grade logs	17 501	7 748	0	25 249	0.8
III A, B, C grade logs	1 111 570	34 003	6 978	1 152 551	37.9
Mining timber	219	0	77	296	0.0
Thin poles	11	0	109	120	0.0
Pulpwood	1 561 187	22 136	6 808	1 590 131	52.2
Energy wood	36 174	0	0	36 174	1.2
Fuelwood	187 241	0	6 959	194 200	6.4
Stumpage	29 495	0	452	29 947	1.0
Raw trunks	12 867	0	107	12 974	0.4
Total	2 957 444	65 079	21 490	3 044 013	100.0
Σ Softwood + hardwood	8 765 195	354 763	148 599	9 268 557	—
Softwood lumber	39 709	12 231	17 197	69 137	—
Hardwood lumber	1 193	815	21	2 029	—
Chipwood	113 032	1 245	0	114 277	—

Source: Quarterly timber supply statistics Les (MA SR) 2-04, National customs statistics.
Prepared by : NFC-FRI Zvolen.
Note: The export volume includes only timber delivered directly by forest owners (tenurers). Differences between the volume of supplied timber and actual timber sales are caused by the adjustment of sawn timber volume not included in the sale volume. Sawn timber is adjusted to fit log grade quality classes I – IV using the 0.65 coefficient for conifers and 0.70 for broad-leaves. The volume of sawn timber delivered to domestic market is added to the volume of log grades sold on the market. The volume of sawn timber for export is added to the volume of export log grades. Delivery volumes also included sawn timber for private consumption.

5.2 TRADE: IMPORTS AND EXPORTS

Official customs figures report the volume of timber exported last year at 2 289 000 m³ in the total value of 3 165 000 SKK. Forest owners and subjects managing forests exported 355 000 m³ of timber of which 290 000 m³ was softwood and 65 000 m³ hardwood. The remaining 1 934 000 m³ was timber exported by other subjects, timber merchants and enterprises. The export of forestry subjects grew only marginally, especially in the category of non-state subjects export of which annually increased by 70 000 m³. Trading companies increased their export by 686 000 m³.

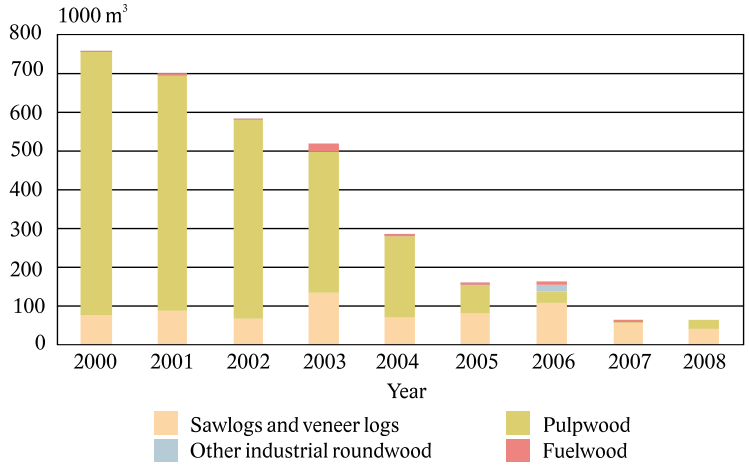


Figure 5.2-1 Export of softwood by forestry subjects.
Source: Quarterly timber supply statistics Les (MA SR) 2-04, Ministry of Economy of SR, Statistical Office of the Slovak Republic, NFC-FRI Zvolen.

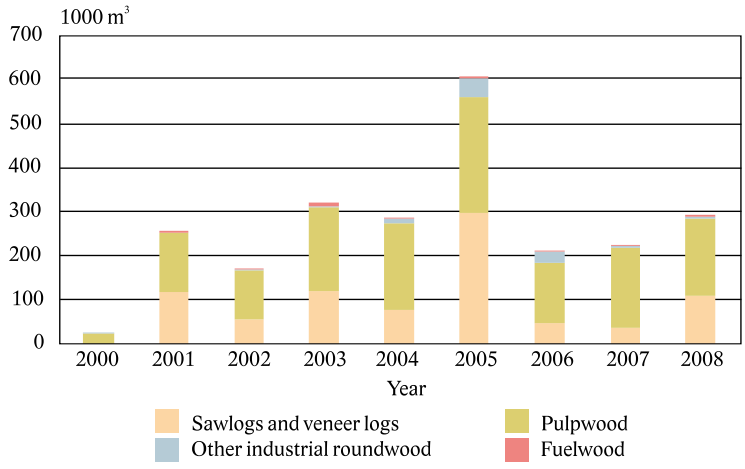


Figure 5.2-2 Export of hardwood by forestry subjects.
Source: Quarterly timber supply statistics Les (MA SR) 2-04, Ministry of Economy of SR, Statistical Office of the Slovak Republic, NFC-FRI Zvolen.

The export of raw timber fell for 6 consecutive years from 2000 to 2005. In 2005, the volume grew to 1 815 000 m³, chiefly because of the removal of timber from the catastrophic windthrow. In 2008, 392 000 m³ of softwood lumber and 50 000 m³ of hardwood lumber were shipped abroad. Forestry subjects themselves sold abroad only 12 000 m³ of softwood and 1 000 m³ of hardwood lumber.

Table 5.2-1 Export of raw timber grades 2007–2008

Grade	2007		2008	
	1000 m³	%	1000 m³	%
Softwood logs (I–III grade)	544	35.5	1 010	44.1
Softwood (IV–V grade)	379	24.7	746	32.6
Hardwood logs (I–III grade)	122	8.0	100	4.4
Hardwood (IV–V grade)	412	26.9	337	14.7
Fuelwood	76	4.9	97	4.2
Total	1 533	100	2 290	100

Source: National customs statistics.

Table 5.2-2 Import of raw timber grades 2007–2008

Grade	2007		2008	
	1000 m³	%	1000 m³	%
Softwood logs (I–III grade)	15	3.6	9	1.1
Softwood (IV–V grade)	46	11.2	218	27.0
Hardwood logs (I–III grade)	74	18.0	23	2.8
Hardwood (IV–V grade)	265	64.3	500	61.9
Fuelwood	12	2.8	58	7.2
Total	413	100	808	100

Source: National customs statistics.

5.3 TIMBER CONSUMPTION

The encouragement of domestic production of raw timber and value-added wood products instead of exporting raw material has become one of the prime objectives of forestry and timber industry sectors striving to increase rural employment and raise disposable income of sectoral workforce. The ongoing positive economic changes have been reflected in latest sectoral figures on the domestic production and consumption of basic grades of raw timber.

Table 5.3-1 Production and consumption per capita

Grade	2000	2006	2007	2008
	m³ per capita			
Roundwood – production	1.082	1.463	1.506	1.713
Roundwood – consumption	0.805	1.299	1.298	1.439
Industrial roundwood – production	0.943	1.405	1.428	1.610
Industrial roundwood – consumption	0.751	1.242	1.232	1.344
Pulpwood – production	0.488	0.469	0.521	0.553
Pulpwood – consumption	0.360	0.344	0.432	0.486

Source: Quarterly timber supply statistics Les (MA SR) 2-04, Ministry of Economy of SR, Statistical Office of the Slovak Republic, NFC-FRI Zvolen.

5.4 PRICES: DOMESTIC AND FOREIGN MARKETS

The volume of traded timber annually increased by almost 14%, chiefly because of improved export figures (27.9% up), particularly in the category of softwood products. Nonetheless, the average price of 1 m³ of timber fell by 12%. The fall in both prices and timber demand was most felt in late 2008 and was associated with the global economic downturn. The difference in the average price rate achieved by state and non-state subjects was negligible (0.5% in favour of state subjects).

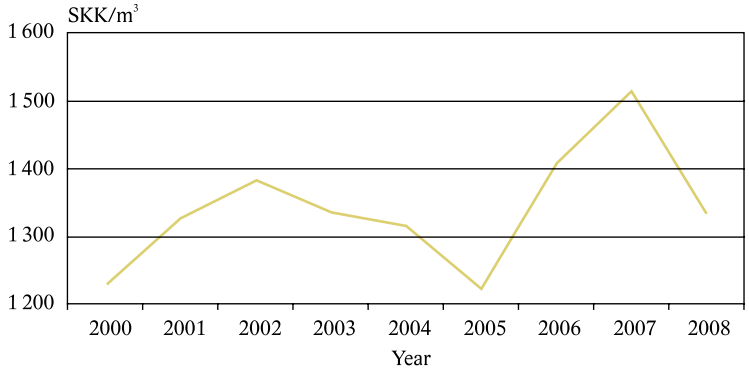


Figure 5.4-1 Average timber prices 2000–2008.

Table 5.4-1 Timber trading and average prices 2008

No	Grade	Traded volume (m³)			Average price SKK m³		
		Slovakia	Export	Total	Slovakia	Export	Total
	Softwood						
1	I grade logs	90	156	246	3 800	4 127	4 007
2	II grade logs	6 883	756	7 639	3 066	3 431	3 102
3	III A, B, C grade logs	3 451 000	102 201	3 553 201	1 603	1 485	1 599
4	Paper-pulp & abrasive timber	8 610	0	8 610	1 368		1 368
5	Mining timber	17 320	3 083	20 403	1 628	1 069	1 544
6	Thin poles	18 284	5	18 289	815	1 095	815
7	Pulpwood	1 240 942	150 317	1 391 259	790	954	807
8	Energy wood	61 940	0	61 940	325		325
9	Fuelwood	195 590	1 282	196 872	472	251	470
10	Σ 1–9	5 000 659	257 800	5 258 459	1 340	1 172	1 332
11	Stumpage	204 339	0	204 339	719		719
12	Raw trunks	636 602	45 892	682 494	1 176	1 564	1 202
13	Σ Softwood	5 841 600	303 692	6 145 292	1 300	1 231	1 297
	Hardwood						
14	I grade logs	1 179	1 192	2 371	10 142	10 622	10 383
15	II grade logs	17 501	7 748	25 249	4 690	6 186	5 149
16	III A, B, C grade logs	1 113 277	35 169	1 148 446	1 809	1 908	1 812
17	Mining timber	219	0	219	1 883		1 883
18	Thin poles	11	0	11	1 718		1 718

Table 5.4-1 – contd.

No	Grade	Traded volume (m³)			Average price SKK m³		
		Slovakia	Export	Total	Slovakia	Export	Total
19	Pulpwood & ungraded timber	1 561 187	22 136	1 583 323	1 115	1 478	1 120
20	Energy wood	36 174	0	36 174	567		567
21	Fuelwood	187 241	0	187 241	935		935
22	Σ 14–21	2 916 789	66 245	2 983 034	1 387	2 422	1 410
23	Stumpage	29 495	0	29 495	485		485
24	Raw trunks	12 867	0	12 867	1 184		1 184
25	Σ Hardwood	2 959 151	66 245	3 025 396	1 377	2 422	1 400
26	Σ Softwood + hardwood	8 800 751	369 937	9 170 688	1 326	1 444	1 331

No	Grade	Total revenue SKK		
		Slovakia	Export	Total
	Softwood			
1	I grade logs	341 973	643 810	985 783
2	II grade logs	21 102 817	2 594 146	23 696 963
3	III A, B, C grade logs	5 531 464 853	151 785 859	5 683 250 712
4	Paper-pulp & abrasive timber	11 774 829	0	11 774 829
5	Mining timber	28 201 449	3 295 727	31 497 176
6	Thin poles	14 906 064	5 475	14 911 539
7	Pulpwood	979 892 916	143 452 683	1 123 345 599
8	Energy wood	20 130 500	0	20 130 500
9	Fuelwood	92 283 371	321 782	92 605 153
10	Σ 1–9	6 700 098 772	302 099 482	7 002 198 254
11	Stumpage	146 929 528	0	146 929 528
12	Raw trunks	748 416 119	71 796 853	820 212 972
13	Σ Softwood	7 595 444 419	373 896 335	7 969 340 754
	Hardwood			
14	I grade logs	11 957 080	12 661 352	24 618 432
15	II grade logs	82 074 868	47 932 719	130 007 587
16	III A, B, C grade logs	2 013 963 948	67 108 445	2 081 072 393
17	Mining timber	412 377	0	412 377
18	Thin poles	18 898	0	18 898
19	Pulpwood & ungraded timber	1 741 156 543	32 722 517	1 773 879 060
20	Energy wood	20 510 658	0	20 510 658
21	Fuelwood	175 161 959	0	175 161 959
22	Σ 14–21	4 045 256 331	160 425 033	4 205 681 364
23	Stumpage	14 303 085	0	14 303 085
24	Raw trunks	15 229 254	0	15 229 254
25	Σ Hardwood	4 074 788 670	160 425 033	4 235 213 703
26	Σ Softwood + hardwood	11 670 233 089	534 321 368	12 204 554 457

Source: Quarterly timber supply statistics Les (MA SR) 2-04.

Table 5.4-2 Average prices 2007–2008

No	Grade	Domestic price			Export price			Domestic + Export		
		SKK m^{-3}								
		2007	2008	2008/ 2007	2007	2008	2008/ 2007	2007	2008	2008/ 2007
Softwood										
1	I grade logs	3 478	3 800	1.09	3 974	4 127	1.04	3 551	4 007	1.13
2	II grade logs	3 218	3 066	0.95	3 321	3 431	1.03	3 228	3 102	0.96
3	III A, B, C grade logs	1 830	1 603	0.88	1 560	1 485	0.95	1 826	1 599	0.88
4	Poles	1 443	1 368	0.95	—	0	—	1 443	1 368	0.95
5	Mining timber	1 494	1 628	1.09	1 384	1 069	0.77	1 483	1 544	1.04
6	Thin poles	798	815	1.02	—	1 095	—	798	815	1.02
7	Pulpwood	949	790	0.83	1 102	954	0.87	974	807	0.83
8	Chipwood	332	325	0.98	—	0	—	1 223	325	0.27
9	Fuelwood	451	472	1.05	1 268	251	0.20	452	470	1.04
10	Σ 1–9	1 567	1 340	0.85	1 190	1 172	0.99	1 548	1 332	0.86
11	Stumpage	701	719	1.03	—	0	—	701	719	1.03
12	Raw trunks	1 409	1 176	0.83	1 419	1 564	1.10	1 410	1 202	0.85
13	Σ Softwood	1 530	1 300	0.85	1 191	1 231	1.03	1 514	1 297	0.86
Hardwood										
14	I grade logs	10 582	10 142	0.96	10 407	10 622	1.02	10 512	10 383	0.99
15	II grade logs	4 986	4 690	0.94	6 006	6 186	1.03	5 295	5 149	0.97
16	III A, B, C grade logs	1 818	1 809	1.00	2 464	1 908	0.77	1 840	1 812	0.98
17	Mining timber	1 610	1 883	1.17	—	0	—	1 610	1 883	1.17
18	Thin poles	—	1 718	—	—	0	—	—	1 718	—
19	Pulpwood & ungraded timber	1 229	1 115	0.91	1 607	1 478	0.92	1 230	1 120	0.91
20	Chipwood	514	567	1.10	—	0	—	1 528	567	0.37
21	Fuelwood	840	935	1.11	1 716	0	0.00	850	935	1.10
22	Σ 14–21	1 492	1 387	0.93	3 278	2 422	0.74	1 530	1 410	0.92
23	Stumpage	381	485	1.27	—	0	—	381	485	1.27
24	Raw trunks	1 323	1 184	0.89	1 425	0	—	1 323	1 184	0.89
25	Σ Hardwood	1 478	1 377	0.93	3 272	2 422	0.74	1 516	1 400	0.92
26	Σ Softwood + hardwood	1 510	1 326	0.88	1 655	1 444	0.87	1 515	1 331	0.88

Source: Quarterly timber supply statistics Les (MA SR) 2-04.

6. FORESTRY ECONOMICS

6.1 SECTORAL EARNINGS AND REVENUE

The sectoral earnings and revenue annually fell by 1.9%. The fall was experienced by both state and non-state forestry subjects.

Table 6.1-1 Earnings and revenue in current prices (million SKK)

Sector	1990	1995	2000	2005	2007	2008
State	4 531	5 118	6 504	9 708	9 895	9 782
Non-state	—	2 376	3 178	4 071	5 514	5 339
Total	4 531	7 494	9 682	13 779	15 409	15 121

Source: PIL 2009, Green Reports, special questionnaire from forest owners and lessees, sectoral statistics Les (MA SR) 5-01, Les (MA SR) 7-01, Les (MA SR) 1-04, Les (MA SR) 2-04, Les (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.
Prepared by: NFC-FRI Zvolen.

6.1.1 Timber sale revenue

In 2008, the volume of traded timber was one of the largest on record. The sale revenue given in current prices was the highest ever despite 12% annual fall in the average price of m^3 of timber. The record revenue was solely attributed to increased volumes of sold timber. Increased felling was associated with a high rate of incidental felling (64.6%) in bark beetle infested forests and mass spruce decline. Furthermore, the record sales were also influenced by increased availability of timber and plummeting prices on global markets hit by economic recession. The volume of timber sales accounted for 96.8% of actual felling. At 0.07%, the revenue growth was only marginal compared to 2007. If the 2007 average prices for m^3 of timber had been considered, the revenue would have grown by an estimated 14%.

Table 6.1.1-1 Timber sale revenue in current prices (million SKK)

Sector	1990	1995	2000	2005	2007	2008
State	2 604	3 540	4 621	7 635	7 031	7 185
Non-state	—	2 074	2 483	3 720	5 164	5 019
Total	2 604	5 614	7 104	11 355	12 195	12 204

Source: PIL 2009, Green Reports, special questionnaire from forest owners and lessees, sectoral statistics Les (MA SR) 5-01, Les (MA SR) 7-01, Les (MA SR) 1-04, Les (MA SR) 2-04,Les (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.
Prepared by: NFC-FRI Zvolen.

6.1.2 Other earnings and revenue

Other earnings and revenue annually fell by 9.2%. The decrease was evenly spread across both state and non-state sectors experiencing 9.3% and 8.6% fall, respectively (Table 6.1.2-1). Traditionally, this category totals earnings from the sale of other forest

products, sideline production, round timber appreciation in a form of marketed sawn timber, hunting, tourism, forestry services, engineering and other production activities. In addition, the revenue from the lease and sale of forest properties and revenue from financial capital and securities are included in the category. Partial overview of other earnings and revenue generated by state subjects is given in Table 6.1.2-2.

Table 6.1.2–1 Other earnings and revenue in current prices (million SKK)

Sector	1990	1995	2000	2005	2007	2008
State	1 927	1 578	1 883	2 073	2 864	2 597
Non-state	—	302	695	351	350	320
Total	1 927	1 880	2 578	2 424	3 214	2 917

Source: Green Reports, special questionnaire from forest owners and lessees.
Prepared by: NFC-FRI Zvolen.

Table 6.1.2–2 Other forest and sideline production in state sector 2008

Indicator			Unit	Volume	Earnings (1000 SKK)
Other forest products	Christmas trees		1000 pieces	5.582	784.0
	Conifer foliage (branches)		kg	1.347	378.0
	Animal feed			—	3 425.0
Sideline goods and services	Sawn timber	Softwood	m^3	43 940	182 349.0
		Hardwood		2 029	17 819.0
	Tourism services (e.g. chalet stays, agro-tourism)		—	—	22 692.0
	Machinery production		—	—	84 430.0
	Engineering services (maintenance, repairs)		—	—	49 839.0
Total				—	361 716.0

Source: Sectoral statistics Les D (MA SR)2-04, other sectoral statistics.
Prepared by: NFC-FRI Zvolen.

6.1.3 Public funding

Public expenditure on forestry is managed through two separate funding strands – forest sector funding (state and non-state subjects involved in forest management and production) and other funding (state forestry administration, the National Forest Centre, the Svätý Anton Museum). In 2008, the total funding amounted to 557.7 million SKK of which 275.5 million SKK was allocated for the forest sector.

Table 6.1.3-1 Public funding by source (million SKK)

Source	Current expenditure	Capital outlay (investments)	Total
Forest sector			
Budgetary chapter of MA SR	3.7	67.4	71.1
08V 01 – Structural Funding for Forest Sector (SOP and RDP) 08V 02 – Revival and Development of Forest Sector	135.8	0.0	135.8
Other sources	49.6	19.0	68.6
Σ forest sector	189.0	86.4	275.5

Table 6.1.1-1 – contd.

Other (MA SR – ŠR)			
NFC Zvolen	147.7	0.0	147.7
Regional Forest Offices and Forestry Department of MA SR	117.5	1.9	119.4
Museum Svätý Anton	5.1	10.0	15.1
Σ other	270.3	11.9	282.2
Σ forestry	459.3	98.4	557.7

Source: Forestry Department of MA SR, APA MA SR.
Prepared by: NFC-FRI Zvolen.

Table 6.1.1-2 Public funding by category (million SKK)

Category	State sector	Non-state sector	Total
Forestry operations	15,6	3,7	19,3
Investments	28,0	58,4	86,4
Other	134,3	35,5	169,8
Total	177,9	97,6	275,5

Source: Forestry Department of MA SR, APA MA SR.
Prepared by: NFC-FRI Zvolen.

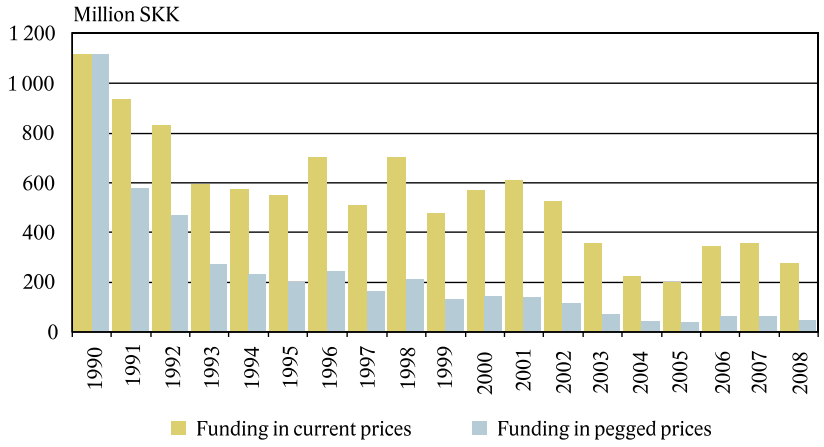


Figure 6.1.3-1 State funding for services in public interest 1990–2008 (million SKK).

In 2008, MA SR provided funding under the following programmes:

- ***08V – Sustainable Forestry*** (sub-programmes: 08V01 – *Structural Funding for Forest Sector; 08V02 – Revival and Development of Forest Sector; and 08V03 – Research and Expert Assistance for Sustainable Forestry)*
- ***090 – Policy Formulation, Regulation and Implementation*** (sub-programmes: 090-01 *Programme Funding; 090-04 Information System of Agriculture; and 090-05 Statistical Information System).*

The funding from other sources was obtained by the FAE Ulič, MFE Pliešovce, FE of TU Zvolen, and the forestry colleges enterprises. The NFC Zvolen received funding from the following sources: 08V03 – *Research and Expert Assistance for Sustainable Forestry*; SOP Agriculture and Rural Development (Measure 2.4); Rural Development Plan (Measure

1.6); European Social Fund; EQUAL; and sources allocated for funding of international projects.
Since the 2004 EU accession, substantial funding has been drawn from the EU Structural Funds through the SOP Agriculture and Rural Development (SOP ARD) and the Rural Development Plan (RDP) funded from the European Agricultural Guidance and Guarantee Fund (EAGGF).
The amount of funding available from public sources given in current prices accounted for 27.4% of the 1990 funding. If estimated in 1990 pegged prices, the share fell down to 4.6%. This fact has far-reaching sectoral implications. It has limited investments of forestry subjects into advanced, environmentally friendly technologies and substantially reduced compensations for the access to environmental and social services and benefits provided by forests. Forestry subjects are thus forced to cover increased management costs from timber revenue which impacts their overall economic results.

6.2 OVERVIEW OF SECTORAL COSTS

The total cost of production, sales and other economic activities of forestry subjects annually fell by 1.2%. Lower costs were most probably associated with falling prices of energy and economic downturn. The total cost of silvicultural treatment and felling operations grew only modestly – 1.2% and 4.8%, respectively. The growth in the state sector was attributed to a higher number of respective operations. In the non-state sector, a similar trend was not observed. Despite the growing volume of silvicultural and felling operations, the overall costs decreased. The rise of costs in the non-state sector was partially limited by unregistered input from forest owners and/or lessees themselves.

Table 6.2-1 Sectoral costs in current prices (million SKK)

Indicator	1990	1995	2000	2005	2007	2008
Total production costs	4 326	7 419	9 497	13 061	14 348	14 180
Material costs including depreciation	1 976	3 226	3 990	5 139	6 760	7 043
Depreciation only	596		813	834	976	964
Personnel costs	2 056	2 304	3 891	4 175	3 900	3 931
– labour costs	1 490		2 789	2 985	2 834	2 796

Source: PIL 2009, Green Reports, special questionnaire from forest owners and lessees, sectoral statistics Les V (MA SR) 5-01, Les F (MA SR) 7-01, Les V (MA SR) 1-04, Les D (MA SR) 2-04, Les P(MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.
Prepared by: NFC-FRI Zvolen.

6.2.1 Material costs including depreciation

The annual changes in material costs were significantly influenced by the fall of fuel prices and stable energy prices. Compared to 2007, the prices fell by 4.2%. At the same time, the depreciation fell by 1.2%. As a result, net material costs annually grew only by 5.1%.

6.2.2 Personnel costs

The annual growth in the group of personnel costs was at 0.8% largely insignificant. In the state sector, the costs were up by 0.9% and were associated with the increase in the overall volume of forest operations. In the non-state sector, the costs were only 0.6% up; the employment grew by 0.07%. The observed rise in productivity and average nominal (8.1%) and real earnings (3.2%) was attributed to the increased volume of operations. In addition to personnel and labour costs, the sum of net pension is considered a significant cost item in the economics of non-state forest owners. The sum is an inherent part of the net profit of the owners.

6.2.3 Production costs

The indicators of the natural production factor show little difference in the quality of commercial forests managed by state and non-state subjects (Table 6.2.3-1). The non-state subjects partly benefit from a higher presence of commercial forests, conifer species, and a higher total growing stock per ha. The state subjects, on the other hand, draw a slight advantage from a higher average yield class for main groups of species and the conifer growing stock per ha.

Table 6.2.3–1 Quality of natural production factor 2008

Indicator	Unit	State sector	Non-state sector	Total
Forest category Commercial (C) Protection (P) Special purpose (SP)	1000. ha/%	 716/67 178/17 173/16	 618/71 152/18 96/11	 1 333/69 330/17 270/14
Main tree species groups in C Conifer Broadleaf	%	 31,6 68,7	 41,0 59,0	 36,0 64,0
Average yield class of main groups in C Conifer Broadleaf	m	 30,6 25,5	 29,9 25,2	 30,3 25,4
Growing stock in C forest pre ha – conifer – broad-leaf Total	m^3	287 207 233	286 207 239	286 207 236

Source: Compendium of Slovak Forestry Statistics, 2009; PIL 2009.

Table 6.2.3–2 Average unit costs of selected silvicultural and felling operations (SKK)

Operation	Unit	State sector		Non-state sector		Total	
		2007	2008	2007	2008	2007	2008
Σ Forest regeneration	SKK ha^{-1}	56 166	37 223	35 085	26 906	46 636	32 762
Artificial regeneration		61 553	58 313	51 635	39 756	57 072	50 130
Natural regeneration		5 714	1 545	3 437	3 828	4 683	2 509
Tending of forest plantations		11 073	6 998	6 170	6 493	9 521	6 833

Table 6.2.3-2 – contd.

Operation	Unit	State sector		Non-state sector		Total	
		2007	2008	2007	2008	2007	2008
Protection of young forests	SKK ha^{-1}	4 600	4 944	5 107	4 890	4 825	4 920
Cleaning		5 255	6 007	3 944	6 146	7 807	6 050
Forest protection		149	196	44	84	118	136
Silviculture	SKK ha^{-1}	1 297	852	985	919	1 159	882
	SKK ha^{-1} of regen. Forest	257 265	107 615	142 036	123 221	205 171	114 370
	SKK m^{-1} of felling	284	174	238	207	264	188
Felling	SKK m^{-3}	153	151	255	194	198	169
Skidding		320	341	235	200	283	275
Log scaling		217	120	58	54	149	105
Timber haulage		201	204	78	92	148	177
Construction and maintenance of unpaved forest roads & maintenance of forest roads and depots	SKK m^{-3} of felling	148	84	120	36	140	63
Felling	SKK m^3	1 159	1 018	794	534	989	812
	SKK ha^{-1}	4 789	4 963	3 289	2 375	4 125	3 805
Σ Silviculture + felling	SKK m^{-3} of felling	1 454	1 193	1 110	740	1 267	1 001
	SKK ha^{-1}	6 086	5 815	4 274	3 615	5 284	4 687

Source: PIL 2009; Record L-144; sectoral statistics Les F (MA SR) 7-01, Les P (MA SR) 1-06, Les D (MA SR) 2-04, Les V (MA SR) 5-01, Les V (MA SR) 1-04, Uč POD 1-01, Uč POD 2-01;analytical standards of state forest enterprises; Green Reports.

Prepared by: NFC-FRI Zvolen.

The non-state sector indicators of forest production were last year computed from forest data available from reporting units. The unit costs of felling operations generally fell in all categories except for timber haulage. The unit costs of the majority of felling operations went down in both sectors, yet at a different scale (Table 6.2.3-2). The approximation of the majority of total unit costs of the state and non-state subjects further continued. Due to the variability of natural and production conditions in a particular year, a certain degree of fluctuation in particular unit costs can be expected.

6.3 EXPLOITATION OF PRODUCTION FACTORS AND ECONOMIC RESULT

6.3.1 Production factor value

The value of natural production factor (forest holdings and stands) expressed by their general value (official market price) annually changed due to the return of certain forests to their original owners and the lease of private forests to state subjects (Table 6.3.1-1). The value of residual capital annually grew by 5.3%. At 6%, the growth was higher in state forests than in the non-state forests (2.1%). The total labour costs were up by insignificant 0.85%.

Table 6.3.1–1 Value of natural production factor, stock and labour 2008

Production factor and stock	Sector (million SKK)		Total (million SKK)	Average (1000 SKK ha^{-1})
	State sector	Non-state sector		
Forest holdings	21 801	15 530	37 331	18.60
Forest stands	153 847	119 831	273 678	136.37
Total	175 648	135 361	311 009	154.98
MIA in residual value	8 843	1190	10 033	5.93
of which: – buildings and constructions	7 524	650	8 174	4.07
– machinery and equipment	1 319	540	1 859	0.93
Labour costs (personnel costs)	2 431	1 500	3 931	1.96

Source: Compendium of Slovak Forestry Statistics; 2009; PIL 2009. Uč POD 2-0; Les V.
Prepared by: NFC-FRI Zvolen.

6.3.2 Rate of production factor exploitation

The annual changes in the exploitation of major production factors are best assessed through the index of changes of selected indicators (Table 6.3.2-1). The annual changes were observed in the rate of exploitation of natural resources and the labour factor, which were down between 1.1% and 1.2% (earnings, revenue, labour costs). At the same time, the exploitation of available capital went up by 4.2% (material costs including depreciation).

Table 6.3.2–1 Exploitation of production factors in nominal values of current year (SKK ha-1)

Indicator	Year			Growth index 2008/2007
	2006	2007	2008	
Earnings and revenue	6 884	7 678	7 534	0.981
of which subsidies for forestry operations	60,82	4,98	9,47	1.902
Total costs	6 313	7 149	7 065	0.988
Material costs including depreciation	2 800	3 368	3 509	1.042
Depreciation	418	486	480	0.988
Labour costs	1 321	1 412	1 393	0.987

Source: Sectoral statistics Les F (MA SR) 7-01; Uč POD 2-01; analytical standards of state forest enterprises; Les V (MA SR) 5-01; special questionnaire of MA SR.
Prepared by: NFC-FRI Zvolen.

6.3.3 Sectoral economic performance

The earnings and revenue given in current prices annually decreased despite the general growth observed in previous years. A similar trend was reported in the category of sectoral economic result which kept rising except for 2003. The total economic result continued to be significantly influenced by the standard of management in state forests. The nominal value of public funding allocated for the sector (inflation excluded) has gone steadily down with the most pronounced annual fall in 2004 (Figure 6.3.3-1).

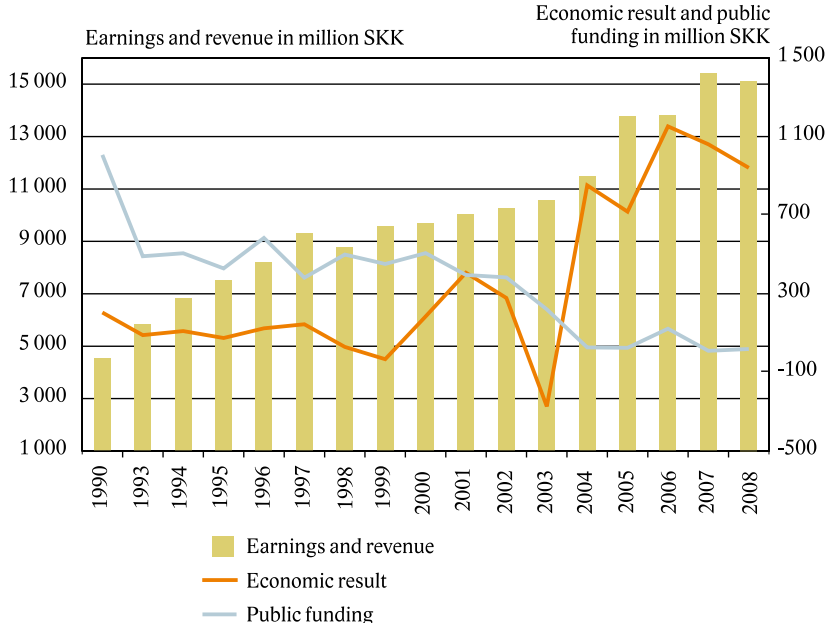


Figure 6.3.3–1 Overview of sectoral earnings, revenue, economic result and public funding.

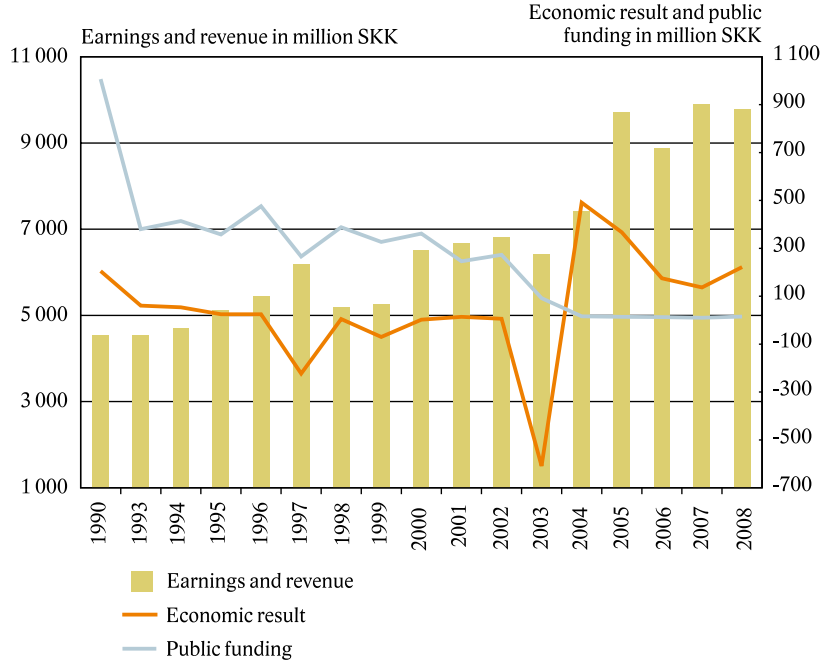


Figure 6.3.3–2 Overview of earnings, revenue, economic result and public funding in the state sector.

The earnings and revenue in the state sector (expressed in current prices) annually slightly declined. The economic result, on the contrary, grew. The standard and effectiveness of forest management in state forests continued to be most significantly influenced by the economic results of the Forests of SR, s.e. The nominal value of public funding (inflation excluded) available for the state sector in 2008 has remained largely unchanged since 2004 (Figure 6.3.3-2).

In the non-state sector, all above-mentioned indicators except for public funding have generally been long-term rising with a slight downturn experienced in 2008. The amount of public funding available for forestry has been in a slow decline since 2003. From the 2003 onwards, the economic result of non-state sector subjects also incorporates labour costs of forest owners, lessees and their relatives (Figure 6.3.3-3).

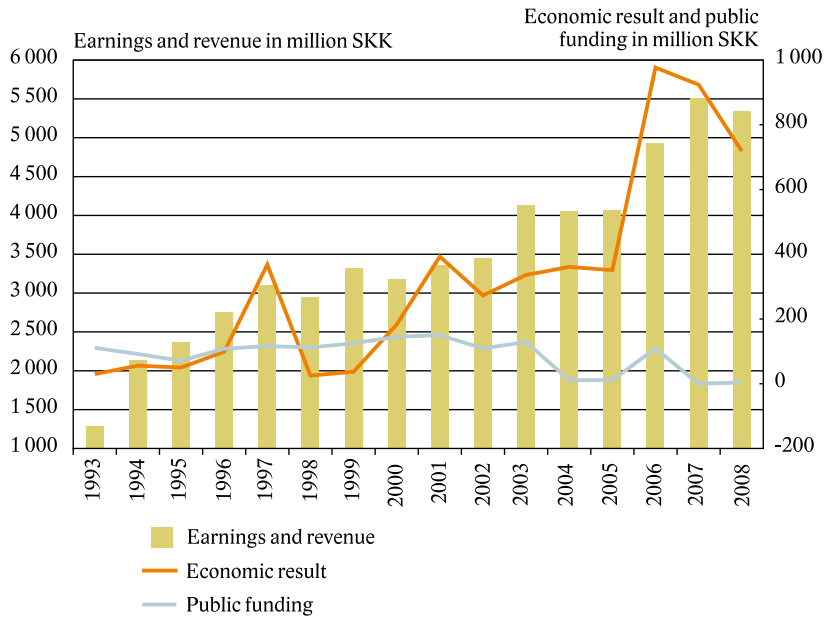


Figure 6.3.3–3 Overview of earnings, revenue, economic result and public funding in the non-state sector.

6.3.4 Economic result

The degree of sectoral competitiveness can successfully be assessed through the economic result parameter. The economic result of forest production represents the difference between the earnings from the sale of timber, other forest products, and forestry services and the cost of silviculture, felling and other forestry operations. The total economic result of the forestry production incorporates also goods, products and services other than forestry activities inclusive of their costs. The 2008 economic result reached the sum of 941 million SKK.

Table 6.3.4-1 Overview of production based economic result (million SKK)

	1990	1995	2000	2005	2007	2008
Economic result	205	75	185	718	1 061	941

6.3.4.1 Economic result of state subjects

The economic result of state subjects was in recent past (2006–2008) significantly affected by the catastrophic windthrow of November 2004. In 2006 and 2007, the windthrow affected sites as well as other areas of conifer forest suffered another setback in a form of mass bark beetle outbreak. On top of that, last year the forest sector started to suffer from the impact of economic recession. The above-mentioned facts significantly impacted earnings from timber sales and the cost of felling and silvicultural operations – the main contributors of the economic result. Both the felling volume and the volume of subsequent operations annually increased. In addition to the previously mentioned, the economic result of state subjects was compared to non-state subjects to a greater scale impacted by the request for the delivery of non-production forest services and benefits (e.g., watercourse management). Furthermore, the state subjects were last year obliged to manage over 100 000 ha of unresolved non-state forests. At the same time, their access to EU money was more limited. In addition, the state subjects were obliged to lay aside part of their profit to meet lease obligations whilst the cost of felling and silvicultural operations was covered from their forest management budgets.

Table 6.3.4.1-1 Economic result of state subjects (SKK)

	Unit	Forest production			Total production		
		2006	2007	2008	2006	2007	2008
Economic result	SKK ha^{-1}	644	251	-173	156	123	200
	SKK m^{-3} of felling	152	60	-36	37	29	41

Source: Sectoral statistics Les F (MA SR) 7-0; Les V (MA SR) 5-01.
Prepared by: NFC-FRI Zvolen.

6.3.4.2 Economic result of non-state subjects

The economic indicators for the non-state sector were calculated from the Record L144 and the data selected from the datasets provided by some 1200 reporting subjects. The network of reporting units was established in 1997 (Les MA SR 5-01). With respect to reporting, it is necessary to note that smaller non-state subjects do not annually perform the whole range of main forest production operations. As a result, only around 600–700 of these subjects are able to provide credible data on a yearly basis. The structure of non-state forest ownership within the reporting network approximately corresponds with the ownership statistics of the basic set (community forests – 55%; municipal forests – 37%; church – 4%; private – 4%). The total area of forest covered by regular yearly reporting is estimated at 40% of the total area of non-state forests.
The combined effect of windthrow, subsequent bark beetle infestation, observed general decline of spruce forests, and impacts of economic slowdown had a negative impact on the economic performance and result of non-state sector subjects.

Table 6.3.4.2–1 Economic result of non-state subjects (SKK)

Economic result	Unit	Forest production			Total production		
		2006	2007	2008	2006	2007	2008
Labour costs included	SKK ha^{-1}	1095	1542	1667	1105	1035	800
	SKK m^{-3} of felling	269	371	375	272	249	180
Labour costs excluded	SKK ha^{-1}	329	463	501	332	311	240
	SKK m^3 of felling*	81	111	112	82	75	54

Source: Sectoral statistics Les F (MA SR) 7-0; Les V (MA SR) 5-01; NFC Zvolen.
Prepared by: NFC-FRI Zvolen.
*Note: *Economic result including the unpaid labour of non-state forest owners and lessees.*

6.4 ECONOMIC TOOLS

6.4.1 Values of key production factors

The official evaluation of forest properties including their natural production factor and the volume of produced products is currently based on the guidelines for regulated and market prices. The guidelines are implemented following the Ministry of Justice of SR Regulation No 492/2004 Coll on estimate of general value of forest property and the Annex 1 of the Act No 326/2005 Coll on forests defining procedure for the evaluation of non-production forest functions. The regulated (official market value of particular forest property and societal forest benefits) value of forest properties and public forest benefits is implied particularly for the state administration purposes (taxes, obligatory fees and payments, etc.). At the same time, it serves as a rough guide of the market value for real estate agencies and the estimate of forest property damage.

6.4.2 Taxes

The largest percentage of contributed taxes was last year formed by the VAT (64%) and income tax (22.6%). The taxes are shown in Table 6.4.2-1. Except for the income tax, the annual increase was observed in all other tax categories. The sharpest growth since 2005 was experienced in the category of property tax. The growth was associated with enforced amendments to the Act No 582/2004 Coll on communal taxes and fee on communal waste and minor construction waste in the wording of the pursuant amendments.
As for sectoral division, the contribution of state subjects represented 66%; the remaining 34% were contributed by non-state subjects.

Table 6.4.2-1 Overview of taxes contributed to national and municipal budgets (million SKK)

Tax category		Year				
		1998	2000	2005	2007	2008
VAT (given as a difference between collected and refunded)	State	580	551	636	729	802
	Non-state	350	340	360	321	333
	Total	930	891	996	1 050	1 135

Table 6.4.2-1 – contd.

Tax category		Year				
		1998	2000	2005	2007	2008
Property tax	State	80	73	98	130	152
	Non-state	30	26	30	43	51
	Total	110	99	128	173	203
Road tax	State	25	32	28	23	25
	Non-state	10	8	8	9	10
	Total	35	40	36	32	35
Income tax*	State	133	149	257	204	191
	Non-state	45	38	171	223	210
	Total	178	187	428	427	401
Total	State	818	805	1 019	1 086	1 170
	Non-state	435	412	569	596	604
	Total	1 253	1 217	1 588	1 682	1 774

Source: MA SR questionnaire.
Prepared by: NFC-FRI Zvolen.
*Note: *derived from the disbursed personal earnings and gross profit.*

6.4.3 Credits

The state sector drew 845 million SKK worth of credits last year. At the same time, the Forests of SR, s.e. was granted the bank overdraft of some 700 million SKK.
The non-state sector took last year the unprecedented worth of credits. The majority of granted credits were used for the purchase of machinery and road construction. For the latter mentioned, public and EU funding was also available.

Table 6.4.3-1 Exploitation of credits (million SKK)

Credit category	Sector						Total		
	State			Non state*					
	2006	2007	2008	2006	2007	2008	2006	2007	2008
Old overdue credits	35	129	162	25	40	50	60	169	212
New credits	60	40	683	50	50	45	110	90	728
Total	95	169	845	75	90	95	170	259	940
Level of proprietary guarantee	28	70	*350	180	200	215	208	270	565
Interest rate (% yr^{-1})	6.9	6.0	4.5	6.5	6.2	5.0	6.7	6.0	4.7

Source: MA SR questionnaire.
Prepared by: NFC-FRI Zvolen.
*Note: *qualified estimate.*

6.4.4 Levy for forest property exclusion

The levy for the loss of non-production forest functions is applied in cases of exclusion or changes in the exploitation of forest properties based on the Act No326/2005 Coll on forests in the wording of the pursuant regulations.

The amount of levy is regulated by the administrative procedure of a particular state forestry authority and is based on the evaluation report by authorised appraisers. The levy reached last year the sum of 89.8 million SKK. The overview of the aforementioned levy is provided in Table 7.1.-1.

6.4.5 Fines and sanctions

Fines and sanctions were imposed for the violation of particular legal provisions. On average, around 400 state and non-state subjects are charged with various offences each year. In 2008, the amount of imposed fines and sanctions totalled 2.7 million SKK of which only 1.6 million SKK were successfully claimed (57.9%). The overview of fines and sanctions is given in Table 7.1-1.

6.4.6 Compensations for forest property damage

The compensations are regulated by general legal norms and certain provisions of the Act No 326/2005 Coll on forests in the wording of the pursuant regulations. At present, the majority of forest damage is associated with anthropogenic activities such as air pollution and climate change.
The impact of air pollution on forests has significantly decreased in the last decade. The estimated worth of annual forest damage due to pollution is around 500 million SKK. The annual official appraisal of the forest damage is around 100 million SKK. The process of damage compensation recovery is, nevertheless, very complicated and often protracted. It is estimated that only around 25% of the officially appraised damage is annually claimed.

6.4.7 Compensations for restriction of ownership rights

The amount of compensations for the management restrictions imposed by the provisions of the Act No 543/2002 Coll on nature and landscape protection annually varies between 620 and 750 million SKK.
The compensations are payable for the restriction of ownership rights under the Rural Development Plan 2007–2013. The claimants can claim payments under the NATURA 2000 (5th level of protection) measure and the silvi-environmental scheme measure. The total allocation for both measures is 32.36 million EUR, or 975 million SKK. Since first calls for proposal were announced only last year, first compensations could be successfully awarded in 2009 the earliest.

6.5 Investments

In 2008, the total amount of sectoral investments rose to 1 277 million SKK. The majority of investments went into construction (59.0%) and machinery / technology upgrade (33.5%). The remaining 7.5% were other investments. In the state sector, the investments annually rose by 11.8% whilst remaining largely unchanged in the non-state sector (1% up)

Table 6.5-1 Investments 2007–2008 (million SKK)

Category	Forest sector		State subjects under MA SR		State subjects		Non-state subjects	
	2007	2008	2007	2008	2007	2008	2007	2008
Construction	495	753	391	597	469	723	26	30
Machinery & technology	402	428	261	316	316	338	86	90
Other	264	96	117	3	178	16	86	80
Total	1 161	1 277	769	916	963	1 077	198	200

Source: Sectoral statistics Les F (MA SR) 8-01; NFC Zvolen.
Prepared by: NFC-FRI Zvolen.

6.5.1 Construction investments

The volume of operations and supplies for the construction projects reached last year the sum of 753 million SKK, which represented 52% increase on 2007. At 54%, the growth in the state sector far surpassed 15% growth in the non-state sector. The overview of construction investments in state subjects under MA SR is given in Table 6.5.1-1. Due to a lack of available data, the similar overview for non-state subjects could not be provided.

Table 6.5.1-1 Construction investments in state subjects under MA SR

Construction jobs (million SKK)						
Forest roads	Timber depots	Torrent regulation	Buildings, structures and construction sites	Nursery operations	Other construction jobs	Total
411	62	28	11	18	67	597

Source: Sectoral statistics Les F (MA SR) 8-01.
Prepared by: NFC-FRI Zvolen.

6.5.2 Investments into machinery and technology

The sectoral investments into machinery and technology annually grew by 6% to reach 428 million SKK last year. In the category of non-state forests the annual growth represented 4.6%. The overview of machinery and technology investments in state subjects under MA SR is given in Table 6.5.2-1.

Table 6.5.2-1 Machinery and technology investments in state subjects under MA SR (million SKK)

Machinery and technology						Passenger & technological transport	Hardware	Software	Total
Felling	Skidding	Timber haulage	Log scaling	Chipwood	Silviculture & nurseries				
20	12	66	124	3	15		15	28	338

Source: Sectoral analytical records, 2009.
Prepared by: NFC-FRI Zvolen.

6.6 SECTORAL ECONOMIC ACCOUNTS

The Economic Accounts for Forestry (EAF) describe and analyse the generation of sectoral pension using four accounts: production; pension; profit; and capital. The EAF provides information on the origin of goods, their use, economic processes and relations within the industry for a particular accounting period.

A new sectoral system of the Integrated Environmental and Economic Account for Forests (IEEAF) was introduced in 2007. The system aims to provide more comprehensive and credible data on forest production. It also takes due account of other factors, particularly the damage of and/or improvements in the natural production factor. In addition, the integrated system accounts include into forest production also the volume of increment laid aside that particular year. With the increment included, the value of net profit generated in 2008 grew from 996 million SKK to approximately 3 billion SKK.

Table 6.6-1 EAF indicators 2008

	Indicator	Unit	State sector	Non-state sector	Total
Production account					
1	Timber felling	1000 m^3	5 405	4 062	9 467
2	Log grades		5 388	3 783	9 171
3	Average timber prices	SKK m^{-3}	1 334	1 327	1 331
4	Value of total timber production	million SKK	7 185	5 020	12 205
5	Value of total other production		2 436	270	2 706
6	Σ 4+5		9 621	5 290	14 911
7	Intermediate consumption		5 221	2 057	7 278
8	Gross added value		4 400	3 233	7 633
9	Fixed capital consumption		614	350	964
10	Net added value		3 786	2 883	6 669
Pension account					
11	Employee bonuses	million SKK	2 431	1 500	3 931
12	Other production taxes		1 128	579	1 707
13	Other production subsidies		150	40	190
14	Net pension from independent commercial activities		377	844	1 221
Company profit account					
15	Rent received	million SKK	88	80	168
16	Interest paid		38	40	78
17	Rent paid		11	10	21
18	Net profit		262	734	996

Source: Compendium of Slovak Forestry Statistics; PIL 2008; Uč POD 3-02; POD 2-01; Les V 4-01.
Prepared by: NFC-FRI Zvolen.

The main indicators of production account, pension account and company profit account given in current prices (value of total production, gross added value, net added value, net pension and net profit) have experienced a moderate increase since 2000.

The annual fall in the net profit was attributed to falling average timber prices accompanied by the coincident growth of taxes, property tax in particular. The growth of net pension from the independent activities and net profit observed in 2006–2007 were associated with higher average timber prices achieved on timber markets.

Table 6.6-2 EAF indicators in current prices (current transaction accounts)

	Indicator	Unit	Year									Index 2008/ 2007
			2000	2001	2002	2003	2004	2005	2006	2007	2008	
Production account												
1	Timber felling	1000 m^3	6 218	6 185	6 260	6 652	7 268	10 190	8 357	8 367	9 404	1.124
2	Log grades		5 791	5 720	5 607	6 257	7 198	9 287	7 794	8 050	9 171	1.139
3	Average timber prices	SKK m^{-3}	1 227	1 341	1 375	1 335	1 315	1 223	1 409	1 515	1 331	0.879
4	Value of total timber production	million SKK	7 104	7 567	7 748	8 355	9 468	11 355	10 980	12 195	12 205	1.001
5	Value of total other production		1 996	2 072	2 039	1 878	1 851	2 399	2 453	3 034	2 706	0.892
6	Σ 4+5		9 100	9 639	9 787	10 233	11 319	13 754	13 433	15 229	14 911	0.979
7	Intermediate consumption		3 989	4 210	4 471	4 747	4 669	6 328	5 921	7 527	7 278	0.967
8	Gross added value		5 111	5 429	5 316	5 486	6 650	7 426	7 512	7 702	7 633	0.991
9	Fixed capital consumption		813	764	791	842	820	834	839	976	964	0.988
10	Net added value		4 298	4 665	4 525	4 644	5 830	6 592	6 673	6 726	6 669	0.992
Pension account												
11	Employee bonuses	million SKK	3 891	4 034	4 078	3 831	3 678	4 175	3 660	3 900	3 931	1.008
12	Other production taxes		182	187	182	432	1 589	1 588	1 679	1 480	1 707	1.153
13	Other production subsidies	million SKK	507	517	440	322	165	153	262	195	190	0.974
14	Net pension from independent commercial activities		732	961	705	703	728	982	1 596	1 541	1 221	0.792
Company profit account												
15	Rent received	million SKK	126	124	120	136	115	191	202	136	168	1.235
16	Interest paid		71	29	18	47	14	8	9	16	78	4.875
17	Interest received		20	14	7	12	13	17	19	10	21	2.100
18	Net profit		555	822	574	532	612	800	1 404	1 399	996	0.712

Source: Compendium of Slovak Forestry Statistics; PIL 2008; Uč POD 3-02; POD 2-01; Les V 4-01.
Prepared by: NFC-FRI Zvolen.
**Value of other taxes was adjusted using updated data.*

6.7 SOCIO-ECONOMIC STATISTICS AND SECTORAL EMPLOYMENT

6.7.1 Labour and job motivation

The new Statistical Classification of Economic Activities (SK NACE Rev. 2) came into force on 1 January 2008. The classification is based on the Statistical Classification of Economic Activities in the European Community, Rev.2 (NACE Rev. 2):

- 02 Forestry and logging
- 16 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- 17 Manufacture of paper and paper products.

According to the selective workforce survey, there were approximately 25 800 employees employed in the Division 02 (SK NACE Rev.2 02). Additional 23 300 and 9 700 workforce were registered in the Divisions 16 and 17, respectively (SK NACE Rev.2 16; SK NACE Rev.2 17).

The official Register of Organizations, administered by the Statistical Office of SR, comprised last year 15 399 subjects active in the NACE 02 Division of which 10 513 were the self-employed tradesmen.

The gender structure of workforce (4:1 for male workers) remained unchanged while the workforce age structure annually improved. The number of workforce in the category of 20–29 years old annually rose by 13.7 percentage point.

Table 6. 7.1-1 Workforce by education (%)

Education	2007			2008		
	Total	Female	Male	Total	Female	Male
Basic	12.9	20.5	9.9	8.5	20.8	5.9
High school	79.2	66.7	84.2	72.5	75.0	72.1
University	7.8	12.8	5.9	19.0	4.2	22.0

Source: SO SR.

Last year, the Office for Labour, Social Issues and Family registered 4 837 job seekers with forestry or wood technology education. The overview of regional unemployment is given in Table 6.7.1-2.

Table 6.7.1-2: Official sectoral unemployment 2008

Region	Forestry and logging	Timber industry	Manufacturing of pulp, paper and cardboard	Total
Bratislava	13	78	13	104
Trnava	36	112	17	165
Trenčín	151	147	12	310
Nitra	62	226	100	388
Žilina	367	251	137	755
Banská Bystrica	702	721	30	1 453
Prešov	399	596	140	1 135
Košice	273	170	84	527
Total	2 003	2 301	533	4 837

Source: SO SR.

The average monthly earnings rose by 3.4% to 19 044 SKK (87.4% of the national average).

6.7.2 Sickness and occupational injuries

The sector traditionally belongs to one of the sectors with a high rate of workplace accidents and occupational diseases. Those most at risk include felling, skidding and haulage crews. In 2008, the Public Health Authority of SR registered 1 365 sectoral workforce in health risk occupations.

Table 6.7.2-1 Overview of sectoral workforce exposed to health risk factors 2008

Risk factor	Excess vibrations	Excess noise	Chemical substances	Long-term excess and unilateral load
Male	791	1 316	15	35
Female	5	24	10	0

Source: Public Health Authority of SR.

Table 6.7.2-2 Sectoral occupational injuries

Year	Total	Injury					
		Fatal		Serious		Other	
		Male	Female	Male	Female	Male	Female
2006	137	8	0	16	0	95	18
2007	121	4	0	29	2	70	16
2008	122	2	0	5	0	99	16

Source: National Labour Inspectorate; MA SR questionnaire, 2009.

In 2008, only a marginal difference in the number of reported injuries was recorded (+ 1 case). Other injuries requiring more than 42-day work absence represented 49%. The main causes of serious injuries with sick leave extending beyond 42 days were insufficient personal skills and abilities to perform assigned duties and the employment of dangerous workplace practices. The number of newly diagnosed occupational diseases continued to grow similarly to previous years. Most prevalent diseases included those associated with excess vibrations and noise; the tick-borne Lyme disease was also common.

Table 6.7.2-3 Overview of sectoral occupational diseases

Year	Indicator	Total	Disease								
			Vibration disease	Noise impaired hearing	Lyme disease	Other					
						Total	Code				
			28	38	A692		24	26	29	37	47
2008	a	31	19	1	7	4	1	—	2	1	—
	b	20	17,4	16	21,7	30	29	—	25	41	—

Source: National Health Information Center

Note: a – No of cases, b – average No of years exposed to hazard

24 – Infectious and parasitary diseases except for tropical and diseases transmittable from animals to humans.

26 – Diseases transmittable from animals to humans directly or through carriers.

29 – Diseases from long-term, excess and unilateral extremity load affecting bones, joints, tendons and nerves.

47 – Other work-related health problems.

7. ORGANIZATIONAL AND INSTITUTIONAL STRUCTURE

7.1 STATE ADMINISTRATION ON FORESTS AND GAME MANAGEMENT

The SR Ministry of Agriculture (MA SR) is the supreme national authority on forests and game management (SAFGM). Practical aspects of state supervision are covered through a network of regional and district forest offices and military forest offices in forests under the jurisdiction of the SR Ministry of Defence (MD SR).

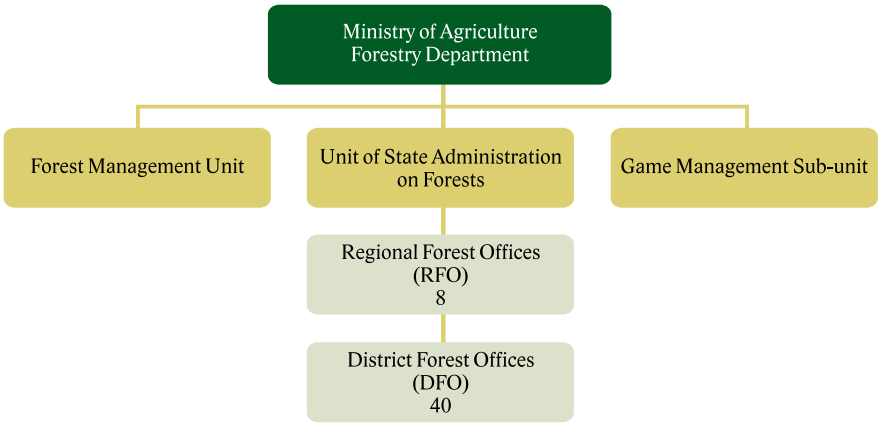


Figure 7.1-1 Organizational structure of state administration on forests and game management 2008.

State administration in the area of forestry and game management is governed by the following legislation:

- Act No 326/2005 Coll on forests in the wording of the pursuant regulations;
- Act No 217/2004 Coll on forest reproductive material and on amendment of associated acts in the wording of the pursuant regulations;
- Act No 181/1995 Coll on land associations in the wording of the pursuant regulations;
- Act No 23/1962 Coll on hunting in the wording of the pursuant regulations.

The SAFGM duties at the executive level are secured by the MA SR Forestry Department through its Forest Management Unit, Unit of State Administration on Forests and Game Management Sub-unit.

In addition to the executive power of SAFGM defined by § 58 of the Forest Act, the Forestry Department conducted a range of other tasks including:

- drafting generally binding regulations on forest management and hunting;
- developing sectoral predictions and development strategies;
- cooperating with other ministerial units on specific assignments;
- contributing to the formulation of tools and instruments supporting sustainable management of forests;
- contributing to various sectoral yearbooks and other documents including the Green Report;
- ensuring protection of state forests;

- fulfilling tasks associated with coordination, supervision and management of state forestry bodies;
- contributing to the Aggregated Forest Economic Account (AFEA);
- consulting for non-state forest owners;
- fulfilling assigned duties on defence and protection of state interests;
- inspection and controlling duties defined by the Act No 502/2001 Coll on financial and internal audit and on the amendment of associated acts in the wording of the Act No 618/2004 Coll;
- disseminating information compliant with the Act No 211/ 2000 Coll on free access to information in the wording of the pursuant regulations.
- The SAFGM duties related to rights, legally protected interests or obligations of natural persons and legal entities are regulated by the procedures defined by the Act No 71/1967 Coll on administrative procedure in the wording of the pursuant regulations (Administrative Code) unless stated otherwise. Tables 13.1-11 – 13.1-13 refer to these procedures as the "Administrative Code procedures" or "decisions."

Tables 13.1-11 and 13.1-12 refer to procedures overseen yet not decided by the SAFGM.

In 2008, the Forestry Department accepted 6 494 official claims. The claims related to the Administrative Code provisions included:

- 27 claims regulated by the Act No 326/2005 Coll on forests in the wording of the pursuant regulations;
- 42 claims regulated by the Act No 217/2004 Coll on forest reproduction material and on amendment of associated acts in the wording of the pursuant regulations;
- 2 claims regulated by the Act No 181/1995 Coll on land associations in the wording of the pursuant regulations;
- 1 487 claims regulated by the Act No 23/1962 Coll hunting in the wording of the pursuant regulations.

Tables 13.1-11 and 13.1-13 contain data on the range of tasks of RFO and DFO defined by the Administrative Code. Tables 13.1-11 and 13.1-12 comprise procedures overseen yet not decided by the SAFGM.

The majority of RFO cases are claims associated with procedural decisions based on the Administrative Code, adjustments to forest management plans and procedures referring to the delineation of forest units. The most common other procedures cases include consulting on various aspects of forest management, execution of state supervision in forests and other tasks associated with generally binding regulations executing the Forest Act. More detailed information on the RGO agenda is given in Table 13.1-11.

The majority of DFO agenda is related to providing support for forest practicioners and owners. The tasks are based on the generally binding regulations executing Forest Act obligations and include state supervision in forests. The majority of claims decided upon by the RFO refer to applied procedures, decisions on the exceptions from the Forest Act obligations and permanent exclusion of forest properties from the forest land. More detailed information on the DFO agenda is given in Tables 13.1-12 and 13.1-13. The largest financial reward was granted to claims for the compensation of lost non-production forest services and benefits (Table 7.1-1).

Table 7.1-1 Payments, fines and penalties based on the Act No 326/2005 Coll on forests

Procedures based on Act No 326/2005 Coll on forests in the wording of the pursuant regulations	Payments/fines/penalties	
	Awarded sum	Paid sum
	SKK	
Compensations for the loss of forest services and benefits (§ 9)	89 076 374	86 522 934
Penalty levy (§ 9, Section 10)	738 468	555 328
Decisions on forest law violation and fines (§ 63, § 65)	582 000	345 200
Decisions on other administrative infringement cases and fines (§ 64, § 65)	2 111 302	1 215 750
Total	92 508 144	88 639 212

Source: MA SR.

The most challenging cases dealt with by state authorities relate to the conduct of state supervision in forests and include imposing fines and penalties for the violation of Forest Act and associated executive regulations and also procedures related to entering records into the Register of Land Associations.

State administration on game management

The execution of the state authority in the area of game management was enforced through the Forestry Department and its Game Management Sub-unit. The executive power was based on the following:

- Act No 23/1962 Coll on hunting in the wording of the pursuant regulations;
- Act No 543/2002 Coll on nature and landscape protection;
- Act No 71/1967 Coll. On administrative procedure in the wording of the pursuant regulations.

In addition to binding administrative duties, the sub-unit also performed other tasks, namely:

- drafting the bill of the new hunting law approved by the Government on 15 October 2008;
- review of the 7 existing executive regulations to the Hunting Act;
- drafting the bill of new regulation to the proposed Hunting Act;
- review of the proposed sectoral and national legislation including judgements;
- cooperation with other ministerial units on tasks associated with the game management administration;
- cooperation on the Green Report and Hunting Yearbook including the implementation of their recommendations into the RFO and DFO practice;
- provision of access to information compliant with the Act No 211/2000 Coll on free access to information and on amendment of associated acts;
- ensuring coordinate participative approach to inspections compliant with the Act No 10/1996 Coll on inspection in state administration at RFO and DFO.

The execution of state authority associated with rights, legally protected interests and obligations of natural persons and/or legal entities was based on administrative procedures regulated by the Act No 71/1967 Coll on administrative procedure in the wording of the pursuant regulations (see annexed Tables for more details).

The Game Management Sub-unit filed last year 1 487 claims of which 144 were select files. Of these, 21 files were dealt with under administrative procedure regulated by the

Hunting Act and Act No 71/1967 Coll on administrative procedure.
The sub-unit was further responsible for overseeing game management in military forests. The RFO dealt with a total of 284 administrative claims last year of which 177 were appeals against first – grade decisions. The number of cases referred to regional offices for further investigation annually increased by 11 to 40 in total.
The number of claims delivered to the RFO under administrative procedure annually increased by 71 to 1268 (Table 13.1-15).
The majority of claims (888) were the proposals for the opening of disciplinary actions under the Common Hunting and Disciplinary Code. The Code is regulated and decisions are taken compliant with the provisions of the Administrative Code. Compared to 2007, the number of claims increased by 70. Of the total of 888 claims, 26 were police attended poaching claims. The disciplinary action was opened against 836 holders of hunting licences of which 823 were successfully concluded. The majority of cases (776) were related to the violation of regulations on hunting, refusal to submit hunting trophy for the exhibition, and last but not least the nappropriate treatment of trophies.
Another large group of claims were the applications for the approval of contracts on the hunting rights lease (193), applications for hunting ground adjustments (89), and appeals against the first-grade decisions of state authorities.
The number of submitted prosecutor protests against the first-grade decisions annually fell by 14 (45 in total). In addition to administrative procedure claims, the RFO also attended claims of non-administrative nature (Table 13.1-15) which included the following: 18 578 applications for the issuance and extension of hunting licences (800 up on 2007); the evaluation and approval of 5094 game management and hunting plans (>300 up on 2007), the assessment of 289 applications for preventive hunting to eliminate game damage in forests and on agricultural crops; the evaluation and approval of 270 Hunting Association Statutes; and 255 inspections of game management standards.

7.2 OWNERSHIP AND MANAGEMENT OF FORESTS

The structure of ownership and forest tenure is given in Table 7.2-1. The state subjects managed last year 55.1% from the total area of forests, but held property rights only to 40.2% of the area. The process of restoration of ownership rights to forests failed to be completed last year and is still ongoing (Tables 7.2-1 and 7.2-2).

Table 7.2-1 Forest structure (forest crop land) by ownership and tenure 2008

Category	Ownership category						
	State	Municipal	Private	Community	Church	Agri co-op	Unknown
	Forest crop land (ha / %)						
Ownership	777 107	187 818	252 192	495 051	57 818	4 438	159 167
	40.2	9.7	13	25.7	3	0.2	8.2
Tenure	1 067 124	170 264	139 080	519 361	32 530	5 232	—
		8.8	7.2	26.9	1.7	0.3	—

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

Table 7.2-2 Forests by ownership and use

Subject		2002	2003	2004	2005	2006	2007	2008
		Forest crop land (%)						
State	Ownership	42.8	42.2	42.1	41.8	41.1	41.4	40.2
	Use	62.3	61.5	59.4	58.5	56.1	55.5	55.1
Non-state	Ownership	49.9	49.3	52.5	52.3	53.4	53.0	51.5
	Use	37.7	38.5	40.6	41.5	43.9	44.5	44.9
Municipal	Ownership	9.7	9.7	9.9	9.7	9.8	9.8	9.7
	Use	8.7	8.7	8.7	8.7	8.9	8.9	8.8
Private	Ownership	12.9	12.0	14.6	14.2	15.0	14.3	13.0
	Use	6.1	5.9	6.2	6.3	7.2	7.2	7.2
Community	Ownership	24.0	24.3	24.4	24.9	25.3	25.5	25.6
	Use	20.6	21.6	23.0	23.8	25.5	26.0	26.9
Church	Ownership	3.2	3.2	3.4	3.4	3.1	3.2	3.0
	Use	2.1	2.1	2.5	2.5	2.0	2.1	1.7
Agri co-op	Ownership	0.1	0.1	0.2	0.1	0.2	0.2	0.2
	Use	0.2	0.2	0.2	0.2	0.3	0.3	0.3
Unknown ownership		7.3	8.5	5.4	5.9	5.5	5.6	8.2

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

7.3 SUBJECTS MANAGING FORESTS

7.3.1 State sector

Forests in state ownership are managed by the following state subjects: the Forests of the Slovak Republic, s.e., Banská Bystrica (Forests SR); Forest-agricultural Estate Ulič, s. e. (FAE); and the State Forests TANAP (SF TANAP). The aforementioned subjects fall under the MA SR authority. The Military Forests and Estates, s.e., Pliešovce (MFE SR) are administered by the MD SR. The state subjects also manage unreclaimed forests and forests leased from non-state subjects. For educational purposes, the Forests of the Slovak Republic, s.e., leased 1 125 ha of forest to the Forestry College (FC) Banská Štiavnica, 1 185 ha of forest to the Forestry College Prešov, and 9 976 ha to the Technical University Zvolen (TU Zvolen). The training for the students of the Forestry College Liptovský Hrádok was provided by the Forests of the Slovak Republic, s.e.

Table 7.3.1-1 Key data on forests managed by state subjects

Indicator	State subjects					Total
	Forests SR	SF TANAP	FAE Ulič	MFE SR	FC + TU	
Forest crop land (ha)	928 055	38 649	20 679	67 720	12 286	1 067 389
Growing stock (1000 $m^{3)}$	218 661	6 121	4 157	14 854	3 245	247 038
Area of mature stands (ha)	170 039	3 613	2 373	14 938	2 853	193 816
Growing stock of mature stands (1000 $m^{3)}$	66 746	1 340	891	5 108	1 369	75 454
Total current increment (1000 $m^{3)}$	5 653	137	127	466	79	6 462
TCI $ha^{-1}m^3$	6,09	3,53	6,12	6,91	6,59	6,16

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

7.3.2 Non-state sector

The category of non-state forests includes private, community, church, agricultural co-op and municipal forests. The most common legal and organizational forms of non-state forest subjects include: land associations with /without corporate entity status; LtD companies; shared companies; natural persons with/without business licence; and administrative units (commercial, semi-budgetary) attached to municipalities.

Table 7.3.2-1 Key data on non-state forests

Indicator	Ownership category					Total
	Private	Community	Church	AG	Municipal	
Forest crop land (ha)	139 080	519 361	32 530	5232	170 264	866 467
Growing stock (1000 m^3)	35 044	118 141	8 065	1 104	42 698	205 052
Area of mature stands (ha)	29 831	92 059	6 036	1 259	33 360	162 545
Growing stock of mature stands (1000 m^3)	11 990	35 470	2 340	409	14 174	64 383
Total current increment (1000 m^3)	919	3 052	244	32	1 078	5 325
TCI ($ha^{-1}m^3$)	6.52	6.05	6.04	6.07	6.27	6.24

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.
Note: AG – agricultural cooperatives.

7.3.3 Commercial sector

The volume of operations performed in 2008 by commercial units is given in the following table:

Table 7.3.3-1 Operations performed by commercial units

Subject	Artificial regeneration		Forest protection		Cleaning		Felling		Skidding		Timber haulage	
	ha	%	ha	%	ha	%	1000 m^3	%	1000 m^3	%	1000 m^3	%
Forests SR	4 660	100	35 524	100	14 775	99	1 812	96	1 792	87	2 393	94
SF TANAP	168	51	2520	74	58	87	236	100	167	100	197	82
FAE Ulič	0	0	9	3	516	64	28	49	29	51	1	2
State subjects under MA SR	4 828	96	38 053	97	15 349	97	2 076	95	1 988	87	2 591	91
MFE SR	425	87	2064	91	1410	90	338	94	283	92	163	86
FC + TU	22	49	193	44	207	67	193	58	249	63	14	5
Other state subjects	447	84	2 257	83	1 617	86	531	77	532	76	177	38
Σ state subjects	5 275	95	40 310	96	16 966	96	2 607	91	2 520	85	2 768	83
Non-state subjects	2634	59	11 890	37	6 555	83	3 696	91	3 498	93	1 771	69
Total	7 909	79	52 200	70	23 521	92	6 303	91	6 018	89	4 539	77

Source: Statistical record Les (MP SR) 7 – 01, special questionnaire.
Prepared by: NFC-FRI Zvolen.

Table 7.3.3-2 Operations performed by commercial units for the Forests SR

Year	Artificial regeneration		Forest protection		Cleaning		Felling		Skidding		Timber haulage	
	ha	%	ha	%	ha	%	1000 m³	%	1000 m³	%	1000 m³	%
2000	571	11	706	2	5 978	31	1 381	42	1 454	45	207	6
2004	3 714	85	28 729	87	15 835	89	3 234	87	3 224	89	742	21
2005	3 954	57	29 916	93	16 073	96	4 224	95	4 187	97	2 729	69
2006	4 126	100	31 512	98	15 677	99	3 767	96	3 680	96	2 148	63
2007	4 262	100	33 140	100	15 492	99	4 073	95	4 042	96	2 217	60
2008	4 660	100	35 524	100	14 775	99	1 812	96	1 792	87	2 393	94

Source: Statistical record Les (MP SR) 7 – 01.
Prepared by: NFC-FRI Zvolen.

7.4 PROFESSIONAL FORESTRY BODIES

7.4.1 National Forest Centre (NFC)

In 2008, the NFC responded successfully to challenges and realised its target goals. Its 4 specialised institutes [NFC - Forest Research Institute (FRI); NFC - Institute for Forest Consulting and Education (IFCE); NFC - Institute for Forest Resources and Information (IFRI); and NFC - Forest Management Institute (FMI)] provided a range of services for forestry professionals and worked on a number of assignments of national and/or international importance. The NFC covered and achieved last year the following:

- Sectoral research (national and/or international projects funded by the Agency for Research and Development Support, 7 FP, EU, and other instruments).
- Establishment of the *Centre of Excellence for Biological Methods of Forest Protection*.
- Development of strategic and conceptual sectoral documents (Green Report, Forestry Development Strategy, NFP Action Plan, etc.).
- Drafting legislation on forestry and hunting.
- Advisory services and further education of forestry professionals.
- Methodological and technical support for the RFO and DFO.
- Development, publishing and archiving of the national thematic map set – forestry layer.
- Compilation of documents and/or cooperation on land reform projects.
- Research into alternative approaches to forest planning and management including guidelines for forestry practice and surveys.
- Comprehensive survey of forest condition for framework planning.
- Administration of sectoral information systems, gathering and processing of forest data for state administration and other subjects, development of the national forestry communication platform Forestportal.
- Public procurement for FMP and coordination of natural persons and legal entities holding licences for the FMP elaboration.
- Compilation of studies, analyses, supporting documents and other outcomes for subjects managing forests and/or other subjects.
- Compilation of analyses, studies and other commissioned documents on forestry and forest ecology for the MA SR, other ministries s and institutions both at national and international levels.

- Coordination of international cooperation – obligations based on the membership in international organizations (FAO, UNECE, MCPFE, EFI).
- Active participation in international working groups and actions (IUFRO, COST).

Table 7.4.1-1 Structure of NFC workforce

Category		To 31 December 2008
Σ workforce		315
A.	Researchers	77
B.	Technicians	27
C.	Support personnel	3
Σ A+B+C		107
D.	Other university educated personnel	118
E.	Other high school educated personnel	61
F.	Workers	29

Source: NFC Annual Report, 2008.

Svätý Anton Museum

The museum's activities revolve around its permanent hunting, artistic and historical exhibitions housed in the Svätý Anton Manor House and the Ferdinand Coburg exhibition in the Predná Hora Hunting Lodge. The museum received last year some 50 000 visitors. The museum also lends its artefacts and exhibits for the decoration of hunting lodge in Topoľčianky, manor houses in Palárikovo and Tatranská Javorina, and the exhibition at Sitno View Tower.

The museum held last year the following exhibitions and events:

- Hunting and Recreation (Slovakiatour Bratislava; 15 000 visitors).
- Regional show of breeders' trophies (March 2008; 264 visitors).
- Hunting through Photography (August–September 2008; 3 000 visitors).
- Unique Trophies of Orava (3 000 visitors).
- Poachers' Weapons and Peculiarities (Pliešovce; 400 visitors).
- Specialised events (18; 13 474 visitors) including the St Hubert Days – a national hunting show held under the auspices of MA SR (9000 visitors).

7.5 INTEREST GROUPS AND ASSOCIATIONS

7.5.1 Slovak Forestry Chamber

The Slovak Forestry Chamber (SFCH) enforces and protects legal, professional, social and economic interests of its members. In cooperation with forestry and environmental non-governmental organizations, state forestry agencies and associations of non-state forest owners the chamber also participates on the development of documents of strategic importance such as national forest policy, sectoral developmental strategies, legislation and its associated executive measures.

In 2008, the SFCH contributed to the review of the following documents: the Act No 543/2002 Coll on nature and landscape protection, the Hunting Act, the sectoral developmental strategy, the NFP Action Plan, and other important documents.

7.5.2 Associations of non-state forest owners

The activities of non-state forest owners were coordinated by the Council of the Non-state Forest Owner Associations (CNFOA), an informal umbrella body representing interests of the Slovak Association of Municipal Forests (62 members, 134 054 ha), the Slovak Union of Regional Associations of Non-state Forest Owners (10 regional associations, 276 200 ha), the Slovak Union of Diocese Forests (13 members, 40 000 ha), and the Union of Owners of Private, Community and Municipal Forests of Banská Bystrica Region (534 members, 134 011 ha).
The CNFOA last year contributed to the review of the Act 543/2002 Coll on nature and landscape protection and participated in drafting and consultations on the Hunting Act.

7.5.3 Association of Forest Sector Employers

The Association of Forest Sector Employers (AFSE) had 25 members last year. The association centred its activities on the protection of employers' interests in the Labour Code disputes and collective bargaining.

7.5.4 Slovak Hunting Union

The Slovak Hunting Union (SHU) is a civic association (Act No 83/1990 Coll on citizen assembling) representing rightful interests of the majority of Slovak hunters (over 50 000). The number of its hunting association units and the area of managed hunting grounds rank it among the largest and most influential Slovak interest groups.
One of the main priorities of SHU is to: provide lifelong education to its members and general public to improve their understanding of game management and hunting; enhance moral and ethical principles of hunting; and, lastly, preserve hunting traditions. In addition, the SHU is actively involved in the youth education through clubs of young friends of hunting attached to district and regional branches of the SHU.
The SHU is a great advocate of ecological aspects of hunting – hunting is understood as a means of conservation of game and its gene pool without compromising the existing biodiversity. The SHU actively cooperates with the State Veterinary and Food Authority on the prevention and suppression of wildlife diseases and enhancement of conservation of protected species of animals. The SHU also closely cooperates on a number of projects with the state administration on game management.
Furthermore, the Union annually organizes a number of cultural events, many of which are associated with June – the Month of Hunting. These events include trophy shows, various exhibitions and kynological events of regional and/or national importance.
The most important event organized by the union are the national *St Hubert Days* annually held in the Svätý Anton Manor House. In addition, the SHU annually organizes a number of other events including: the national contest in playing the French horn; the national competition of clubs of young friends of hunting; national shooting competitions; national championships in deer calling; national championships in game calling; national junior

championships in game calling. The latter three are held in St. Anton. The national hunter squad regularly participates in the European Championship in Hunting Multithlon. In the past, Slovakia has twice played a host to the European Championship in Deer Calling held as a part of the *St Hubert Days*.
The SHU is a regular member of a number of international hunting, kynological, shooting, and falconry organizations such as the CIC International Council for Game and Wildlife Conservation, FACE (Federation of Associations for Hunting and Conservation of the EU), FCI (Fédération Cynologique Internationale), IAF (International Association for Falconry), and FITASC (Federation Internationale de Tir aux Armes Sportives de Chasse).

7.5.5 Council for Economic and Social Understanding in the Forest Sector

The Council is formed by three representatives from each the Ministry of Agriculture, the Association of Forest Sector Employers and the Trade Unions of Timber, Forest and Water Industries. In 2008, the Council participated in negotiations on the amendment of Social Insurance Act and commented on the 2008 State Budget Act.

7.5.6 Slovak Forest Certification Association

The Slovak Forest Certification Association (SFCA) develops and administers the national system of forest certification under PEFC, establishes rules for the certification of the Chain-of-Custody as well as defines requirements for both the auditors and certification bodies. It is an independent professional association of legal entities whose 16 members are according to their stakeholder interests divided into 3 chambers: the Chamber of Forest Owners – 6 members; the Wood-processing Industry Chamber – 2 members; and the Chamber of other Interest Groups – 8 members. The Association is a regular member of the PEFC Council (Program for Endorsement of Forest Certification Schemes) that promotes sustainable forest management through independent third party forest certification.

7.6 SECTORAL INFORMATION SYSTEM AND STATISTICS

At present, there are several parallel forest data systems in Slovakia. The systems have different objectives, scale (national/international) and content. They also differ in data gathering procedures. They include the following:

- ***National Inventory and Monitoring of Forests*** (selective statistical data from permanent monitoring plots).
- ***Forest Condition Monitoring*** (data on forest health and factors affecting forest condition).
- ***Detailed Survey of Forest Condition*** (forest condition data gathered for the elaboratiion of forest management plans).

- ***Comprehensive Survey of Forest Condition*** (forest condition data for framework planning and planning at the level of basic spatial forest unit).
- ***Economic data*** (economic results of the sector and its subjects).
- The Forestry Information System (FIS) represents a multi-spectral information system which operates as a cluster of specific subsystems on forest production, socio-economic, ecological/environmental and scientific/research aspects of forestry. Its most important component is the Forest Sector Information System (FS IS).

Forest Sector Information System

The FS IS has been established to enhance information services across the sector. The system is rooted in legislation and is based on binding information standards and defined data flows. It provides up-to-date integrated data on forest condition and standard of forest management in a particular forest. One of its inherent components is the Thematic State Map Set on Forests (TSMSF) which combined with textual and numeric sources provides for data localisation and geospatial analyses. Both the FS IS and TSMSF are administered by the National Forest Centre - Institute for Forest Resources and Information Zvolen. The system is hierarchical and integrates a number of specialised subsystems (forest condition, Forest Record, forest ownership and tenure, sectoral statistics, timber market reporting, GIS, etc.). The data used by particular subsystems are processed and stored in the Data Bank. FS IS outputs are available alternatively in printed, file and/or network digital format.

Other IS under Forestry Information System (FIS)

There are a number of other IS in forestry differing both in purpose and scale. These systems include the following: IS of State Forestry Administration; State Forest Sector IS; Non-state Forest Sector IS; Forest Research IS; Forest Tree Species Gene Pool IS; IS of state agencies independent of MA SR; and, finally, the Sectoral Emergency IS.

8. RESEARCH, EDUCATION AND ADVISORY SERVICES

8.1 FOREST RESEARCH

The NFC-FRI Zvolen and the Research Station & Museum of SF TANAP (RSM TANAP) represent leading research bodies on forest and tree related issues. From other sectors, the Forestry Faculty of TU Zvolen and the Institute of Forest Ecology of the Slovak Academy of Sciences (IFE SAS) in Zvolen conduct research on forests.
In 2008, two scientific centres of excellence were established under the Operational Programme Research and Science 2008/2.1/01:

- *Centre of Excellence for Biological Methods of Forest Protection* (Coordinator: NFC - FRI Zvolen)
- *Centre of Excellence for Adaptive Forest Ecosystems* (Coordinator: FF TU Zvolen).

The *National Centre for Research of Primeval Forests of Temperate Zone* established under the common scientific network specialises in research of natural forests. The DNA laboratory specialising in research of genetic structure of populations is jointly managed by the TU Zvolen and NFC-FRI Zvolen.
Much of the research is funded by the MA SR and project agencies such as the Agency for Research and Development Support (APVV), the Scientific and Grant Agency (VEGA) of the Ministry of Education, and SAS. Other funding is provided through projects of scientific/technical cooperation, applied research & developmental projects of the Ministry of Education, and projects of the Cultural and Educational Grant Agency (KEGA).
In 2008, the majority of research was associated with various aspects of spruce decline, functions of forest at a landscape level, effective use of available forest resources and the post-windthrow development of the Tatra forests.

Table 8.1-1 Scientific and research projects 2008

Organization	RP	APVV	VEGA	KEGA	Other
Organization	2	15	—	—	6
NFC – FRI	—	2	—	—	—
RSM TANAP	1	8	26	5	5
FF TU	—	5	11	—	1
IFE SAS					

Source: Questionnaire of MA SR 7 – 01, 2009.
Note: RP – governmental and sectoral research projects.

The active transfer of knowledge is inconceivable without the publication of results in national and international scientific periodicals and journals. In 2008, the following scientific periodicals were published: Forestry Journal (NFC), Folia oecologica (IFE SAS), and the Acta Facultatis Forestralis (FF TU Zvolen).

Table 8.1-2 Publication activities 2008

Organization	No of published materials (Regulation No 13/2008-R*)				Other publications
	Book publications – scientific monographs	Other book publications	Current scientific journals, patents and discoveries	Other reviewed publications	
NFC – FRI	5	20	6	119	174
RSM TANAP	—	—	–	10	15
FF TU	14	39	12	436	72
IFE SAS	—	7	13	31	62

Source: Questionnaire of MA SR, 2009.
*Note: *Regulation of the Ministry of Education of SR No 13/2008-R from 16 October 2008 on bibliographical registration and categorization of publication activities and responses.*

In addition, over 40 scientific conferences, seminars and workshops, of which 21 were of international importance, were organised by forestry organizations last year.

8.2 EDUCATION

In 2008, the graduate and undergraduate courses and programmes related to forestry were offered by the Faculty of Forestry of TU Zvolen. Taught degrees produced last year 115 bachelors, 100 forestry engineers and 12 PhD graduates. In addition, 3 specialised forestry colleges (Banská Štiavnica, Liptovský Hrádok, Prešov) and 5 forestry apprenticeship schools and colleges (Banská Štiavnica, Bijacovce, Ivanka pri Dunaji, Tvrdošín, Poltár) offered a range of college courses and apprenticeship programmes.
Forestry apprenticeship schools and colleges produced last academic year 411 apprentices and graduates.

Table 8.2-1 College and apprenticeship school courses

Course	No of students /No of graduates
Forestry (CCE)	806/205
Forestry and forest management (HSE)	14/14
Rural tourism (HSE)	15/15
Forestry (SOV)	36/12
Σ College courses	871/246
Programme	**No of apprentices /No of graduates**
Forest machinery operator	174/0
Forest machinery mechanic	62/19
Road vehicles mechanic	12/12
Forest production technician	135/45
Forest and landscape keeper	12/5
Rural tourism entrepreneur	57/17
Forest production	63/21
Forest and landscape keeper II	9/0
Car mechanic	17/0
Road and public transport	12/0

Table 8.2-1 – contd.

Course	No of students /No of graduates
Household management	69/4
Mechanization in agriculture and forestry (HSE)	34/20
Forestry (HSE)	51/22
Σ Apprenticeship schools and colleges	707/165

Source: Questionnaire of MA SR, 2009.
Note: CCE – complete college education, HSE – specialised higher education, SOV – specialised college education.

Table 8.2-2 University taught courses 2007/2008

Course	Form	
	Day	Distance
	Students / Graduates	
Bachelor		
Forestry	380/68	109/25
Applied zoology	146/20	60/2
Total	526/88	169/27
Master		
Forestry	137/47	58/16
Applied zoology and game management	29/15	0/0
Management and financing of forest enterprises	31/15	0/0
Forest ecology	44/14	0/0
Total	241/91	58/16
PhD		
Forest planning	7/1	5/0
Silviculture	7/0	10/0
Mechanization in agriculture and forestry	6/2	6/2
Game management	6/0	6/0
Hydro melioration	5/0	3/0
Plant protection	0/0	5/1
Sectoral and diversified economics	0/0	3/0
Ecology	1/0	1/3
Forest phytology	6/0	8/3
Total	38/3	47/9

Source: NFC questionnaire, 2009.

The further education of sectoral workforce was last year centrally managed by the NFC-IFCE Zvolen. The Institute held last year 151 accredited educational events which provided training for 2 784 employees of both state and non-state sectors.
The most successful events (21) included the courses for the forest manager licence applicants and the exams of holders of forest reproduction material licence. The additional activities managed by the NFC-IFCE Zvolen included the following:

- Accredited courses for technical personnel (e.g. hunting & rural tourism enterprises; harmful agents on forest trees and their control; project development skills; forest pedagogy, etc.).
- Specialised language courses (forestry German; project English).
- Specialised management courses (personnel management; development of managerial skills; application for environmental payments; IT implementation; etc.).

- Basic courses and trainings for forest workers.

The Centre for Further Education (CFE), formally attached to the TU Zvolen, continued to run the Third Age University Project in which 196 mature students participated last year. In the cooperation with the FF TU Zvolen, additional 44 courses on the implementation of new knowledge on forests into practice were held in 2008. Further 625 participants received training in the restoration of spruce forests, silviculture of broad-leaved and selection forests, integrated felling-haulage technologies, and other areas associated with forestry.

8.3 ADVISORY SERVICES

In 2008, the MA SR focused its efforts on the establishment of the Advisory Centre for Land Use in Agriculture and Forestry. The Centre is jointly attached to the Agroinštitút Nitra, s. e., and the NFC-IFCE Zvolen.

The NFC-IFCE Zvolen held last year courses for legal advisors, administered their certification and the national register of land use advisors. In 2008, the total of 35 applicants successfully completed the advisor course. Of these applicants, 16 were certified to provide advisory services for legal entities. Another 5 became certified for natural persons.

Compliant with the approved strategy for the national system of land use advisory services, the NFC-IFCE made on their website publicly available (www.nlcsk.sk/ULPV/) the National Register of Forestry Advisors. The website also provides up-to-date information resources for advisors and general public.

The advisory services are provided by the NFC Zvolen, IFE SAS Zvolen, FF TU Zvolen, state forestry authorities, SF TANAP Tatranská Lomnica, and through the media (magazines *Les/Slovenské Lesokruhy* and *TATRY*; information leaflets and booklets; posters; websites).

In 2008, the NFC offered advisory services in the following primary areas: forest protection, silviculture, biomass use, and the FMP elaboration.

The bodies of state forestry authorities, the DFO in particular, regularly offered advisory services facilitated though meetings with forest owners, lessees and certified forest managers. In addition, the officers of state authorities routinely participated in general assemblies of land use associations.

The bimonthly magazine *Les/Slovenské Lesokruhy*, published in joint cooperation with the MA SR, was in 2008 distributed in 3000 circulation per issue. Special magazine supplements provided forestry public with the free-of-charge copies of most recent sectoral regulations.

9. INTERNATIONAL AND PUBLIC RELATIONS

9.1 INTERNATIONAL COOPERATION

Ministry of Agriculture of SR

In 2008, the MA SR in joint cooperation with the NFC participated in meetings of committees and expert groups on forests both at the European and international levels. International obligations and engagements were met through close cooperation between its Forestry and International Cooperation Departments. The following list names the most important bodies and processes with a direct involvement of Slovakia:

- Working Group on Forests of the EU Council
- EC Standing Forestry Committee (SFC)
- United Nations Forum on Forests (UNFF)
- FAO Committee on Forestry (COFO)
- Ministerial Conference on Protection of Forests in Europe (MCPFE).

Furthermore, the MA SR coordinated promotion events at the 2008 European Forest Week held in Rome and Brussels during the week of October 20–24.

National Forest Centre

In 2008, the Centre was a coordinating unit for a number of international activities and events associated with the membership in EFI and its particular project centres (CONFOREST, INNOFORCE), working and expert groups (IUFRO, FAO, UNFF, UNECE, MCPFE, European Commission, EUROSTAT, EPPO, etc.). Of particular importance was the involvement of NFC experts in the COST actions (E42, E43, E45, E51, E52, FP 0703) and the collaboration on joint research projects under the Seventh Framework Programme (FP7).

In 2008, the NFC organised 10 international scientific events attended by 285 foreign participants from 27 countries. The most prestigious event hosted by the NFC was the international conference *Forests and Forestry – Risks, Challenges, Solutions*. The Conference, held in Zvolen, was to commemorate 110th anniversary of the establishment of the first forestry research body on the territory of Slovakia and the 30th anniversary of the further education of forestry professionals. The event was attended by 200 participants from 12 countries of Europe including the Director of EFI, the Executive Director of IUFRO in Vienna, representatives of the Regional FAO Office for Central and Eastern Europe, and the representative of the Research Directorate-General of the European Commission.

Technical University Zvolen

The University continued to actively strive for the improvement of mobility opportunities for students and lectures available through Socrates, Leonardo and CEEPUS. The University is renowned for its international campus – there were 127 foreign students taught in one of the university courses last year.

The University is a member of a number of academic and professional international bodies (IUFRO, EFI, PRO SILVA, IAWS, IAWA, FPS) and actively participates in a number of international projects under the Sixth Framework Programme (FP6), COST, and ODA.

In 2008, the Forestry Faculty organised 6 international events attended, among others, by

participants from Croatia, Lithuania, Poland, Germany, Austria, Hungary and the Czech Republic.

Institute of Forest Ecology SAS
In 2008, the IFE SAS continued in activities associated with its membership in international scientific organisations and unions such as IUFRO, NK MAB/UNESCO, ISA, EUROBAT, ISHS, and others. In addition, the Institute was also represented on the editor board of 2 foreign journals (Folia zoologica, Sylvia). In 2008, the IFE SAS hosted 2 international scientific conferences attended by experts from the Czech Republic, Poland, Germany and Austria.

Forestry colleges and apprenticeship schools
Participation in international projects and initiatives opens up new opportunities for young foresters to acquire forestry experience in the international setting.
In 2008, the most talented apprentices represented Slovakia in the international Apprentice Skills Competition attended by 20 participants from 3 European countries. They also took part in student exchanges in Sweden and Finland. In addition, students participated in summer falconry camps in Banská Štiavnica, Germany, Austria and Canada.

State forest enterprises and other forest sector bodies (Forests SR, s.e., State Forests TANAP, MFE Pliešovce
Last year, the aforementioned bodies continued to further develop existing cooperation with the state forest enterprises of neighbouring countries, particularly in the area of nature conservation, common European labour market and public relations. The cooperation with Polish, Czech and Hungarian colleagues was mostly facilitated through projects, expert exchanges, bilateral working meetings and competitions. The SF TANAP were additionally also involved in the forest research initiatives under ICP Forests and ILTER EUROPE.

Table 9.1-1 Mobility 2008

	No of sent experts / students	No of accepted foreign experts / students
NFC	231	285
FF TU	129/4	177/32
IFE SAS	18	10
SF TANAP	—	2
College /apprenticeship school	58	55

Prepared by: NFC-FRI Zvolen.

9.2 PUBLIC RELATIONS

PR events were last year coordinated by a working group for the coordination of communication strategy in forestry. State and non-state subjects organised last year a number of events for foresters and general public to promote the results of their work among public and increase its awareness about the importance of forests for modern society (Table 9.2-1).

Table 9.2-1 Events overview

Public events	Forestry contests	Children events	Exhibition participation	School events
Forestry Days Tree Day European Forest Week Clean Mountains Clean Waters Opening of new forest trails Opening of barrier-free trails St Hubert Days Salamander Parade	Best Game Warden Sawyer Tatra Mowing Contest Skills Championship Venerovský Skiing Competition	Travelling Owl Know and Protect Slovak Nature Nature for Future Chamois – experience programme Tree under Christmas Tree Forest walks	Slovakiatour Bratislava Holiday World Praha Mountains – People – Trees – Forests Agrokomplex 2008 Lignumexpo – Les 2008 Hunting – Forestry Hunting and Nature Delicate Habit of Tatra Nature	Open Door Days Fairs Skill Contests Forest Horn Playing Contest School presentations of skills and achievements Lectures Excursions Knowledge quizzes Hunting events Falconry shows Museum visits

Source: NFC questionnaire, 2009.

The most important public event – the *2008 Forestry Days*, was organized in joint cooperation between the MA SR, NFC, Forests SR, s.e., SF TANAP, MFE, s.e., SFCH and 65 other contributing partners. The event provided an umbrella for over 30 different events held in 27 towns and villages of Slovakia. The events were attended by more than 100 000 visitors. The *Days* were nationally promoted through their own website www.lesnickedni.sk; furthermore, a 15-minute TV shot was produced in Slovak and English languages to draw attention of public to the event.

The accompanying actions included the *Trees of Knowledge* co-hosted by the Ministry of Education and the *Green Drop of Blood* jointly organised with the National Transfusion Service and the Slovak Red Cross .

A series of other events promoting forestry among public was held under the 2008 *European Forest Week*. These events mostly included guided forest walks for children to promote the message "*European forests improve our lives and protect our planet*!."

Table 9.2-2 Overview of publishing and media activities

Subject	Published outputs	Media	Target group
NFC	275 different outputs	17 press releases; 1 press conference; 8 seminars; 3 discussion fora; 2 conferences; participation in round-table discussions, talks, and radio programmes	Forestry professionals; general public
Forests SR, s. e.	2 books; 11 issues of the *Lesník* magazine; 5 maps for the Forestry Information Offices	724 different media outputs including: > 50 press releases; STV Channel series *Getting to Know Trees* (12 episodes); *Wandering through Special Forestry Sites* – 20 programmes on the Slovak Radio	Forestry professionals; general public
SF TANAP	66 issues of the *TATRY* magazine; 2 issues of the Slovak-Polish TATRY magazine; 25 different outputs	93 press releases; 10 press conferences; 2 open journalist days; 5 articles in the *Lesokruhy* magazine; 5 articles in the *Farmár* magazine; cooperation on the *Halali – Lesu zdar* TV series; cooperation with national and/or regional media	Forestry professionals; general public

Table 9.2-2 – contd.

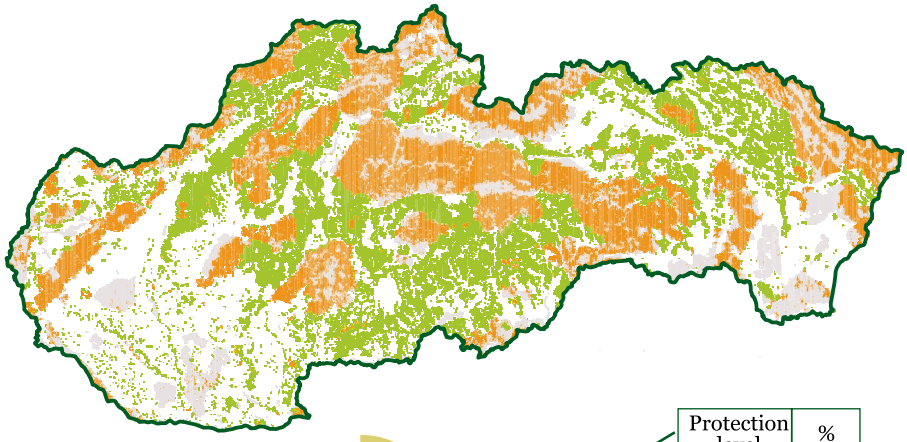
Subject	Published outputs	Media	Target group
MFE SR, s. e.	12 issues of the MFE SR, s. e. newsletter	Press releases; conferences; talks	Forestry professionals; general public
Forestry schools	Journal *Acta Facultatis Forestralis*; school newsletters *Poddubáčik, Zelená krv, Letokruhy*; cooperation on the book publication; 3 paperback publications	Press conference; press releases; talks, workshops; briefings; school presentations on the STV (*Farmárska revue*), TV Markíza and Patriot TV channels	Students; forestry professionals; general public
Other	Expert opinions	TV and radio programmes; press releases	Forestry professionals; general public

Prepared by: NFC-IFCE Zvolen.

10. SECTORS AND INDUSTRIES ASSOCIATED WITH FORESTS

10.1 NATURE AND LANDSCAPE PROTECTION

The protected areas (PA) are mostly designated in areas with a limited impact of mankind activities. These areas are often covered by forests and largely unsuitable for agricultural production. For this reason, the average forest cover in protected areas is at 72.6% significantly higher than the national average. Figure 10.1-1 shows forests impacted by management restrictions imposed by the Act No 543/2002 Coll on nature and landscape protection.



Protection level	%
SPA	11.0
2	29.4
3	12.5
4	0.6
5	3.6
Total	57.1

Figure 10.1-1 Forests under restricted management.

Mankind activities are in the majority of protected areas restricted depending on the level of protection (2–4) except for SPA areas where the 1st level of protection is applied. The latter mentioned is also applied to "open countryside" outside PA. The significance and extent of restrictions increase with every subsequent level. It means that forests under the strictest 5th level of protection are designated as intervention free zones. Restrictions imposed in areas under the 2-4 level of protection mainly include restrictions in the pesticide and fertiliser use, construction of forest roads and other forest structures, collection of forest berries and the execution of hunting rights. Nonetheless, such rigid system not always meets the objectives of nature conservancy because it does not always guarantee the conservation of natural values declared protected.

The current network of PA also features ecosystems in which full restoration of natural biodiversity is due to occurred changes largely hypothetic (e.g. forest plantations, locust stands, etc.). Furthermore, effective protection of large-scale PA, particularly with respect to compensation payments for restricted management, is costly, resources demanding and largely unrealistic. Another hotly discussed issue associated with territorial protection is the extent of buffer zones around protected areas (NP in particular). These zones are currently under the 2nd level of protection and often too extensive. For this reason, the Ministry of Environment is planning to re-evaluate the current extent of national network of PA (except for Natura 2000 sites) and introduce their zonation.

Table 10.1-1 Protected areas by category and level of protection

Protected area		Level of protection (ha)					Total
		1	2	3	4	5	
Protected Landscape Areas (PLA)[1]		—	354 450	—	—	—	354 450
Ntional Parks (NP)[1]		—	—	225 286	—	—	225 286
NF buffer zones		—	117 885	—	—	—	117 885
PLA[2] and NP[3] (area in ha minus SSPA area	A	—	—	—	—	1 107	1 107
	B	—	—	—	3 921	—	3 921
	C	—	—	15 826	—	—	15 826
	D	—	28 667	—	—	—	28 667
Small-scale Protected Areas (SSPA)	(National) Nature Reserves ((N)NR)	—	—	—	5 427	67 270	72 697
	(National) Nature Monuments ((N)NM)	—	—	—	1 022	342	1 364
	Protected Landscape Elements (PLE)	—	—	—	3	—	3
	Protected Sites (PS)	—	—	62	1 232	—	1 294
	SSPA buffer zones	—	—	327	1 028	—	1 355
Sites of Community Importance (SCI) outside the national PA network		—	67 748	—	—	—	67 748
Special Protection Areas (SPA) outside SCI and the national PA network		212 044	—	—	—	—	212 044
Total		212 044	568 750	241 501	12 633	68 719	1 103 647

Source: ME SR, 2009.
Prepared by: NFC-FRI Zvolen.
Notes: [1]area deducted by SSPA.
[2]zonation completed only in PLA Horná Orava.
[3]zonation completed only in NP PIENAP.

In 2008, disputes on the approach to the management of intervention-free areas remained high on the agenda of forestry and nature conservation bodies. Despite recent restrictions in the designation of intervention-free zones associated with economic recession, the disputes on the bark beetle control in PA further persisted. While several exceptions were granted last year on the use of pesticides in PA, mountain forest reserves remained hotbeds of bark beetle and its spreading into the adjacent stands. In order to prevent invasion of pests into commercial forests a number of controlling measures were applied in the buffer zones of affected mountain reserves. Nonetheless, the measures were proven largely ineffective due to their restricted character (limited funding) and often unclear delineation of these zones.

Natura 2000

Sites of Community Importance

The national list of proposed Sites of Community Importance (pSCI) was endorsed by the Government Decree No 239/2004 from 17 March 2004. It was published by the Order of the Ministry of Environment of SR No 3/2004-5.1 from 14 July 2004. This act initiated the development of a national network of Natura 2000 sites which currently features 382 pSCIs covering 573 690 ha. 88% of the network area overlaps with the national network of protected areas which retain their original level of protection. The remaining 12% are located outside protected areas and are currently under the 2nd level of protection.

The implementation has gradually exposed a conflict between the Slovak and European legislation related to the level of management restrictions – practical experience has shown that in some cases the EU restrictions far exceed those defined for the 2nd level of national protection. The general understanding is that the implementation of Natura 2000 has led to further management restrictions in Slovak forests not only in newly established PA, but also in the majority of original PA under the 2–4 level of protection. Fundamental adjustments avoided only the 5th level of protection which remained largely unchanged except for the introduction of more complicated approval procedures.

Special Protected Areas

The Special Protection Areas (SPA) represent another category of Natura 2000 sites. The national list of proposed SPA was endorsed by the Government Decree No 636/2003 from 9 July 2003 and contained 38 sites. In subsequent years (2005–2006), the Government extended the list by adding 5 new sites. In 2007, the regulations for the remaining sites were reviewed by all major stakeholders including the ME SR, environmental NGOs, as well as owners and lessees of affected forests. In 2008, 14 regulations came into force on 1 February; another 2 were endorsed on 15 November (Dunajské luhy and Úľanská mokraď). The total area of proposed and designated SPA adds up to 1 154 111 ha (designated SPA presently cover 392 352 ha). 51.6% of SPA network readily overlaps with the existing network of PA.

UNESCO sites

The Primeval Beech Forests of the Carpathian were inscribed on the UNESCO's World Heritage List in 2007. The site itself covers 29 279 ha with additional 48 693 ha designated a buffer zone. The site is covered by the existing national and European network of protected areas.

10.2 WATER MANAGEMENT

One of the top priorities of forest management is to enhance water conservation properties of forests since these have a significant impact on both the water cycle and quality of water resources. Forests are acknowledged to minimise runoff and prevent soil erosion. This ability considerably improves infiltration into underground aquifers and to a certain degree also flood control. At the same time, it positively affects siltation processes. The influence of forests might temporarily be reduced in the initial stages of forest

regeneration or by inappropriately designed forest roads. Given the societal and economic dimension of these services it is important to ensure sustainable development of available forest resources. Timing and spatial arrangement of applied treatment is of particular importance during the regeneration period. Research in areas devastated by large-scale bark beetle outbreaks has shown partial restriction of hydric properties in affected forests which is especially worrying in view of the current development in TANAP and other PA areas infested by bark beetle.

Although all forests are able to provide a certain degree of hydric effect, their importance is critical on steep slopes, in higher mountain locations (headwaters of many watercourses) and around the sources of drinking water. These are the areas with the highest number of applications for the designation of special-purpose forests (forests in buffer zones of designated water sources). Despite accelerating demands for hydric services of forests and their increasing importance for modern societies, the area of forest with primary hydric functions has changed only very little. These forests at present cover 3.8% of the total forest land, or 72 621 ha. The importance of hydric functions of forests was recently acknowledged by leading forestry experts at the 5th Ministerial Conference on the Protection of Forests in Europe which was held in Warsaw on 5–7 November 2007. The Warsaw Resolution 2: "*Forests and Water*" highlighted the need for the conservation and enhancement of hydric functions of forests through the afforestation of non-forest land, restoration of degraded forests in inundated areas and headwaters, enhancement of supporting political instruments, and enhancement of public awareness about these functions. The document also draws attention to the impact of climate change on the vital connection between forests and water and calls for the implementation of effective mechanisms to support hydric services of existing forests. At a national level, the importance of these services has been recognised in the *nfp* by directly referring to these functions in the Strategic Objective 3: *Enhancement of Quality of Life; Priority 7: Maintenance and Enhancement of Protection Functions of Forests*.

10.3 Technical amelioration and minor watercourses

Technical amelioration (TA) and torrent control (TC) in forests are the legal responsibility of respective forestry bodies. Their obligations are defined by the Act No 364/2004 Coll on waters and the Act No 666/2004 Coll on flood prevention. Recent funding constraints has almost frozen investments into this area. As a result, new projects are rare and old structures are gradually falling into disrepair. In 2008, the Forests SR, s.e. invested 27. 998 million SKK into the improvement of TA and TC infrastructure. Further42. 820 million SKK was spent on the maintenance of existing structures. The investment of SF TANAP into the area were last year a mere 78 000 SKK.

The state subjects under the MA SR last year managed 17 855 km of minor watercourses (MW). Additional 651 km were managed by subjects under the SR Ministry of Defence and forestry colleges. Another 4 km were transferred to the Slovak Water Company.

The total cost of damage caused by flooding is given in Table 10.3-1.

Table 10.3-1 Damage to watercourses managed by state subjects (1000 SKK)

Indicator	2000	2001	2002	2003	2004	2005	2006	2007	2008
Damage	30 850	5 165	55 448	0	11 006	9 760	31 265	4 250	33 082
Compensated	8 247	385	26 420	0	3 889	0	0	2 375	0
Outstanding sum	-22 603	-4 780	-29 028	0	-7 117	-9 760	-31 265	-1 875	-33 082

Source: NFC, 2008.
Prepared by: NFC-FRI Zvolen.

10.4 WOOD PROCESSING INDUSTRIES

Economic parameters illustrating mid-term sectoral trends are given in Tables below

Table 10.4-1 Volume of processed wood by industry (1000 m³)

Industry	Volume			
	1990	2005	2007	2008
Timber industry	2 300	5 069	4 285	4 491
Pulp and paper industry	1 880	2 302	2 333	2 577
Σ Wood processing sector	4 180	7 371	6 618	7 068

Source: SR Ministry of Economy.
*Note: *2000 data are unavailable;*
**data do not include firewood consumption.*

Table 10.4-2 Selected sectoral indicators (million SKK)

Indicator	Industry	1990	2005	2006	2008
Revenue	TI	9 138	19 940	22 200	20 503
	FI	10 088	33 000	32 650	28 793
	PPI	29 564	45 343	46 500	49 597
	Sector	48 790	98 283	101 350	98 893
Costs	TI	9 455	19 166	21 800	20 227
	FI	10 282	31 439	30 800	27 268
	PPI	28 225	43 635	44 100	46 190
	Sector	47 961	94 240	96 700	93 685
Gross economic result	TI	-316	774	400	276
	FI	-194	1 561	1 850	1 525
	PPI	1 339	1 708	2 400	3 407
	Sector	829	4 043	4 650	5 208
Employment	TI	—	9 924	9 778	8 617
	FI	—	11 830	12 144	13 242
	PPI	—	7 458	7 371	7 409
	Sector	—	29 212	29 293	29 268

Source: SR Ministry of Economy.
Note: TI – timber industry; FI – furniture industry; PPI – pulp and paper industry.
**2000 and 2007data are unavailable.*

Table 10.4-3 Timber products per capita (m^3; tonnes)

Log grade	1990	2005	2007	2008
Lumber production	0.269	0.487	0.515	0.525
Lumber consumption	0.260	0.336	0.334	0.470
Wood chipboard production	0.057	0.058	0.124	0.145
Wood chipboard consumption	0.057	0.061	0.124	0.118
Particleboard production	0.012	0.050	0.027	0.028
Particleboard consumption	0.090	0.061	0.027	0.053
Pulp production (tonnes)	0.085	0.113	0.117	0.128
Pulp consumption (tonnes)	0.076	0.114	0.117	0.133
Paper and cardboard production (tonnes)	0.082	0.159	0.166	0.170
Paper and cardboard consumption (tonnes)	0.061	0.094	0.098	0.142

Source: SR Ministry of Economy, Statistical Office of SR, NFC-FRI Zvolen.

10.5 LINE UTILITY STRUCTURES

Line utility structures have become a common feature of cultural landscape. They include underground and surface distribution lines (power, petroleum, gas and water lines) vital for further development of modern societies. Since their construction is always associated with land use changes, they often affect forests and their management. The majority of these structures, power lines in particular, were established in the early 1950s. Their construction on forest land requested mass strip clearances of forest vegetation (Table 10.5-1). From practical viewpoint, each such site requires adjustment of management practices and extra input from the forest owners and managers.

Table 10.5-1 Forest area of the Forests SR, s.e. covered by line structures by region (ha)

	Banská Bystrica	Poprad	Bratislava	Žilina	Trnava	Trenčín	Košice	Nitra	Total
Gas lines	178.3	9.9	52.9	49.2	18.4	83.6	105.6	20.0	517.9
Power lines	1 460.5	856.5	313.0	1 046.2	806.7	276.3	932.1	254.8	5 946.1
Total	1 638.8	866.4	365.9	1 095.4	825.1	359.9	1 037.7	274.8	6 464.0

Source: NFC-IFRI Zvolen.
Prepared by: NFC-FRI Zvolen.

The management of forest clearances above and/or below utility lines represents a major long-term challenge for forestry professionals. The existence of these structures contributes to the following:

- fragmentation of forest stands;
- disturbance of natural spatial structure of forests;
- increased vulnerability of forest stands to damage by wind, rime, bark sunstroke;
- potential changes of hydrological conditions in forests;
- increased susceptibility of conifers (especially spruce) to bark beetle attacks, particularly on open up sites;
- increased intensity of game damage and cost of game protection measures (on forest margins in particular);

- increased risk of soil erosion on cleared sites;
- compromised timber production (safety comes first);
- restrictions in the execution of rightful ownership rights;
- increased management costs.

Clearings under power lines are currently used as/for:

- biomass production;
- Christmas tree plantations;
- game feeding plots;
- establishment of permanent grasslands in densely forested areas to compensate for deficient natural meadows and pastures;
- temporary forest roads;
- fires breaks;
- cultivation of agricultural biomass crops, honey production, fruit orchards, etc.

The management and use of plots under line utility structures always mean the compromise of ownership rights and reduction of forest production. Compensations for these restrictions and often additional management costs are presently subject to ongoing negotiations.

10.6 FOREST BIOMASS

The energy systems based on forest biomass are capable of using waste or otherwise "unmerchantable" dendromass. That is one of the main reasons behind their wider national implementation. Another is that by 2012 we pledged to meet by 10% of our energy needs from biomass. At 19%, the target for grid power is even more ambition. At present, the enewable supply merely 5% of national energy needs of which 2% is wood based. Nevertheless, these figures are far below the average EU27 figures (>13% for the total production of which 7.5% is biomass). From the medium-term outlook, wood biomass is considered the most potent green source of energy with the potential to cover an estimated 9% of national energy needs.

Table 10.6-1 Forest biomass for energy production

Year	Chipwood		Fuelwood and other[1]		Total	
	1000 tonnes[2]	TJ	1000 tonnes	TJ	1000 tonnes	TJ
1990	2	19	368	3 496	370	3 515
2000	5	48	471	4 475	476	4 523
2005	120	140	640	6 080	760	6 220
2006	150	1 425	660	6 270	810	7 695
2007	175	1 663	670	6 365	845	8 028
2008*	190	1 805	690	6 555	880	8 360

Source: NFC – FRI, 2009.

*Notes: *estimate;*

[1]fuelwood and waste wood – tops and branches of trees left after timber harvests, snags;

[2]chipwood and wood for chipwood production.

10.7 HUNTING

In 2008, there were 1 837 recognised hunting grounds, 33 independent hunting enclosures, and 13 pheasantries. Additional 18 enclosures and 28 pheasantries were approved within the borders of designated hunting grounds. The average area of hunting grounds was 2 465 ha. Their average area annually increased by 23 ha (Table 10.7-1).

Table 10.7-1 Hunting grounds 2008

	Forests SR, s. e.	Other state subjects	Non-state subjects	Hunting associations	Other subjects	Total
No of hunting grounds	104	25	69	1 350	289	1 837
Total area (ha)	409 048	171 187	191 656	3 109 041	648 570	4 529 502
Average area (ha)	3 933	6 847	2 778	2 303	2 244	2 466

Main game species

The spring stocks of ungulates (correct to 31 March 2008) annually increased. The increase was considered largely undesirable due to increased amount of damage to forest stands and agricultural crop. Despite higher shooting, the number of shot specimens was short of plans. A slight improvement was reported in pheasant, partridge and wild turkey spring stocks whilst rabbit stocks annually declined. The number of shot specimens of pheasant, hare, rabbit, wild duck and turkey also annually declined.

Table 10.7-2 Ungulates and small game

Species	Number						
	Spring stock	Plan	Shot*	Trapped*	Mortality*	Σ*	Restocking
Red deer	44 316	19 225	15 589	36	1 264	16 889	47
Fallow deer	9 068	4 093	2 965	51	194	3 210	102
Mouflon	10 867	4 622	3 162	245	214	3 621	138
Roe deer	92 680	28 016	20 141	23	4 540	24 704	56
Wild boar	29 290	28 782	28 992	129	579	29 700	96
Pheasant	190 279	163 816	127 856	1	7 475	135 332	116 683
Hare	203 123	35 646	21 905	7 097	5 468	34 470	521
Rabbit	1 192	25	34	0	216	250	51
Partridge	13 453	40	175	0	287	462	4 677
Wild duck	0	0	12 843	55	314	13 212	4 677
Wild turkey	290	68	84	0	12	96	163

Prepared by: NFC-FRI Zvolen.

The figures for large predators annually improved and continued to remain extremely high. Similar trend was observed in the category of other rare game species (except for marmot) shooting of which is strictly regulated. Out of 42 licences issued last year for bear shooting only 34 were realised. In addition, 121 wolves, 9 chamois and 1 wisent were shot.

Table 10.7-3 Rare game

Species	Number			
	Spring stock	Licensed shooting	Actual shooting	Mortality
Chamois	661	10	9	3
Bear	1 939	42	34	9
Wolf	1 563	0	121	1
Lynx	1 447	0	0	4
Wild cat	2 375	0	0	7
Otter	680	0	0	12
Grouse	1 474	0	0	0
Capercailzie	1 234	0	0	0
Hazel grouse	7 660	0	6	14
Marmot	1 001	0	0	0
Wisent	35	0	1	0
Beaver	727	0	0	2

Prepared by: NFC-FRI Zvolen.

Economics

The total earnings from hunting reached last year the sum of 247 559 000 SKK which with the total expenditure of 277 915 000 SKK produced fiscal deficit of 30 356 000 SKK. Profit of some 7 021 000 SKK was reported only from the self-managed hunting grounds of the Forests SR, s.e. The remaining subjects closed fiscal year with operating deficits.

10.8 RURAL DEVELOPMENT

The Rural Development Programme for 2007–2013 (RDP) represents one of the most important funding instruments for forestry at a national level. In 2008, first calls for proposal were announced. The funding was provided through 2 forestry measures:

- Measure 1.4: *Improvement of the economic value of forests* (Axis 1)
- Measure 2.1: *Restoring forestry potential and introducing prevention actions* (Axis 2)

The overview of submitted applications including the requested amount of eligible costs is given in Table 10.8-1.

Table 10.8-1 Overview of public funding for selected forestry measures (1st call)

Measure Call period	Accepted applications			Limits (EU + SR) = total public expenditure 2007 – 2013	% of requested funding from total limits 2007 – 2013
	N	Eligible costs	Requested contribution		
Measure 1.4 15 April 2008 – 31 July 2008	212	1 246,5 mil. SKK (41,4 mil. €)	623,3 mil. SKK (20,7 mil. €)	1 236, 4 mil. SKK (41 mil. €)	50%
Measure 2.1 1 February 200 – 30 June 2008	314	2 995 mil. SKK (99,4 mil. €)	2 889,1 mil. SKK (95,9 mil. €)	3 361, 9 mil. SKK (111,6 mil. €)	86%

Source: APA (http://www.apa.sk).

The applications for direct payments included the following:

- 64 applications submitted under the Measure: Natura 2000 payments – forest land. The applications for the total of 1 133 538 EUR (34 148 959 SKK) covered 14 148 ha of forest land included in the Sites of Community Importance.
- 54 applications submitted under the Measure: Forest-Environment payments. The applications covered some 20 643 ha of forest land for which 52 applications for the total of 2 294 681 EUR (69 129 573 SKK) were submitted.

10.9 RECREATION AND WELLNESS

Natural and rural landscapes rich in forest vegetation offer endless opportunities for great outdoors, recreation, wellness and cultural experience. Slovak forests are frequented by nature lovers, walkers, berry and mushroom pickers, hunters, and other outdoor enthusiasts. Roads in forests are used for mountain biking, cycling, horse riding, cross-country skiing and many other sporting pursuits.

The survey on the frequency of recreational use of forests showed that in 2006 95.2% of the interviewed visited forest at least once a year. In 2007, the number of visitors fell to 93.3% whilst the average number of recreational visits to forest reached 30.3.

In general, all forests regardless of ownership are open for public recreation except for military zones, game enclosures, and strictly protected areas. These forests account for 94% of the total forest area; however, the access to some of these forests is permitted only on way marked paths because of nature conservation interests. In addition, there is a certain percentage of mountain forests inaccessible due to terrain constraints (e.g. dwarf pine communities).

Table 10.9-1 Area of forest available for recreation

	Forest category	Total
Suburban recreational forests and other forests with distinct wellness, cultural and recreational values	Special-purpose forests	28 531 ha
Forests in and around spas	Special-purpose forests	2 499 ha
Forests open for public	All categories	approx. 1 800 000 ha
Total		approx. 1 830 000 ha

Source: Compendium of Slovak Forestry Statistics, NFC-IFRI Zvolen, 2009.
Prepared by: NFC-FRI Zvolen.

The implementation of two-functions-only policy introduced for the evaluation of forest stands has proven unsuitable since many forest stands fulfil equally well a number of different functions and thus their multifunctional properties should be duly recognized in planning, management and compensations paid for the provision of environmental services.

11. ASSESSMENT OF THE AGRICULTURAL DEVELOPMENT STRATEGY 2007–2013: CHAPTER FORESTRY

Key objectives and priorities

The Strategy defines a fundamental long-term objective of the sector: *Ensure sustainable management of forests based on the enhancement and sound exploitation of economic, environmental and social factors to meet the needs of the present and future, especially in rural areas.*

Key objectives

- To enhance economic viability of multifunctional forestry and sustainable delivery of multiple forest products, goods and services (*economic objective*).
- To ensure long-term improvement of health, vitality and resilience of forest ecosystems and conservation of their biodiversity (*environmental objective*).
- To enhance social and cultural aspects of forests and their contribution to improved quality of life (*social objective*).

Economic objective

Priorities

- To enhance sectoral competitiveness *(support for sectoral innovations and businesses; balancing natural and capital aspects of forest property and their exploitation; enhancement of economic effectiveness and employment; improvement of main and supporting forest operations; promotion of environmentally friendly technologies; support for forest research, science, and technology in line with the FP7 objectives).*
- To improve existing data on forest resources, goods and services provided by forest sector.
- To promote green energy initiatives based on wood.

Environmental objective

Priorities

- To promote environmentally friendly management practices in forests *(enhanced conservation of forest gene pool; conservation and further enhancement of forest biodiversity; implementation of environmentally friendly technologies).*
- To improve protection of forest resources – water quality and soils in particular.
- To enhance forest health and vitality.
- To mitigate the impact of global climate change on forest ecosystems.

Social objective

Priorities

- To enhance the contribution of forests and forestry to the development of rural economics *(support for the diversification of forestry and other operations associated with forest production; enhancement of social aspects of forests – wellness, recreation, aesthetics; support for forestry and hunting through rural tourism initiatives; promotion of effective training and education schemes).*
- To ensure the fulfilment of interests and needs of forest owners and local communities.

- To ensure the enhancement of non-production forest functions – protection of urban settlements and infrastructure (roads, agricultural land, etc.) against floods, avalanches, landslides, and noise.
- To ensure forest protection against fire.

INTERIM REPORT

Assessment of economic objectives and their priorities

The measures promoting sectoral innovations and business development are implemented through various research and IT projects and education programmes. The investments into modernization and informatization of forest enterprises are chiefly provided through RDP projects. These projects are also used to fund the enhancement of machinery and engineering capital. Nevertheless, additional funding is needed to reach the requested level. Under development or in progress are the projects on the restoration of forests damaged by windstorms and bark beetle, and also projects on the mitigation of climate change impact.

The ongoing forest certification encourages wider implementation of environmentally sound technologies. The implementation of measures improving productivity is partially affected by the ongoing financial crisis and thus their long-term effect can not be assessed without thorough performance analyses.

The RDP project also support the establishment of businesses providing all-round services to forest owners and lessees. The year 2008 saw the consolidation of data to accepted information standards and technical implementation / optimisation of data models including data download.

The volume of investments into research and science set by the Lisbon Strategy at 3% of GDP annually fell to 0.46%. The Government succeeded in securing the research employment, yet failed to implement government support schemes and provide institutional research funding.

The completion of the first cycle of the National Forest Inventory and Monitoring (NFIM) improved the scope and accuracy of data on forest resources. The completion was followed by the development of a flexible selection system for the survey of smaller forest units. The data on merchantable products and services are regularly updated in the Green Report and annual reports and accounts of particular subjects. The issue of quantification, assessment and perspective marketing of forest products and services is currently subject to elaborate national (and international) research outputs of which should be fully implemented by 2013 (including informatics).

No direct funding has been provided to support wood biomass production in forestry and other manufacturing industries. The RDP measure aimed to assist with the purchase of machinery and equipment for the production of wood biomass is yet to has been fully exploited. The tasks pending solution include those of absent legal framework for the establishment of energy plantations on subsidised agricultural land and effective management of existing forest stands on agricultural plots (so-called “white plots”).

Assessment of environmental objectives and their priorities

The typical contemporary phenomenon of areas dominated by spruce forests is the disintegration of protection forests infested by bark beetle. The escalating volume of incidental felling in protection forests contributing to soil damage and increased siltation of local watercourses have raised concerns of many forestry professionals thus pending immediate attention. The new system of identification, quantification and evaluation of environmental aspects of forests is under development. Among other outputs, it should also provide for future funding of protection functions of forests. The generation of sufficient funding nevertheless exceeds current means of the sector. In addition, the research into the improvement of alternative management regimes for forests with primary ecological-protection functions is of prime practical importance.

The main funding for projects of forest protection and revitalization is provided through particular measures of the RDP. The research into biological methods of bark beetle control is gaining on momentum with the establishment of the national monitoring network and elaboration of framework documents for the forest protection in 6 main spruce regions. In 2008, the NFC commenced the establishment of the *Centre of Excellence for Biological Methods of Forest Protection*. The project generated extra funding for the completion of research laboratory upgrade. The Government passed the Decrees No 990/2007 Coll complementing report on forest health and No 878/2008 Coll on legal and economic measures aimed at mitigation and subsequent restriction of bark beetle outbreaks in spruce forests.

Under way is the implementation of the results of research into the impact of global climate change on forest condition in Slovakia *(Impact of Global Climate Change on Forests of Slovakia)* completed in 2007. The research focused on management models and their modification to meet the climate change challenges. The NFC has been commissioned to develop a data set of management models for all forests of Slovakia.

Assessment of social objectives and their priorities

A number of events have been under way under the Priority *Support for the diversification of forestry and other operations based on forest products* including various PR campaigns and education programmes to improve public awareness on suitable economic alternatives, marketing strategies and forms of their implementation on the market. In the field of green energy, the RDP supports the purchase of technology and equipment for the management of biomass plantations and its subsequent processing for energy production. Technology investments have been accompanied by public campaigns to raise public awareness on the importance of renewable sources of energy.

A number of web-based online information sources (www.forestportal.sk, www.lesnickedni.sk, www.lesnapedagogika.sk) have become available to assist with the consulting, training and education of public on major forest-related issues. The advisory services covered all aspects of modern forestry including sustainable management of forest resources and forest-related legislation at both national and EU levels. These services were last year offered by the following institutions: NFC Zvolen; IFE SAS Zvolen; FF TU Zvolen; state administration o forests; and SF TANAP. In addition, other means such as forestry magazines (*Les/Slovenské lesokruhy, TATRY*), information leaflets, posters and websites were used. The education programmes focused on the promotion

of business activities and enhancement of rural economies (diversification, support for small and medium enterprises, forest-based tourism, protection of the environment, etc.). The research into interests and needs of forest owners and rural communities resulted in the identification of disadvantaged areas of forests at the level of basic spatial units.
As for immediate future, efforts should concentrate on the exploitation of environmental payments and compensations for restricted ownership rights and management of protected forests. The Forestry Department of the MA SR in cooperation with the Fire and Rescue Brigade Headquarters (MD SR) organize education programmes and events focused on the prevention of forest fires.

12. CONCLUSIONS AND RECOMMENDATIONS

A number of conclusions and recommendations have been drawn on the basis of the interim report. The main findings of the report figures are:

Forest health (spruce forests in particular) is deleterious and further declining.

Forestry professionals are nowadays most concerned about the compromised vitality and resilience of spruce forests and their nationwide observed decline. In the past, the majority of spruce decline theories were associated with the detrimental effect of air pollution. With respect to ongoing climatic changes the issue has gradually gained a much broader context and nowadays the impact of these changes is being linked to the accelerating aggression of harmful biotic agents, undesirable biodiversity changes, and last but not least, worsening stability of forest ecosystems gradually leading to their disintegration. On top of that, there are a number of other „decline associated" issues such as a shift towards higher forest age classes, unfavourable spatial structure of spruce forests and their regionally non-native character.
Towards future, the researchers predict an increase in the wind and bark beetle induced forest damage. Spruce decline will be further accelerated by fungi pathogens. Oak forests in southern Slovakia will suffer from more frequent attacks of gypsy moth as the periods between particular gradations are predicted to shorten. The pest is at the same time expected to spread to previously unaffected areas. Hence, the volume of incidental felling is anticipated to further grow. Conservationists favoured passive forms of forest management (intervention-free zones) will further exacerbate forest decline in protected areas. The felling figures for 2008 are alarming – 64% of the total felling volume were classed as incidental; at the same time, the annual allowable cut was topped by almost 26%. These figures are to be compared only to 2005 when the calamitous timber from the 2004 windthrow was being removed.

Recommended measures

- To ensure active alternative protection against biotic agents to limit the incidence and scale of natural disturbances, decrease incidental felling and improve the health of Slovak forests, sprucewoods in particular.
- To ensure sufficient public funding for the enhancement of ecological and structural stability of vulnerable ecosystems.
- To ensure sufficient public funding for the cessation of forest decline and restoration of forests in affected areas.

The earnings and revenue from other goods and services provided by the sector are insufficient.

The other earning and revenue accounted last year for 19.3% of the sectoral earnings and revenue. They were generated from the following: sale of Christmas trees, conifer branches and feed (other forest production); lumber production; tourism services; and machinery / equipment production including their maintenance (associate goods and services). In order to enhance economic competitiveness of the sector, considered a basic pillar of sustainable forestry, it is of vital importance to increase the income from

the aforementioned goods and services. It is thus perhaps not surprising that it has been included into the National Forest Programme as one of its priorities. To achieve this objective it is necessary to develop and implement effective tools for the compensation and marketing of previously unmerchantable goods and services provided by the sector and complete in 2009 the ongoing research into forest functions carried out by the NFC-FRI Zvolen.

Cooperation, event coordination and communication with forestry associated sectors are largely insufficient.

Connecting sectors with a direct link to the forest sector (e.g., forest damage, public recreation, nature conservation, forestry operations regulated by special legislation, etc.) is another key component of the effective approach to forest decline mitigation.
At the same time, effective inter-sectoral cooperation constitutes one of the key elements of sustainable stewardship of national forest resource and enhancement of sectoral competitiveness.

Forestry and nature conservation need to coordinate their interests.

It is of crucial importance to coordinate ambitions of nature conservation with actual economic conditions of Slovak forestry and connect these efforts with the development of legal, technical and economic preconditions for active yet differentiated management of forests in protected areas. Applied management regimes should respond to needs of particular forests and reflect their degree of naturalness and conservation. They should provide for improvement and effective conservation of rare habitats and species as well as ongoing natural processes.
With respect to the aforementioned, it is necessary to pay the immediate attention to the following:

- review of the current extent of protected areas;
- review of the list of proposed Sites of Community Importance;
- improvement of the cooperation between forest sector and nature conservation bodies;
- coordinate regulatory framework and ensure funding for alternative management regimes in protected areas;
- fair compensation of forest owners and lessees for a loss of income associated with nature conservation induced management restrictions.

It is of equal importance to reach common consensus on the development of economic tools for the provision of non-production forest functions and services delivered by the sector.

Forest sector and companies managing line utility structures need to find political consensus.

The pressure to find common political consensus on the compensation of restricted execution of rightful interests of owners and lessees of forests under and around utility structures has intensified after the accession of Slovakia to the EU.

Recommended measures

- To prepare detailed economic analysis of the impact of construction and operation of line utility structures on the sector including the estimation of incurred property losses.
- To draft customised guidelines for the estimate of property loss.

13. ANNEXES

13.1 TABLES

Table 13.1-1 Key sectoral fiscal indicators

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
1	Earnings and revenue	million SKK	4 531	13 816	15 409	15 121	11 851	11 822
2	Timber earnings		2 604	10 980	12 195	12 204	9 531	9 534
3	Other earnings and revenue		920	2 714	3 214	2 917	2 335	2 271
4	Direct costs of silvicultural treatment		565	1 661	1 869	1 780	1 117	1 258
5	Direct felling costs		916	5 393	6 441	6 220	5 118	5 142
6	Total treatment costs		1 094	2 210	2 465	2 495	1 539	1 688
7	Total felling costs		1 584	7 079	8 021	8 402	6 836	6 625
8	Total production costs		4 326	12 664	14 348	14 180	11 759	11 808
9	Material costs including depreciation		1 976	5 616	6 760	7 043	5 461	5 577
10	Depreciation		596	839	976	964	918	974
11	Personnel costs*		2 056	3 660	3 900	3 931	3 462	3 521
12	– labour costs		1 490	2 649	2 834	2 796	2 440	2 475
13	Economic result (profit, loss)		205	1 152	1 061	941	92	14
14	Total state subsidies		1 222	346	357	276	267	320
15	– subsidies for forestry operations		1 007	122	10	19	16	22
16	– subsidies for investments		108	84	162	86	62	73
17	– subsidies for other activities		107	140	185	170	189	225
18	Overdue assets		105	680	632	750	615	604
19	Overdue obligations to 31 December		10	71	94	135	50	60

Source: PIL 2009, Green Reports, MA SR questionnaire, analytical standards of state forest enterprises, Statistical Record Les V (MA SR) 5-01, Les F (MA SR) 7-01, Les V (MA SR) 1-04, Les D (MA SR) 2-04, Les P (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.

*Note: *including labour costs of service providers*

Table 13.1-2 Key sectoral fiscal indicators (continued)

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
1	Σ forest regeneration	ha	18 964	15 561	13 698	15 402	13 415	14 363
2	– artificial regeneration		15 500	9 256	9 027	9 984	8 539	8 896
3	Tending of young forests		16 968	11 348	10 789	10 731	1 868	3 679
4	Protection of young forests		141 920	68 357	65 055	71 745	43 199	48 511
5	Forest protection (direct costs)	1000 SKK	95 000	190 257	205 077	272 580	106 760	155 387
6	Cleaning	ha	34 143	28 383	25 595	25 338	6 975	18 338
7	Thinning		37 143	46 566	42 513	40 750	45 050	44 831

Table 13.1-2 – contd.

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
8	Σ timber felling	1000 m³	5 276	8 357	8 367	9 467	8 460	8 212
9	– conifer		2 777	5 150	5 344	6 355	5 311	5 079
10	– broadleaf		2 499	3 207	3 023	3 112	3 149	3 133
11	Σ incidental felling (out of 8)		2 611	4 266	4 701	6 115	4 801	4 557
12	– conifer		1 726	3 831	4 272	5 559	4 480	4 336
13	– broadleaf		885	435	429	555	321	221
14	Σ timber purchase		49	162	306	178	157	166
15	– conifer		30	75	81	91	81	91
16	– broadleaf		19	87	225	87	76	75
17	Σ timber sale		5 070	7 794	8 050	9 171	8 090	7 835
18	– conifer		2 723	4 764	4 959	6 145	5 204	4 829
19	– broadleaf		2 347	3 030	3 091	3 026	2 886	3 006
20	Stumpage sale (out of 17)		60	418	173	233	443	371
21	– conifer		25	308	140	204	391	314
22	– broadleaf		35	110	33	29	52	57
23	Σ domestic sales		4 720	7 409	7 761	8 800	7 615	7 300
24	– conifer		2 531	4 550	4 734	5 841	4 829	4 444
25	– broadleaf		2 189	2 859	3 027	2 959	2 786	2 856
26	Timber export (out of 17*)		350	385	289	370	475	535
27	– conifer		192	215	225	303	375	385
28	– broadleaf		158	170	65	67	100	150
29	Σ investments	million SKK	553	1 174	1 161	1 277	384	445
30	– construction works		279	520	495	753	210	250
31	– machinery and equipment		274	577	402	428	143	164
32	– other**		—	77	264	96	31	31
33	Length of forest roads to 31 December	km	27 796	21 196	21 198	21 244	21 2581	21 263
34	Length of unpaved forest roads to 31 December		14 937	15 894	15 908	15 921	15 923	15 933
35	Length of managed watercourses		23 640	18 559	18 510	18 506	18 503	18 502
36	Area of managed forest properties	1000 ha	1 977	2 007	2 007	2 007	2 007	2 007
37	Technical personnel***	persons	36 316	12 463	11 924	12 152	11 469	10 870
38	– workers		25 536	7 435	7 195	7 118	6 212	6 244
39	Average monthly earnings	SKK	3 419	17 232	18 455	19 044	17 952	19 043

Source: PIL 2009, Green Reports, MA SR questionnaire, analytical standards of state forest enterprises, Statistical Record Les V (MA SR) 5-01, Les F (MA SR) 7-01, Les V (MA SR) 1-04, Les D (MA SR) 2-04, Les P (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.

*Note: *export managed by individual forest owners (lessees).*

***e.g. FMP elaboration, other intangibles.*

****personnel of subjects managing forests; personnel of service providers and hired by forest owners self-managing their forests.*

Table 13.1-3 Aggregated fiscal indicators – state subjects

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
1	Earnings and revenue	million SKK	4 531	8 889	9 895	9 782	7 251	6 972
2	Timber earnings		2 604	6 502	7 031	7 185	5 231	5 034
3	Other earnings and revenue		920	2 374	2 864	2 597	2 035	1 921
4	Direct costs of silvicultural treatment		565	941	1 129	1 100	527	658
5	Direct felling costs		916	3 613	3 992	4 230	3 318	3 242
6	Total treatment costs		776	1 220	1 415	1 525	689	818
7	Total felling costs		970	4 559	5 284	5 852	4 536	4 175
8	Total production costs		4 326	8 714	9 758	9 560	7 609	7 558
9	Material costs including depreciation		1 976	4 166	5 250	5 563	4 111	4 177
10	Depreciation		596	489	606	614	618	624
11	Personnel costs*		2 056	2 280	2 409	2 431	2 062	2 071
12	– labour costs		1 490	1 631	1 734	1 686	1 400	1 400
13	Economic result (profit, loss)		205	175	137	222	-358	-586
14	Total state subsidies		1 115	125	174	178	172	200
15	– subsidies for forestry operations		1 007	13	10	15	11	12
16	– subsidies for investments		1	9	12	28	12	13
17	– subsidies for other activities		107	103	152	134	149	175
18	Overdue assets		105	550	512	610	465	464
19	Overdue obligations to 31 December		10	31	49	85	10	10

Source: PIL 2009, Green Reports, MA SR questionnaire, analytical standards of state forest enterprises, Statistical Record Les V (MA SR) 5-01, Les F (MA SR) 7-01, Les V (MA SR) 1-04, Les D (MA SR) 2-04, Les P (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.

*Note: *including labour costs of service providers.*

Table 13.1-4 Aggregated fiscal indicators – state subjects (continued)

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
1	Σ forest regeneration	ha	18 964	9 419	7 504	8 572	7 615	8 113
2	– artificial regeneration		15 500	5 185	4 950	5 520	4 789	4 896
3	Tending of young forests		16 968	8 151	7 373	7 320	668	1 179
4	Protection of young forests		141 920	37 528	36 152	39 611	24 099	25 511
5	Forest protection (direct costs)	1000 SKK	95 000	134 457	166 205	217 896	85 260	125 387
6	Cleaning	ha	34 143	19 634	16 844	17 441	4 475	12 738
7	Thinning		37 143	28 993	25 959	26 662	28 550	27 831
8	Σ timber felling	1000 m^3	5 276	4 767	4 661	5 405	4 860	4 512
9	– conifer		2 777	2 774	2 826	3 427	2 811	2 479
10	– broadleaf		2 499	1 993	1 835	1 978	2 049	2 033
11	Σ incidental felling (out of 8)		2 611	2 362	2 501	3 373	2 501	2 357
12	– conifer		1 726	2 095	2 257	3 010	2 380	2 336
13	– broadleaf		885	267	244	363	121	21
14	Σ timber purchase		49	12	146	8	7	6

Table 13.1-4 – contd.

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
15	– conifer	1000 m³	30	5	1	1	1	1
16	– broadleaf		19	7	145	7	6	5
17	Σ timber sale		5 070	4 511	4 603	5 388	4 640	4 285
18	– conifer		2 723	2 542	2 650	3 433	2 724	2 329
19	– broadleaf		2 347	1 969	1 953	1 955	1 916	1 956
20	Stumpage sale (out of 17)		60	47	40	37	243	121
21	– conifer		25	22	38	32	211	94
22	– broadleaf		35	25	2	5	32	27
23	Σ domestic sales		4 720	4 303	4 518	5 243	4 365	3 960
24	– conifer		2 531	2 480	2 608	3 325	2 529	2 124
25	– broadleaf		2 189	1 823	1 910	1 918	1 836	1 836
26	Timber export (out of 17*)		350	208	85	145	275	325
27	– conifer		192	63	42	108	195	205
28	– broadleaf		158	145	43	37	80	120
29	Σ investments	million SKK	553	1 024	963	1 077	304	355
30	– construction works		279	465	469	723	190	230
31	– machinery and equipment		274	502	316	338	113	124
32	– other**		0	57	178	16	1	1
33	Length of forest roads to 31 December	km	20 547	9 947	9 843	9 879	9 892	9 897
34	Length of unpaved forest roads to 31 December		14 937	7 684	7 697	7 693	7 695	7 705
35	Length of managed watercourses		23 640	18 559	18 510	18 506	18 503	18 502
36	Area of managed forest properties	1000 ha	1 976	1 123	1 114	1 109	1 097	1 086
37	Technical personnel***	persons	36 316	5 913	5 384	5 607	5 119	4 620
38	– workers		25 536	2 605	2 395	2 318	2 062	1 994
39	Average monthly earnings	SKK	3 419	22 669	25 253	25 146	23 041	25 054

Source: PIL 2009, Green Reports, MA SR questionnaire, analytical standards of state forest enterprises, Statistical Record Les V (MA SR) 5-01, Les F (MA SR) 7-01, Les V (MA SR) 1-04, Les D (MA SR) 2-04, Les P (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.

*Note: *export managed by individual forest owners (lessees).*

***e.g. FMP elaboration, other intangibles.*

****personnel of subjects managing forests; personnel of service providers and hired by forest owners self-managing their forests.*

Table 13.1-5 Aggregated fiscal indicators – non-state subjects

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1993	2006	2007	2008		
1	Earnings and revenue	million SKK	1 288	4 927	5 514	5 339	4 600	4 850
2	Timber earnings		990	4 478	5 164	5 019	4 300	4 500
3	Other earnings and revenue		187	340	350	320	300	350
4	Direct costs of silvicultural treatment		245	720	740	680	590	600
5	Direct felling costs		423	1 780	2 449	1 990	1 800	1 900
6	Total treatment costs		318	990	1 050	970	850	870
7	Total felling costs		614	2 520	2 737	2 550	2 300	2 450
8	Total production costs		1 258	3 950	4 590	4 620	4 150	4 250
9	Material costs including depreciation		353	1 450	1 510	1 480	1 350	1 400
10	Depreciation		109	350	370	350	300	350
11	Personnel costs*		546	1 380	1 491	1 500	1 400	1 450
12	– labour costs		396	1 018	1 100	1 110	1 040	1 075
13	Economic result (profit, loss)		30	977	924	719	450	600
14	Total state subsidies		111	221	183	98	95	120
15	– subsidies for forestry operations		111	109	0	4	5	10
16	– subsidies for investments		—	75	150	58	50	60
17	– subsidies for other activities		—	37	33	36	40	50
18	Overdue assets		296	130	120	140	150	140
19	Overdue obligations to 31 December		123	40	45	50	40	50

Source: PIL 2009, Green Reports, MA SR questionnaire, analytical standards of state forest enterprises, Statistical Record Les V (MA SR) 5-01, Les F (MA SR) 7-01, Les V (MA SR) 1-04, Les D (MA SR) 2-04, Les P (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.

*Note: *including labour costs of service providers.*

Table 13.1-6 Aggregated fiscal indicators – non-state subjects (continued)

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1993	2006	2007	2008		
1	Σ forest regeneration	ha	1 924	6 142	6 194	6 830	5 800	6 250
2	– artificial regeneration		1 766	4 071	4 077	4 464	3 750	4 000
3	Tending of young forests		870	3 197	3 416	3 411	1 200	2 500
4	Protection of young forests		12 295	30 829	28 903	32 134	19 100	23 000
5	Forest protection (direct costs)	1000 SKK	41 000	55 800	38 872	54 684	21 500	30 000
6	Cleaning	ha	5 480	8 749	8 751	7 897	2 500	5 600
7	Thinning		7 145	17 573	16 553	14 088	16 500	17 000
8	Σ timber felling	1000 m^3	966	3 590	3 706	4 062	3 600	3 700
9	– conifer		491	2 376	2 518	2 928	2 500	2 600
10	– broadleaf		475	1 214	1 188	1 134	1 100	1 100
11	Σ incidental felling (out of 8)		409	1 904	2 200	2 742	2 300	2 200
12	– conifer		358	1 736	2 015	2 550	2 100	2 000
13	– broadleaf		51	168	185	192	200	200
14	Σ timber purchase		0	150	160	170	150	160

Table 13.1-6 – contd.

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1993	2006	2007	2008		
15	– conifer	1000 m³	0	70	80	90	80	90
16	– broadleaf		0	80	80	80	70	70
17	Σ timber sale		929	3 283	3 447	3 783	3 450	3 550
18	– conifer		484	2 222	2 309	2 712	2 480	2 500
19	– broadleaf		445	1 061	1 138	1 071	970	1 050
20	Stumpage sale (out of 17)		100	371	133	196	200	250
21	– conifer		65	286	102	172	180	220
22	– broadleaf		35	85	31	24	20	30
23	Σ domestic sales		802	3 106	3 243	3 557	3 250	3 340
24	– conifer		394	2 070	2 126	2 516	2 300	2 320
25	– broadleaf		408	1 036	1 117	1 041	950	1 020
26	Timber export (out of 17*)		127	177	204	225	200	210
27	– conifer		90	152	183	195	180	180
28	– broadleaf		37	25	21	30	20	30
29	Σ investments	million SKK	71	150	198	200	80	90
30	– construction works		51	55	26	30	20	20
31	– machinery and equipment		20	75	86	90	30	40
32	– other**		—	20	86	80	30	30
33	Length of forest roads to 31 December	km	7 249	11 249	11 355	11 365	11 366	11 366
34	Length of unpaved forest roads		3 108	8 210	8 211	8 228	8 228	8 228
35	to 31 December		0	0	0	0	0	0
36	Length of managed watercourses	1000 ha	430	884	893	899	903	906
37	Area of managed forest properties	persons	5 900	6 550	6 540	6 545	6 350	6 250
38	Technical personnel***		4 350	4 830	4 800	4 800	4 150	4 250
39	– workers		5 600	12 324	12 858	13 816	13 850	14 600
	Average monthly earnings	SKK						

Source: PIL 2009, Green Reports, MA SR questionnaire, analytical standards of state forest enterprises, Statistical Record Les V (MA SR) 5-01, Les F (MA SR) 7-01, Les V (MA SR) 1-04, Les D (MA SR) 2-04, Les P (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.

*Note: *export managed by individual forest owners (lessees).*

***e.g. FMP elaboration, other intangibles.*

****personnel of subjects managing forests; personnel of service providers and hired by forest owners self-managing their forests.*

Table 13.1-7 Aggregated fiscal indicators – state subjects under MA SR

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
1	Earnings and revenue	million SKK	4 179	7 914	9 067	8 985	6 603	6 258
2	Timber earnings		2 301	5 972	6 462	6 650	4 818	4 567
3	Other earnings and revenue		884	1 942	2 605	2 335	1 802	1 676
4	Direct costs of silvicultural treatment		511	880	1 068	1 038	469	591
5	Direct felling costs		607	3 412	3 784	4 024	3 096	3 004
6	Total treatment costs		776	1 154	1 349	1 457	626	746
7	Total felling costs		970	4 333	5 058	5 625	4 295	3 922
8	Total production costs		4 016	7 827	8 977	8 769	6 964	6 847
9	Material costs including depreciation		1 853	4 004	5 094	5 400	3 967	4 016
10	Depreciation		557	405	523	518	529	525
11	Personnel costs*		1 928	2 079	2 201	2 233	1 890	1 877
12	– labour costs		1 397	1 491	1 592	1 550	1 281	1 264
13	Economic result (profit, loss)		163	87	90	216	-361	-589
14	Total state subsidies		1 101	56	109	113	95	117
15	– subsidies for forestry operations		994	0	0	6	0	0
16	– subsidies for investments			0	5	9	0	0
17	– subsidies for other activities		107	56	104	97	95	117
18	Overdue assets		105	479	448	545	409	408
19	Overdue obligations to 31 December		10	12	28	50	1	1

Source: PIL 2009, Green Reports, MA SR questionnaire, analytical standards of state forest enterprises, Statistical Record Les V (MA SR) 5-01, Les F (MA SR) 7-01, Les V (MA SR) 1-04, Les D (MA SR) 2-04, Les P (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.

*Note: *including labour costs of service providers*

Table 13.1-8 Aggregated fiscal indicators – state subjects under MA SR (continued)

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
1	Σ forest regeneration	ha	17 497	8 597	6 695	7 891	6 966	7 460
2	– artificial regeneration		14 308	4 553	4 320	5 001	4 275	4 380
3	Tending of young forests		14 084	7 637	7 269	7 178	500	1 000
4	Protection of young forests		136 220	34 662	33 397	36 904	21 730	23 150
5	Forest protection (direct costs)	1000 SKK	41 000	132 471	163 329	214 599	82 544	122 665
6	Cleaning	ha	30 775	17 672	14 946	15 565	2 947	11 200
7	Thinning		35 384	26 488	23 618	24 433	26 026	25 386
8	Σ timber felling	1000 m^3	4 800	4 386	4 258	4 983	4 500	4 152
9	– conifer		2 501	2 565	2 598	3 152	2 630	2 297
10	– broadleaf		2 299	1 821	1 660	1 831	1 870	1 855
11	Σ incidental felling (out of 8)		2 415	2 224	2 348	3 150	2 334	2 190
12	– conifer		1 572	1 985	2 132	2 812	2 234	2 190
13	– broadleaf		843	239	216	338	100	0
14	Σ timber purchase		49	12	6	8	5	5

Table 13.1-8 – contd.

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
15	– conifer	1000 m³	30	5	1	1	1	1
16	– broadleaf		19	7	5	7	4	4
17	Σ timber sale		4 732	4 129	4 229	4 970	4 282	3 927
18	– conifer		2 490	2 331	2 438	3 164	2 543	2 147
19	– broadleaf		2 242	1 798	1 791	1 806	1 739	1 780
20	Stumpage sale (out of 17)		60	31	25	27	222	100
21	– conifer		25	8	24	23	192	75
22	– broadleaf		35	23	1	4	30	25
23	Σ domestic sales		4 398	3 939	4 162	4 844	4 077	3 672
24	– conifer		2 307	2 282	2 409	3 072	2 403	1 997
25	– broadleaf		2 091	1 657	1 753	1 772	1 674	1 675
26	Timber export (out of 17*)		334	190	67	126	205	255
27	– conifer		183	49	29	92	140	150
28	– broadleaf	million SKK	151	141	38	34	65	105
29	Σ investments		541	803	769	916	191	241
30	– construction works		274	346	391	597	96	135
31	– machinery and equipment		267	453	261	316	94	105
32	– other**			4	117	3	1	1
33	Length of forest roads to 31 December	km	18 672	8 997	8 998	9 029	9 037	9 037
34	Length of unpaved forest roads to 31 December		13 474	6 979	6 990	6 976	6 968	6 974
35	Length of managed watercourses		22 958	17 867	17 855	17 855	17 853	17 852
36	Area of managed forest properties	1000 ha	1 829	1 039	1 031	1 027	1 017	1 007
37	Technical personnel***	persons	33 693	5 344	4 929	5 145	4 684	4 215
38	– workers		23 700	2 309	2 174	2 114	1 866	1 812
39	Average monthly earnings	SKK	3 456	22 837	25 342	25 099	22 768	24 968

Source: PIL 2009, Green Reports, MA SR questionnaire, analytical standards of state forest enterprises, Statistical Record Les V (MA SR) 5-01, Les F (MA SR) 7-01, Les V (MA SR) 1-04, Les D (MA SR) 2-04, Les P (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.

*Note: *export managed by individual forest owners (lessees).*

***e.g. FMP elaboration, other intangibles.*

****personnel of subjects managing forests; personnel of service providers and hired by forest owners self-managing their forests.*

*Table 13.1-9 Aggregated fiscal indicators – state subjects under MD SR and forestry colleges***

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
1	Earnings and revenue	million SKK	352	975	828	797	648	714
2	Timber earnings		303	530	569	535	413	467
3	Other earnings and revenue		36	432	259	262	233	245
4	Direct costs of silvicultural treatment		54	61	61	62	58	67
5	Direct felling costs		309	201	208	206	222	238
6	Total treatment costs			66	66	68	63	72
7	Total felling costs			226	226	227	241	253
8	Total production costs		310	887	781	791	645	711
9	Material costs including depreciation		123	162	156	163	144	161
10	Depreciation		39	84	83	96	89	99
11	Personnel costs*		128	201	208	198	172	194
12	– labour costs		93	140	142	136	119	136
13	Economic result (profit, loss)		42	88	47	6	3	3
14	Total state subsidies		14	69	65	65	77	83
15	– subsidies for forestry operations		13	13	10	9	11	12
16	– subsidies for investments		1	9	7	19	12	13
17	– subsidies for other activities			47	48	37	54	58
18	Overdue assets		0	71	64	65	56	56
19	Overdue obligations to 31 December		0	19	21	35	9	9

Source: PIL 2009, Green Reports, MA SR questionnaire, analytical standards of state forest enterprises, Statistical Record Les V (MA SR) 5-01, Les F (MA SR) 7-01, Les V (MA SR) 1-04, Les D (MA SR) 2-04, Les P (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.

*Note: *including labour costs of service providers.*

***before 2004 given as Key fiscal indicators of state subjects managed by other sectors than MA SR.*

*Table 13.1-10 Aggregated fiscal indicators – state subjects under MD SR and forestry colleges*****

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
1	Σ forest regeneration	ha	1 467	822	809	681	649	653
2	– artificial regeneration		1 192	632	630	519	514	516
3	Tending of young forests		2 884	514	104	142	168	179
4	Protection of young forests		5 700	2 866	2 755	2 707	2 369	2 361
5	Forest protection (direct costs)	1000 SKK	54 000	1 986	2 876	3 297	2 716	2 722
6	Cleaning	ha	3 368	1 962	1 898	1 876	1 528	1 538
7	Thinning		1 759	2 505	2 341	2 229	2 524	2 445
8	Σ timber felling	1000 m^3	476	381	403	422	360	360
9	– conifer		276	209	228	275	181	182
10	– broadleaf		200	172	175	147	179	178
11	Σ incidental felling (out of 8)		196	138	153	223	167	167
12	– conifer		154	110	125	198	146	146
13	– broadleaf		42	28	28	25	21	21

Table 13.1-10 – contd.

No	Indicator	Unit	Year				Estimate 2009	Outlook 2010
			1990	2006	2007	2008		
14	Σ timber purchase	1000 m³	0	0	140	0	2	1
15	– conifer		0	0	0	0	0	0
16	– broadleaf		0	0	140	0	2	1
17	Σ timber sale		338	382	374	418	358	358
18	– conifer		233	211	212	269	181	182
19	– broadleaf		105	171	162	149	177	176
20	Stumpage sale (out of 17)		0	16	15	10	21	21
21	– conifer		0	14	14	9	19	19
22	– broadleaf		0	2	1	1	2	2
23	Σ domestic sales		322	364	356	399	288	288
24	– conifer		224	198	199	253	126	127
25	– broadleaf		98	166	157	146	162	161
26	Timber export (out of 17*)		16	18	18	19	70	70
27	– conifer		9	14	13	16	55	55
28	– broadleaf		7	4	5	3	15	15
29	Σ investments	million SKK	12	221	194	161	113	114
30	– construction works		5	119	78	126	94	95
31	– machinery and equipment		7	49	55	22	19	19
32	– other**			53	61	13	0	0
33	Length of forest roads to 31 December	km	1 875	950	845	850	855	860
34	Length of unpaved forest roads to 31 December		1 463	705	707	717	727	737
35	Length of managed watercourses		682	692	655	651	650	650
36	Area of managed forest properties	1000 ha	147	84	83	82	80	79
37	Technical personnel***	persons	2 623	569	455	462	435	405
38	– workers		1 836	296	221	204	196	182
39	Average monthly earnings	SKK	2 944	21 096	24 292	25 670	25 975	25 951

Source: PIL 2009, Green Reports, MA SR questionnaire, analytical standards of state forest enterprises, Statistical Record Les V (MA SR) 5-01, Les F (MA SR) 7-01, Les V (MA SR) 1-04, Les D (MA SR) 2-04, Les P (MA SR) 6-01, Uč POD 1-01, Uč POD 2-01.

*Note: *export managed by individual forest owners (lessees).*

***e.g. FMP elaboration, other intangibles.*

****personnel of subjects managing forests; personnel of service providers and hired by forest owners self-managing their forests.*

*****before 2004 given as Key fiscal indicators of state subjects managed by other sectors than MA SR.*

Table 13.1-11 Regional Forest Offices – Administrative Code and other procedures 2008

Procedures regulated by Act No 326/2005 Coll on forests in the wording of the pursuant regulations	Administrative Code	Other procedures
	No	
Designation of protection forests (§ 16)	61	
Designation of special-purpose forests (§ 16)	57	
Approval on methods of forest restoration (§ 19, Sec. 3)	1	
Imposing forest protection measures [§ 28, Sec. 1, Letter i) and § 28, Sec. 4] should these extend behind the jurisdiction of a particular DFO	1	
Issuance and revocation of bans and restrictions on public use of forests and other forest exploitation (§ 30, Sec. 4) should these extend above the jurisdiction of a particular DFO	0	
Approval on forest management projects (§ 37)	5	
Establishment of forest units (§ 39, Sec. 3)	75	
Approval of plan drafts (§ 41, Sec. 13)	68	
Decision on plan adjustments (§ 43, Sec. 2)	90	
Approval on execution of incidental felling above the planned volume for a particular forest or ownership unit (§ 23, Sec. 9)	34	
Issuance of certified forest manager licences; administration of the Register of Certified Forest Managers; decision on licence and registration withdrawal (§ 47)	53	47
Execution of state authority under its jurisdiction (No of meetings with DFO)		46
Approval on draft of regional planning schemes (§ 6, Sec. 2)		2
Approval on proposals for protected deposit area and proposals for the enlargement of exploitation areas (§ 6, Sec. 2)		10
Binding standpoint on planning decisions affecting forest properties (§ 6, Sec. 3) should these extend above the jurisdiction of a particular DFO		4
Review of reports and protocol issuance (§ 41, Sec. 9)		79
Execution of state authority in forests (§ 62)		476
Forestry-related advisory services		515
Execution of other tasks defined by generally binding regulations on the execution Act No 326/2005 Coll on forests in the wording of the pursuant regulations*		238
Procedures based on other generally binding regulations	Administrative Code	Other procedures
	No	
Appeal procedures against DFO decisions (Act No 71/1967 Coll on administrative procedure)	75	
Issuance of procedural decisions (Act No 71/1967 Coll on administrative procedure)	142	
Procedures investigated by the prosecutor's office (Act No 153/2001 Coll on prosecution)	4	4
Decision on emergency correction measures (Act No 71/1967 Coll on administrative procedure)	8	3
Agenda and issuance of decisions on the access to information (Act No 211/2000 Coll on free access to information)	11	40
Execution of other tasks defined by generally binding regulations (No of standpoints issued by RFO – Act No 543/2002 Coll on nature and landscape protection)		18
Inspections conducted at RFO by inspecting bodies (Act No 10/1996 Coll on inspection in state administration)		29

Table 13.1-11 – contd.

Procedures based on other generally binding regulations	Administrative Code	Other procedures
	No	
Procedures investigated by Court (Act No 99/1963 Coll – Civic Court Order)		37
Participation in court hearings (Act No 99/1963 Coll – Civic Court Order)		16
Procedures associated with solving complaints (Act No 152/1998 Coll on complaints)		16
Total		15

Source: MA SR.

Table 13.1-12 District Forest Offices – other procedures 2008

Procedures regulated by Act No 326/2005 Coll on forests in the wording of the pursuant regulations	Other procedures
	No
Administration of the Forest Property Record; records kept for managing subjects and certified forest managers (§ 4, Sec. 1) – No of Record entries	1 515
Approval of municipal and zonal planning schemes (§ 6, Sec. 2)	439
Issuance of binding standpoints on planning decisions affecting forest propertie (§ 6, Sec. 3)	356
Issuance of binding standpoints on construction location and land use in development free forest belts (§ 10, Sec. 2)	463
Administration of Timber Mark Register and registers of other authorised timber marking methods (§ 23 Sec. 4) – No of Register entries	284
Issuance and revocation of bans and restrictions on public use of forests and other forms of forest exploitation (§ 30, Sec. 4)	3
Regulation and/or other adjustment of executive power (§ 32, Sec. 3)	5
Administration of forest management records (§ 49, Sec. 7)	62
Appointment and revocation of forest rangers (§ 52)	270
Organisation of forest ranger examinations and administration of forest ranger lists (§ 52)	214
Forestry-related advisory services	6 031
Cooperation with appropriate authorities on allocation and monitoring of public spending	950
Execution of state authority in forests (§ 62)	1 724
Execution of state authority in forests located on other than forest land (e.g. timber haulage inspections)	288
Execution of other tasks defined by generally binding regulations on the execution Act No 326/2005 Coll on forests in the wording of the pursuant regulations*	2 543
Procedures based on other generally binding regulations	Other procedures
	No
Issuance of standpoints related to soil protection in procedures on prevention and remedy of environmental damage on forest land (Act No 359/2007 Coll on prevention and remedy of environmental damage)	100
Execution of other tasks defined by generally binding regulations (No of standpoints issued by RFO – Act No 50/1976 Coll on building))	56
Execution of other tasks defined by generally binding regulations (No of standpoints issued by DFO– Act No 586/2003 Coll on advocacy)	119
Execution of other tasks defined by generally binding regulations (No of standpoints issued by RFO – Act No 543/2002 Coll on nature and landscape protection)	12
Procedures involving the prosecutor's office (Act No 153/2001 Coll on prosecution)	7

Table 13.1-12 – contd.

Procedures based on other generally binding regulations	Other procedures
	No
Inspections conducted at DFO by competent authorities (Act No 10/1996 Coll on inspection in state administration)	15
Procedures investigated by Court (Act No 99/1963 Coll – Civic Court Order)	7
Participation in court hearings (Act No 99/1963 Coll – Civic Court Order)	8
Administration of Record of Forest Reproductive Material (Act No 217/2004 Coll on forest reproductive material)	613
Procedures associated with solving complaints (Act No 152/1998 Coll on complaints)	8
Participation in committees on land reform projects (Act No 330/1991 Coll on land reform)	132
Issuance of standpoints on land reform projects (Act No 330/1991 Coll on land reform)	80
Participation in reprivatisation procedures (Act No 229/1991 Coll on adjustment of ownership rights to soil and other agricultural property)	147
Provision of extracts and information from the Register of Land Associations (Act No 71/1967 on administrative procedure)	570
Total	17 021

Source: MA SR.

Table 13.1-13 District Forest Offices – Administrative Code procedures 2008

Procedures based on Act No 326/2005 Coll on forests in the wording of the pursuant regulations	Decisions
	No
Designation of forest property (§ 3, Sec. 3)	73
Confirmation of forest property status (§ 3, Sec. 2)	240
Permanent exemption of forest properties (§ 5) – permanent change to forest property use	55
Permanent exemption of forest properties (§ 5) – permanent change of property category	379
Temporary exemption of forest properties (§ 5)	192
Restrictions in forest property use (§ 5)	81
Decision on the amount of compensation for a loss of non-production forest functions (§ 9)	277
Decision on penalties (§ 9, Sec. 10)	25
Decision on contributory payment returns (§ 9, Sec. 11)	2
Decision on a division of forest property should resulting property be less than 10 000 m^2 in size (§ 11)	4
Approval of extensions to a standard period of regeneration of non-stocked forest land (§ 20, Sec. 4)	75
Approval of extension to a binding period for the establishment of young forest (§ 20, Sec. 6)	59
Approval of timetables for incidental felling (§ 23, Sec. 6)	45
Decision on the use of other properties (§ 24, Sec. 3)	1
Decision on the use of forest roads (§ 25, Sec. 4)	0
Imposing forestry amelioration measures and decision on a method and payment of incurred costs (§ 26)	2
Imposing forest protection measures [§ 28, Sec. 1, Letter i) and Sec. 4]	43
Approval of exemptions from bans on specific uses of forest properties (§ 31 Sec. 6)	604
Imposing other measures on personal and property safety (§ 33, Sec. 2)	18
Imposing measures based on § 34, Sec. 3	1
Approval of certified forest managers for forest units over 2000 ha (§ 47, Sec. 6, Letter b)	13
Imposition and/or revocation of professional management of a particular forest (§ 49, Sec. 1)	8
Establishment and/or revocation of legal pawn rights (§ 49, Sec. 5)	0

Table 13.1-13 – contd.

Procedures based on Act No 326/2005 Coll on forests in the wording of the pursuant regulations	Decisions
	No
Ban on and/or restrictions of certain activities (§ 62, Sec. 2, Letter c)	5
Imposing measures on removal of irregularities identified by state forest inspection (§ 62, Sec. 2, Letter d)	139
Decision on forest offences and fines (§ 63, § 65)	271
Decision on other forest offences and fines (§ 64, § 65)	116
Imposing measures on the rectification of consequences of illegal procedures (§ 65, Sec. 3)	16
Procedures based on other generally binding regulations	Decisions
	No
Establishment or revocation of sources of forest reproductive material (§ 7, Sec. 7 of the Act No 217/2004 Coll on forest reproductive material)	191
Specification of the protection period for felling in approved sources of reproductive material (Act No 217/2004 Coll on forest reproductive material)	3
Imposing special measures (§ 30, Sec. 2 and § 31 of the Act No 217/2004 Coll on forest reproductive material)	11
Entry into the Register of Land Associations (§ 27, Sec. 1 of the Act No 181/1995 Coll on land associations)	75
Adjustment of entries into the Register of Land Associations (§ 27, Sec. 1 of the Act No 181/1995 Coll on land associations)	336
Decision on emergency correction tools (Act No 71/1967 Coll on administrative procedure)	3
Decision on procedural issues including all procedural decisions (Act No 71/1967 Coll on administrative procedure)	687
Provision of information (Act No 211/2000 Coll on free access to information)	316
Total	4 366

Source: MA SR.

Table 13.1-14 Execution of state authority on game management 2008 – Regional Forest Offices

A. Administrative Procedures

No	Procedure	Act No 71/67 Coll on administrative procedure	Number enquiry	Issued decisions					Other
				Approved	Rejected	Interrupted	Aborted	Unfinished	Other (e.g. withdrawn
a	b	c	1	2	3	4	5	6	7
1.	Appeal against DFO decision No 1 – 12, Table A, DFO analytical standard	§ 58	171	46	103	3	2	11	4
2.	Scrutiny of DFO decision No 1 – 12, Table A, DFO analytical standard	§ 65	18	0	3	0	2	3	10
3.	Reopened procedure – ordered	§ 62	4	0	2	0	1	0	0
	– approved		5	1	2	0	1	1	0
4.	Prosecutor's protest – retracted from DFO	§ 69	8	3	3	0	0	0	0
	– against RFO decision		2	0	2	0	0	0	0
5.	Decision investigated by Court	§ 70	40	8	10	0	4	13	0
6.	Total		248	58	125	3	10	28	14

B. Procedures outside Administrative Code

No	Procedure	Legal norm	No
a	b	c	1
1.	Handling complaints – justified/ unjustified	Act No 152/98 Coll on complaints	10 / 17
2.	Advanced hunting exams - applied / present / successful	Examination Order	32 / 26 / 24

Table 13.1-15 Execution of state authority on game management 2008 – District Forest Offices

A. Administrative Procedures

No	Procedure	Act No 23/62 Coll on hunting and Act No 71/67 Coll on administrative procedure	Number Enquiry	Issued decisions				Other (e.g. withdrawn
				Approved	Rejected	Interrupted	Aborted	
a	b	c	1	2	3	4	5	6
1.	Approval on hunting grounds, game enclosures and independent pheasantries	§ 5, 6, 7, 8, 13	89	44	14	17	13	4
2.	Approval on leasing contracts	§ 16 Sec. 1	193	169	7	26	10	1
3.	Conclusion of leasing contracts	§ 16 Sec. 4 Letter e)	1	0	1	0	0	0
4.	Conclusion of leasing contracts	§ 16 Sec. 4 Letter d)	46	43	1	0	1	1
5.	Approval on restriction of game numbers on non-hunting grounds	§ 29 Sec. 5	27	27	0	0	0	0
6.	Imposition of disciplinary action regulated by the Order of the MA SR No 46/1994 – 100 from 29 March 1994 establishing Unified Hunting and Disciplinary Code	§ 19 Sec. 1 JPDP	888	888	1	6	26	16
7.	Offences defined by Act No. 372/1990 Coll	—	3	2	0	0	1	0
8.	Σ appeals against 1–7	§§ 53, 56, 57 Administrative Code (AC)	138	26	61			
	of which: a) handled by DFO		1	0	0			
	b) handled by RFO	§§ 57, 58 of AC	39					
	c) settled outside appeal procedure	§§ 65, 66 of AC	5	3	1			
	d) ordered procedural review	§ 62 of AC	0	0	0			
	– based on the party to the procedure proposal		15	2	2			
	e) prosecutor's protest	§ 69 of AC	45	4+	3			

Table 13.1-15 – contd.

B. Procedures outside Administrative Code

260	Act No 23/62 Coll on hunting	Total number of enquiries	Of which		
			Approved	Rejected	Unfinished
b	c	1	2	3	4
Approval of Hunting Association Statutes	§ 4 Sec. 2	270	266	3	1
Approval of leading contracts	§ 16 Sec. 1	114	89	17	0
Approval of game management and hunting plans	§ 24 Sec. 2	5 094	5 082	12	0
Permission for unplanned hunting	§ 29 Sec. 4	289	286	3	0
Issuance (extension) of hunting licences	§ 31 Sec. 3	18 578	18 556	9	13
Registered complaints	—	8	0	8	0

C. Inspection

Type	No of inspections / No of hunting grounds	Inspections conducted by DFO officers	Inspections conducted by DFO volunteers
b	1	2	3
Inspections of game husbandry	280 / 260	255	25

D. Disciplinary agenda of DFO related to hunting

I. Actions	Total Number
b	1
Σ disciplinary actions 2008	876
of which police investigated	26
Disciplinary actions opened in 2008	836
Disciplinary actions completed by the 1st degree decision of DFO	823
Unfinished disciplinary actions to 1 January 2009	21
II. Overview of disciplinary actions to 31 December 2008	Total Number
b	1
Violation of provisions on game selection (inappropriate hunting, failure to provide trophy, faulty treatment)	776
Other	91

13.2 Bibliography

1. Barančíková G. *et al*. 2009. Monitoring of Slovak soils. *Actual condition and development of monitored soils: basis for their protection and further exploitation*. Results from PMS Soil 2002–2006 (3rd cycle). 1st edition. Research Institute for Soils and Soil Protection. 200 p. ISBN 978-80-89128-54-9.
2. FAO. 2006. *Global planted forests thematic study: results and analysis, by A. De1. L. Lungo, J. Ball and J. Carle*. Planted Forests and Trees Working Paper 38. Rome (also available at ww.fao.org/forestry/site/10368/en).
3. FAO. 2006. *Global Forest Resources Assessment 2005 – Progress towards sustainable forest management*. Rome, 320 p.
4. FAO. 2007. *State of the World's Forests 2007*. Rome 2007, 144 p.
5. FAO & UNECE. 2008. *Forest Products Annual Market Review*. Geneva Timber and Forest Study Paper 23, 153 p. ISBN 978-92-1-116990-4.
6. *Fifth Ministerial Conference on the Protection of Forests in Europe*. Conference Proceedings, 5–7 November 2007, Warsaw, Poland, 272 s. ISBN 83-922396-9-5.
7. *Forest inventory*. 1960. Ministry of Agriculture, Forestry and Water Management, 614 p.
8. *Forest inventory of Slovakia 1949–1953*. 1956. Slovak Agriculture Press, Bratislava, 555 p.
9. NFC-IFRI. 2008. *Compendium of Slovak forestry statistics (AFMP, PFI)*. 31 December 2008. Zvolen.
10. Konôpka J. *et al*. 1999. *Analysis of trends and current status of forestry in the Slovak Republic (1990–1998)*. Forestry Studies No 55. Forest Research Institute Zvolen, 268 p. ISBN 80-07-01173-0.
11. Kunca A. *et al*. 2009. *Incidence of harmful agents in Slovak forests in 2008 and outlook for 2009*. Research Paper. NFC-FRI Zvolen, 101 p. ISBN 978-80-8093-052-3.
12. Moravčík M. *et al*. 2007. *Trends in Slovak agriculture, food production, forestry and rural development – chapter forestry*. Report. NFC-FRI Zvolen, 66 p.
13. Moravčík M. *et al*. 2008. *Green Report 2008*. MA SR Bratislava, NFC-FRI Zvolen, 164 p. ISBN 978-80-8093-018-9.
14. Moravčík M. *et al*. 2008. *Sectoral developmental strategy*. Report. NFC-FRI Zvolen. 85 p.
15. Moravčík M., Novotný J., Toma P. *et al*. 2007. *National Forest Programme*. MA SR, NFC – FRI Zvolen, 63 p. ISBN: 978-80-8093-036-3.
16. Moravčík M., Toma P., Král F. 2008. *National Forest Programme Action Plan*. *In* LES / Slovenské lesokruhy No 7-8, 2008, 24 p.
17. MCPFE & FAO & UNECE. 2008. *State of Europe's Forests 2007*. 247 p. ISBN 83-922396-8-7.
18. Pavlenda P. *et al*. 2009. *Monitoring of forests and environmental interactions*. Forest Focus. BioSoil. PMS Forests. NFC – FRI Zvolen, 110 p.

19. Sušková M. *et al.* 2009. *Inspection of forest reproductive material*. Report. NFC-FRI Zvolen. 51 p. + 16 supplements

20. Šmelko Š., Šebeň V., Bošela M., Merganič J., Janković J. 2008. *National inventory and monitoring of Slovak forests 2005–2006*. *In* LES / Slovenské lesokruhy, No 5–6, 2008, 15 p.

21. UNECE. 2005. *European forest sector outlook study 1960–2000–2020 – main report*. Geneva Timber and Forest Study Paper No. ECE/TIM/SP/20. Geneva, United Nations Economic Commission for Europe. 234 p.

13.3 Contributors

Editor
Ing. Martin Moravčík, CSc.

National Forest Centre
Ing. Marián Radocha, CSc., Ing. Jozef Tutka, CSc., doc. Ing. Jozef Konôpka, CSc., Ing. Karol Burgan, Ing. Peter Hrbáľ, CSc., Ing. Peter Kaštier, dr. Ing. Bohdan Konôpka, Ing. Miroslav Kovalčík, Ing. Andrej Kunca, PhD., Ing. Roman Longauer, CSc., Ing. Valéria Longauerová, Ing. Ľudmila Marušáková, Ing. Milan Oravec, CSc., Ing. Pavel Pavlenda, PhD., Ing. Milan Sarvaš, PhD., Ing. Zuzana Sarvašová, PhD., Ing. Matej Schwarz, Ing. Miriam Sušková, PhD., Ing. Roman Svitok, CSc., PhD., Ing. Milan Zúbrik, PhD., Ing. Mária Žiaková, CSc.

Department of Forestry and Wood processing of the SR Ministry of Agriculture
prof. Ing. Július Novotný, CSc., Ing. Pavel Toma, Ing. Pavol László, Ing. Marián Ondrejčák, Ing. Katarína Šimová, Ing. Juraj Balkovič, Ing. Boris Greguška, PhD., RSDr. Jozef Hlásnik, Ing. Eva Hušťáková

Photographs
prof. Ing. Vladimír Čaboun, CSc.

Graphics & design
Ľuboš Frič, Ľubica Pilná

Translation
Ing. Zuzana Kmeťová

Published by
National Forest Centre – Forest Research Institute Zvolen

Contributing partners
Ministry of Agriculture of the Slovak Republic
Ministry of Economy of the Slovak Republic
Ministry of the Environment of the Slovak Republic
Ministry of Defence of the Slovak Republic
Ministry of Health of the Slovak Republic
Statistical Office of the Slovak Republic
Association of the Forest Sector Employers of the Slovak Republic
Forests of the Slovak Republic, s.e. Banská Bystrica
Forests and Estates Ulič, state enterprise
State Forests of the Tatra National Park
Military Forests and Estates of the Slovak Republic, s.e. Pliešovce
Council of the Non-state Forest Owner Associations
Forestry College Banská Štiavnica
School Forests Kysihýbel
Forestry College Liptovský Hrádok
Forestry College Prešov – Cemjata
School Forests of FC Prešov – Cemjata
Poltár College
Bijacovce College
Banská Štiavnica College
Joined College Ivanka pri Dunaji
Forestry Apprenticeship School Tvrdošín
Agricultural Paying Agency
Technical University Zvolen
University Forest Enterprise Zvolen
Institute of Forest Ecology of the Slovak Academy of Sciences
Svätý Anton Museum
Slovak Forestry Chamber
Slovak Hunting Union