



MINISTRY OF THE ENVIRONMENT OF THE SLOVAK REPUBLIC



**STATE OF THE ENVIRONMENT REPORT
SLOVAK REPUBLIC 2005**





*Aiming to the sustainable development, it is important to **create a balance between various activities of the society**, social-economical development and loading limit of the environment or particular elements of environment respectively, while respecting the self-renewable capacities of natural resources.*

National Environmental Action Programme II, adopted by the Slovak Government Decree No. 1 112/1999

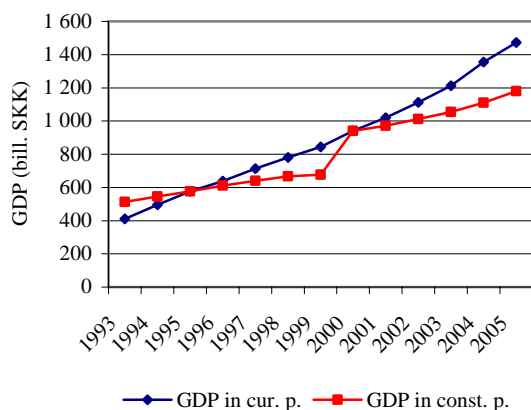
STATE OF THE ENVIRONMENT - CAUSES AND CONSEQUENCES

• ECONOMIC SECTORS AND THEIR IMPACT ON ENVIRONMENT

Economy trend in the SR

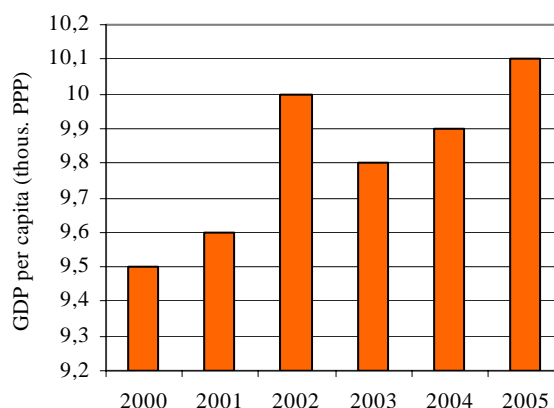
In 2005, gross domestic product (GDP) at current prices was 1 472.1 bill. SKK and in reality increased by 6.1 %, compared to the previous year. Industry contributed with 29.8 % to the generated GDP, while agriculture contributed with 4.5 %, and construction that from all sectors showed the greatest year-to-year increment (9.8 %) with 6 %.

Trends in gross domestic product in SR*



* till 1999 at const. p. of 1995, from 2000 at const. p. of 2000
Source: SO SR

Trends in GDP per capita at PPP (constant prices of 2000)



Source: SO SR

GDP per capita in the SR at the purchase power parity (PPP) in 1999 was 47 % of the EU-25 average, and its share in 2005 increased to 55 %. Greatest regional share of GDP per capita at PPP in

2003 was recorded in the Bratislava region, with the share of 115.9 %. Other regions did not exceed 50 % of the EU-25 average, with East Slovakia reaching only 38.8 %.

Of total GDP volume, **private sector** produced 90.6 %, which was by 0.5 % more than in 2004. Private sector contributed to total GDP by 99.7 % from commercial activities, 99 % from agriculture, 85.9 % from industry, 63.6 % from transport and 46.7 % from forest management.

Export of goods and services in 2005 at current prices reached 1 133.9 bill. SKK and in comparison to the previous year, export of goods and services was accelerated by 13.5 %. **Import of goods and services** in 2005 at current prices reached 1 199.5 bill. SKK and grew by 15.5 % on the year-to-year basis.

In 2005, **foreign direct investments (FDI)** to the SR economy were 20 123 bill. SKK, and by the end of 2005, the cumulative volume of foreign direct investments in the SR was 417.02 bill. SKK.

Industry

♦ Share of manufacturing in GDP generation

Pursuant to the Branch classification of economic activities, there are three basic groups involved in industry: **C** - Mining and quarrying, **D** – Manufacturing and **E** – Electricity, gas and water production and distribution.

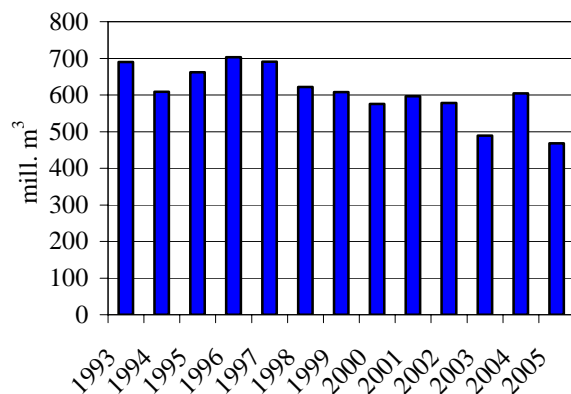
Manufacturing strengthened its positions within industry. Its share in total revenues from the industry's turnover in 2005 reached 83.8 %, while electricity, gas and water production and distribution reached 15.3 % and mineral exploitation was 0.9 %. **Total share of industry in GDP generation in 2005 was 28.6 %.**

♦ Demand of industrial production on the exploitation of resources

In 2003, share of industry in the SR in final energy consumption was 42.2 % (in the EU-25 countries it was 28 %), while in 2004 the final energy consumption in industry in the SR decreased to 37 %.

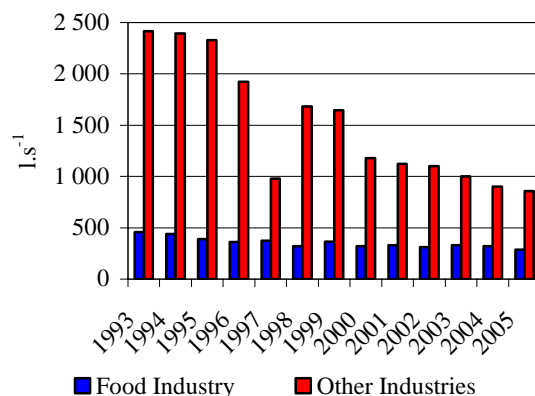
Since 1993, **surface water abstraction** by industry shows a falling tendency. In 2005, surface water abstraction by industry dropped by 32.2 %, compared to 1993. Trends in **underground water abstraction** by industry show analogical tendency.

Development in consumption of surface water in industry



Source: SHMI

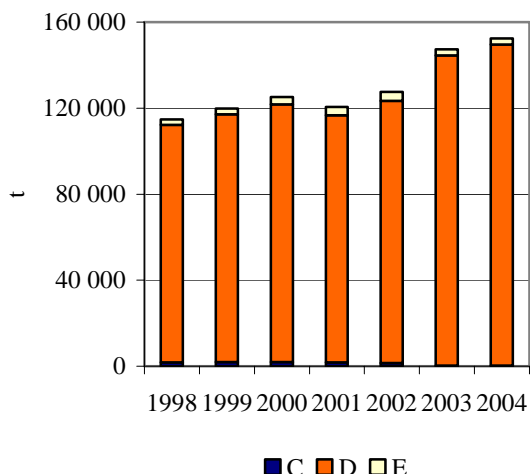
Advancement in underground water consumption in industry



Source: SHMI

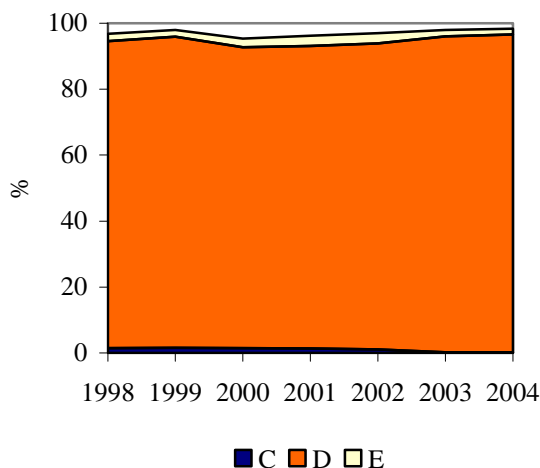
CO emissions from industry in 2004 made up as much as 98.4 % of large-size and middle-size stationary sources and emissions **increased** by 32.7 %, compared to 1998. **SO₂ emissions** from industry in 2004 made up as much as 99 % of large-size and middle-size stationary sources and emissions **decreased** by 41.2 %, compared to 1998.

CO emissions trend from stationary industrial sources



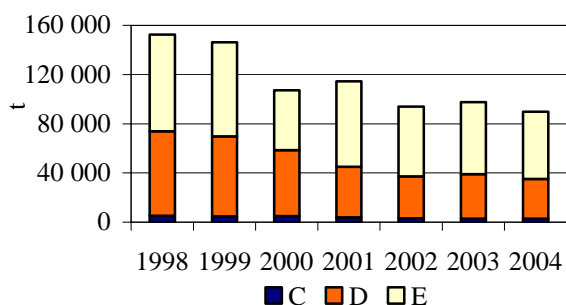
Source: SHMI

Share of CO emissions from stationary industrial sources on the overall CO emissions



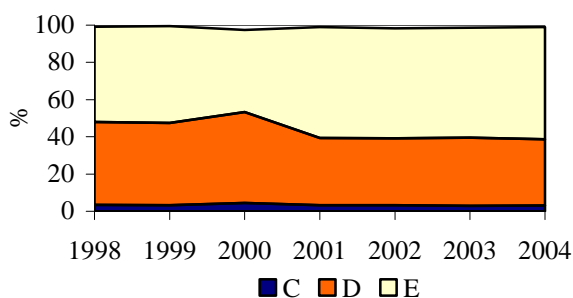
Source: SHMI

SO₂ emissions trend from stationary industrial sources



Source: SHMI

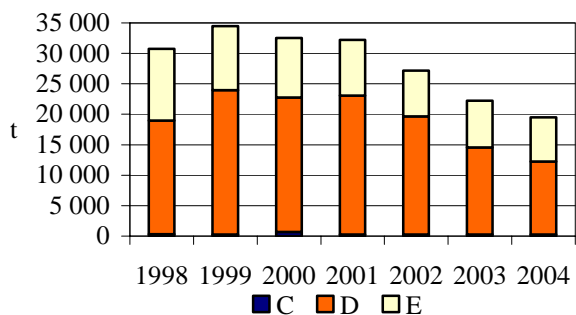
Share of the SO₂ emissions from stationary industrial sources on the overall SO₂ emissions



Source: SHMI

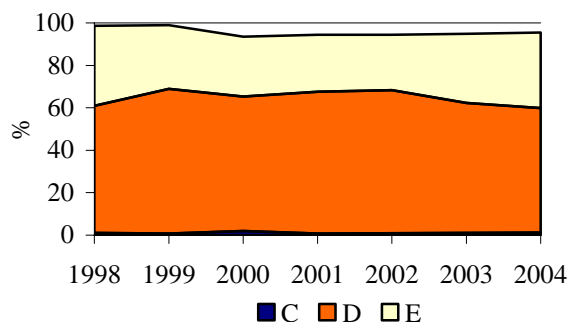
NO_x emissions from industry in 2004 made up as much as 96.3 % of large-size and middle-size stationary sources and emissions **decreased** by 31 %, compared to 1998. **SPM emissions** from industry in 2004 made up as much as 95.5 % of large-size and middle-size stationary sources, and emissions **decreased** by 36.6 %, compared to 1998.

SPM emission trend from stationary industrial sources



Source: SHMI

Share of the SPM emissions from stationary industrial sources on the overall SPM emissions

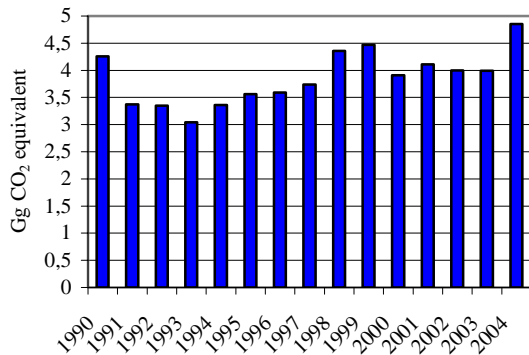


Source: SHMI

Heavy metal emissions by industry have had a decreasing tendency since 1990. However, in 2004 there was an increase in the Pd emissions from incineration processes in industry, as well as in the Cd emissions from industrial technologies, compared to the previous year.

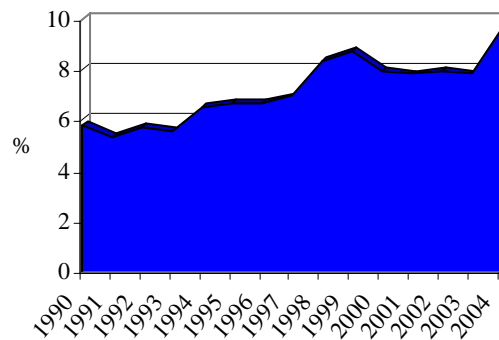
Aggregated greenhouse gases emissions from industrial processes in 1990 - 2004 had a slightly rising trend. Compared to 1990, in 2004, these emissions from industrial processes increased by 13.8 %.

Trend of aggregated emissions of the greenhouse gases from industry (Gg CO₂ equivalent)



Source: SHMI

Share of the emissions of greenhouse gases from industry on the greenhouse gases overall emissions



Source: SHMI

In 2005, **industry alone generated 6 048 208 tons of waste** (64.5 % share in total waste generation), including **304 266 tons of hazardous waste** and **5 743 943 tons of other waste**.

Extraction of minerals

Changes that occurred in 2005 lead to the reduction in the exploitation of the majority of minerals. Increase trend was in the extraction of limestone and cement raw material.

Trend in extraction of minerals between 1998 – 2005

Extracted mineral	Measure unit	1998	1999	2000	2001	2002	2003	2004	2005
Brown coal and lignite	kt	4 288.9	4 041.8	3 947.6	3 761.9	3 661.2	3 508.8	3 101.7	2 513.0
Crude oil, including gasoline	kt	60.2	60.264	56.892	54.085	51.770	47.943	42.082	33.15
Natural gas	thous. m ³	262 043	218 569	227 038	195 938	200 812	186 797	178 088	150 851
Ores	kt	1 088.4	1 083.7	1 104.0	1 047.5	719.2	706.5	977.8	651.89
Magnesite	kt	1 572.8	1 423.8	1 535.2	1 573.0	1 464.5	1 640.9	1 668.9	1 555.0
Salt	kt	102.1	100.2	101.8	104.0	102.7	104.8	104.3	105.1
Building stone	thous. m ³	4 700.2	3 473.9	3 540.4	3 881.6	4 478.3	4 503.3	4 527.5	6 016.2
Gravel sands and sands	thous. m ³	5 427.9	2 874.4	2 443.3	2 689.4	2 933.1	3 872.7	3 951.7	4 870.1
Brick clay	thous. m ³	561.1	480.3	529.5	442.1	433.4	507.4	591.7	466.8
Limestone and cement raw materials	thous. m ³	515.4	294.1	320.2	302.3	332.7	384.9	569.5	690.6
	kt	1 435.6	1 398.1	1 419.5	1 614.6	1 547.4	1 649.4	3 479.8	3 743.3
Limestone for special purposes	thous. m ³	778.3	200.9	299.4	292.3	833.0	941.4	14.9	28.50
	kt	350.0	320.0	345.0	325.0	0.0	0.0	1057.5	834.80
High-content limestone	kt	4 187.3	4 603.4	4 176.5	4 211.1	4 356.8	4 093.0	3 767.3	4 053.5
Other raw materials	thous. m ³ (surface)	742.9	896.1	983.7	1 026.9	1 216.8	1337.2	567.8	509.1
	kt (underground)	150.1	120.0	127.7	142.3	86.4	86.2	91.6	106.5
	kt (surface)	0.0	0.0	2.4	32.30	31.1	11.8	1 143.9	1 024.0

Source: MMO SR

Brown coal and lignit extraction in 2005 dropped again. Individual mines showed 2 513.03 kt of extracted volumes. This is the lowest extraction volume since 1997. Compared to 2004 the number of workforce in this industry decreased by 13.8 %.

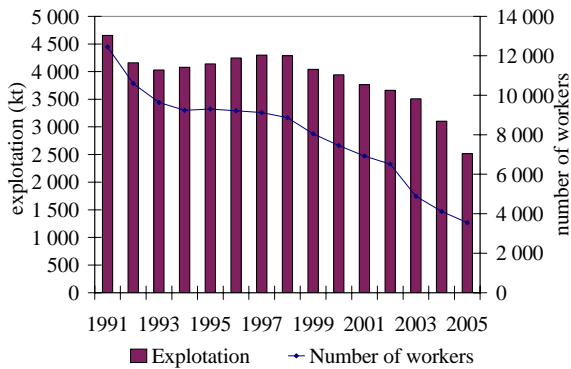
Crude oil, gasoline, and natural gas extraction was also decreased, compared to the previous year. Total extracted volumes included 2 457 t of non-paraffin crude oil, 28 156 t of semi-paraffin crude oil, and 2 535 t of gasoline. Natural gas stores decreased by 150 851 thous. m³.

Exploitation of **ore minerals** decreased. The Siderit, Ltd. company in Nižná Slaná has the biggest share on all ore volumes, (603.5 kt) The Slovenská banská Ltd. company in Hodruša Hámre, contributed by 19.29 kt, while Rudňany contributed by 29.1 kt.

In 2005, there was a slight increase in exploitation of **non-ore raw material**. However, 1 555 kt of *magnesite* was extracted at three significant magnesite deposits (Jelšava, Lubeník, Hnúšťa), which is a reduction by 113.9 kt, compared to the previous year. In 2005, exploitation of *rock salt* (Solivary, Prešov) was at the level of 105.1 kt of salt in salt water, from which 99.9 kt of salt was produced.

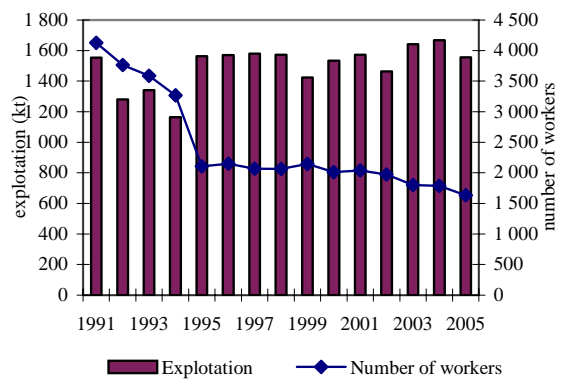
Basic indicators of mineral extraction trend in SR between the years 1991 – 2005

Trend in brown coal and lignite extraction



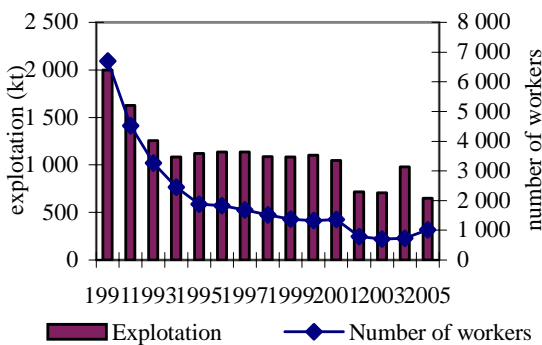
Source: MMO SR

Trend in magnesite extraction



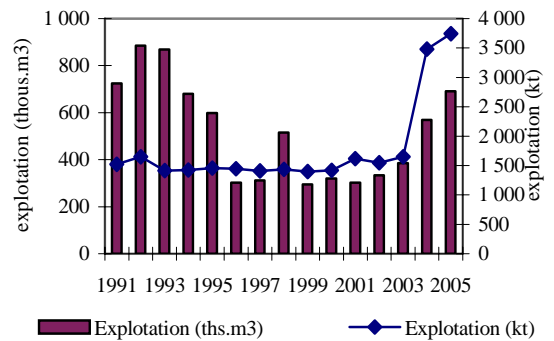
Source: MMO SR

Trend in ores extraction



Source: MMO SR

Trend in limestone and cement materials extraction



Source: MMO SR

◆ **Environmental impact of mineral exploitation**

Mineral extraction is demanding in terms of environmental protection. SGIDS has been commissioned, to keep a register of abandoned mining works. As of December 31, 2005, the register had 16 517 objects left after abandoned mining activity.

The Central mining office keeps records of current mining works including **dumps** and **tailings dumps**. As of December 31, 2005, there were 107 active (78 in the extraction site, 29 outside the extraction site) and 50 inactive **dumps** (40 in the extraction site, 10 outside of it) left after the extraction of minerals, and also 38 active (21 in the extraction site, 17 outside the extraction site) and 12 inactive (5 in the extraction site, and 7 outside the extraction site) **tailings dumps**. Compared to the previous year, territory with located dumps increased, while the area of tailings dumps decreased only slightly.

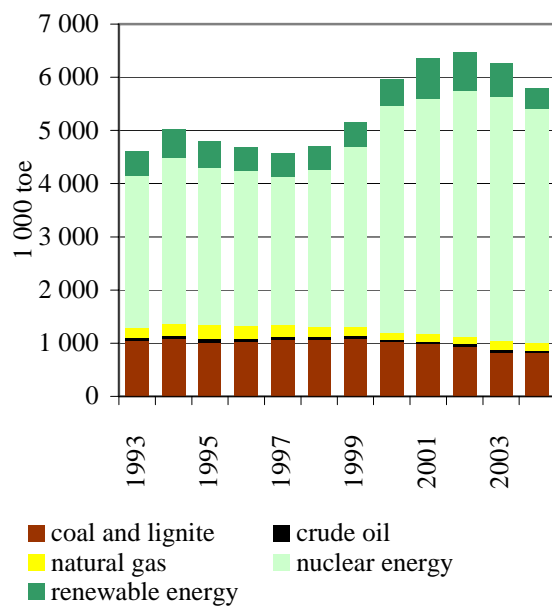
Energy management, Heat production and Gas management

◆ Energy sources balance

SR ensures almost 90 % of the primary energy sources (PES) through purchase outside the internal EU market. The only significant domestic energy source is brown coal, which covers 79 % of brown coal consumption needed for electricity and heat production. Domestic exploitation of natural gas and crude oil is not significant.

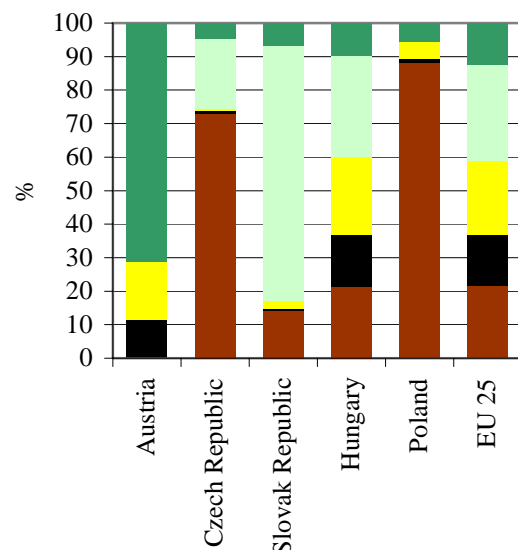
Structure of exploited PES in the SR since 1996 is typical for the increased consumption of gas fuels and renewable energy sources at the cost of consumed solid fuels, also due to more strict emission limits. Utilization of nuclear fuels in recent years plays an exceptionally significant role in the PES structure of the SR. We expect only a slight increase in crude oil consumption, especially in the sector of transportation, due to the replacement of crude oil-based components with bio-fuels.

Trend in used primary energy sources in the SR



Source: EUROSTAT

Structure of primary energy sources in 2004 – international comparison



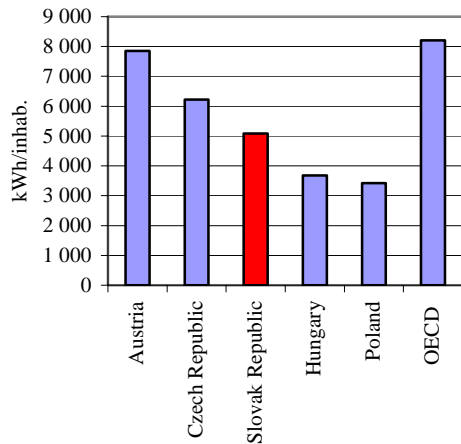
Source: EUROSTAT

Consumption of primary energy sources per capita in the SR is still lower than in the EU 15 countries, which is less than 150 PJ per capita. Although it showed some increase in the last year, it currently does not reach more than 90 % of the EU average.

Compared to the developed OECD and EU countries, Slovakia has a low electricity consumption per capita, which is caused mainly by low electricity consumption by households and services.

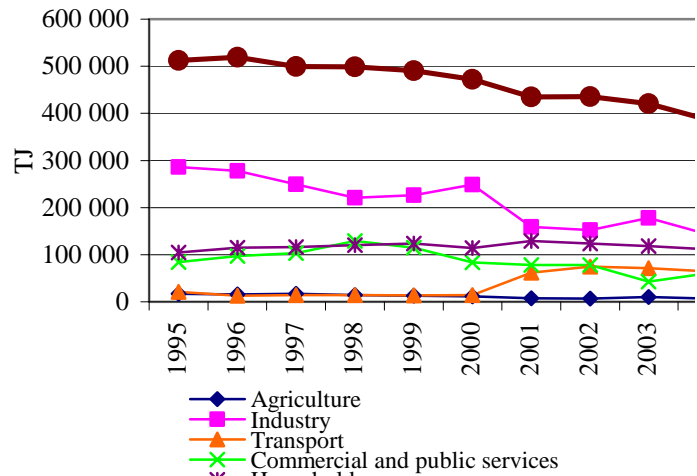
Of all sectors, industry has the greatest final consumption in all fuel types in the SR. Compared to the other EU countries, a relatively low household consumption has not changed, while the sector of transportation shows increased energy consumption since 2000.

Electricity consumption per capita in 2004 – international comparison



Source: IEA

Trend of final energy consumption in sectors of economy



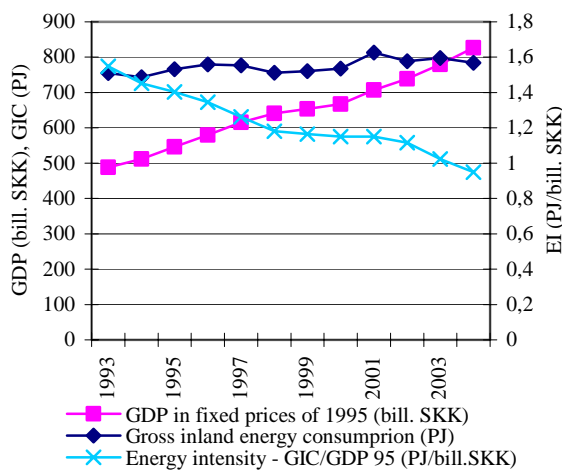
Source: SO SR

◆ **Energy intensity**

Energy intensity (EI) is an important economic indicator also used to make international comparisons. It is defined as the share of the gross inland energy consumption (GIC) on the generated GDP ($GIC/GDP=EI$). Over the recent years, the GDP growth was accompanied by a balanced consumption of energy sources and a drop in the final energy consumption. Since 1993, energy intensity has been decreasing every year by 4 %, caused mainly by more development in the value added production, as well as by introduction of rationalization measures in production and consumption alike.

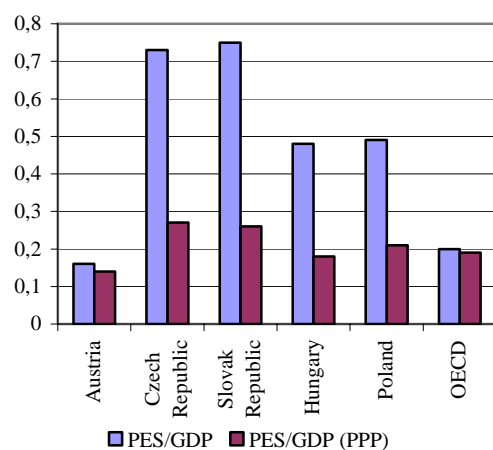
Notwithstanding this positive trend, the EI in Slovakia is still about 1.5-times higher than the average consumption of the OECD countries.

Trend in selected indicators of energy intensity in SR



Source: SO SR

Energy intensity in 2004 – international comparison



Source: IEA

Note:

PES/GDP (toe/USD) – energy intensity by PES,

PES/GDP – PPP (toe/USD) - energy intensity by PES, expressed through the purchase power parity (PPP) that evaluates movements in exchange rates in prices over long time periods. Thus, the differences among individual countries are reduced.

◆ Electricity power management

Present composition of installed outputs of the SR sources is equally distributed among the nuclear, heat, and hydro power plants. More than a half of the electricity production is provided by nuclear power plants, while thermal power plants represent app. 30 % of the production, the rest of the produced electricity comes from hydro power plants.

Generation station capacity according to the type in SR (MW)

Indicator	1998	1999	2000	2001	2002	2003	2004
Nuclear power plant	2 200	2 200	2 640	2 640*	2 640*	2 640*	2 640*
Thermal power plant	3 159	3 132	3 144	3 190*	2 929*	3 319*	3 120*
Hydro power plant	2 417	2 419	2 420	2 470*	2 505*	2 507*	2 518*
Total	7 777	7 752	8 205	8 300*	8 074*	8 466*	8 278*

Source: SO SR, MoEC SR

Note: The output of the thermal power plants includes also the output of the gas-fired and combustion power units.

* Data taken from revised methodology SO SR 2002

In 2004, total produced electricity in the SR energy network dropped on the year-to-year basis by 1.86 % to 30 567 GWh.

Overall domestic electricity consumption dropped on the year-to-year basis by 0.65 % to 28 705 GWh, which is 187 GWh less than in 2003. Domestic electricity consumption was fully covered from the internal production. Availability of resources made it possible to locate part of the produced electricity on international markets, reaching the balance of 1 862 GWh (export-dominant), which represents 72.8 % of the 2003 value.



◆ Gas management

Slovak Gas Management Industries in Bratislava (Slovenský plynárenský priemysel, Inc. Bratislava) is the dominant company on the Slovak gas market, with the greatest market share. In 2004, the company provided services to approximately 1.441 mil. of clients in various segments (bulk clients, small clients, and households). Approximately 98 % of domestic gas consumption is imported from the Russian Federation. Compared to 2003, the sale of natural gas on the designated Slovak territory in 2004 dropped by 4.4 %.

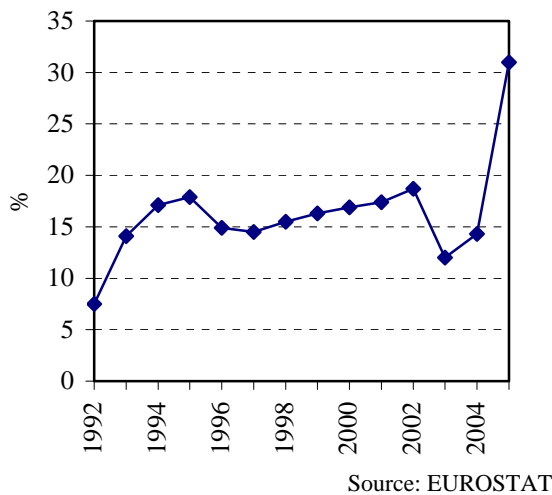
The Slovak gas distribution system is interconnected with the neighboring countries' networks, specifically with Ukraine, Czech Republic and Austria. Capacity of the transport network is more than 90 bill. m³ annually.

Natural gas consumption in the Slovak Republic (SR) in 2004 was 6.7 bill. m³.

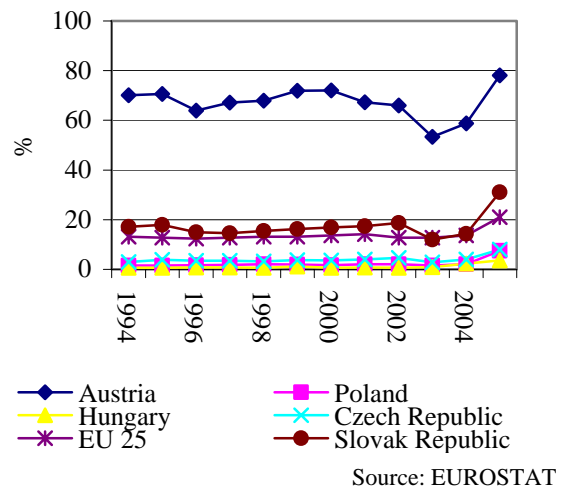
◆ **Renewable energy sources (RES)**

Increase in renewable energy sources' extraction represents a significant element in the system of measures introduced to meet the Kyoto Protocol's objectives. Share of electricity produced from the RES (renewable energy sources) on total electricity consumption in 2004 was 14.4 %. Hydro power plants have the greatest share on electricity production from all RES in Slovakia (more than 90 %). For this reason, volumes of electricity produced within the Slovak RES network fully depend on favorable hydro-energy conditions. Biomass is the dominant RES used to produce heat. In total, RES reached a 3.9 % share on the gross domestic energy consumption in 2004.

Share of electricity from renewable energy to gross electricity consumption



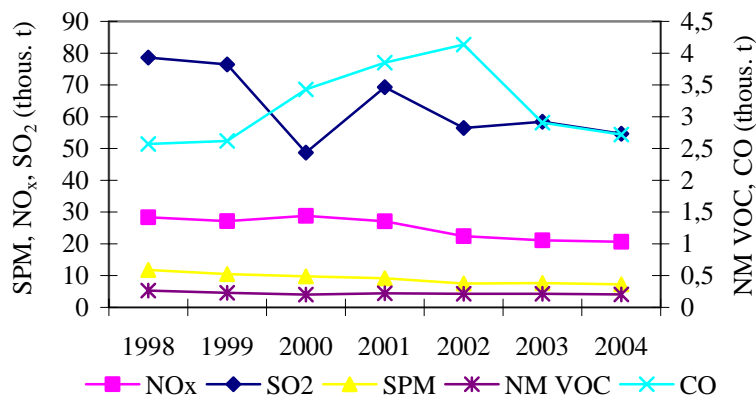
Share of electricity from renewable energy to gross electricity consumption – international comparison



◆ **Air pollution caused by energy production**

Over the recent years, sulfur oxides (SO₂), nitrogen (NO_x), and particulate matter (PM) emissions were reduced significantly. This situation was caused by decreased production and consumption of energy and a shift in the fuel base toward more purified fuels, as well as by using fuels with better quality characteristics.

Trend of basic polluting substances emissions from energy stationary sources in 1998 – 2004 in the SR



Source: SHMI

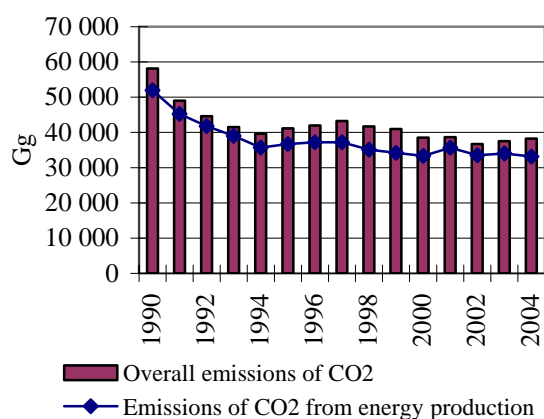
Power management sector has the most dominant share on the greenhouse gases emissions. In 2004, the share was almost 80 % of total greenhouse gases emissions in the SR. Over the monitored period, greenhouse gases air emissions showed a light reduction in the power management (energy) sector. This was caused by a higher proportion of services on the GDP production, higher share of natural gas within the fuel base, structural changes, and decreased energy consumption in energy-demanding sectors.

Trend of greenhouse gasses emissions from energy production in the SR (thousand tons)

Emissions	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CO ₂	51 982	36 685	37 186	37 186	35 136	34 191	33 345	35 669	33 513	34 035	33 153
CH ₄	21.3	8.7	8.6	8.4	7.8	7.4	6.7	6.3	4.5	4.4	4.0
N ₂ O	0.58	0.39	0.39	0.38	0.35	0.33	0.29	0.30	0.29	0.31	0.30

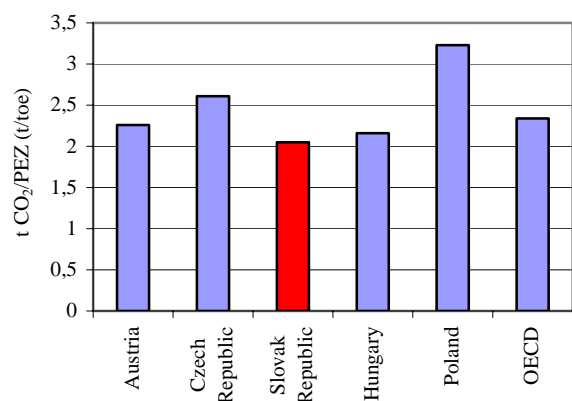
Source: SHMI

Trend of CO₂ emissions from energy production (thousand tons)



Source: SHMI

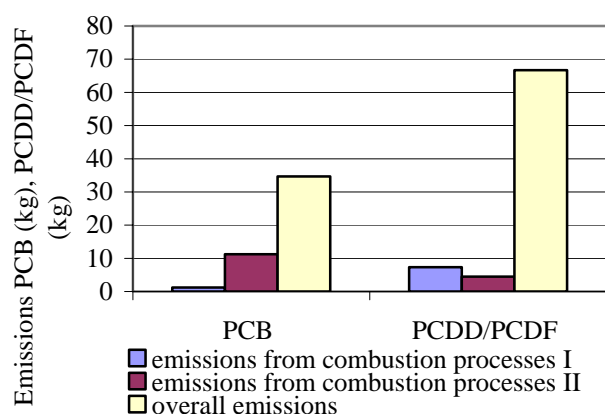
Energy Intensity according to CO₂ in 2004 – international comparison



Source: IEA

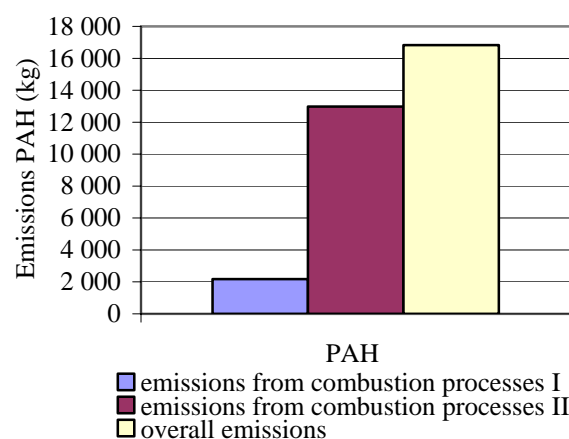
The POP emissions have a falling tendency since 1990. This is caused by a drop in the production and changes to fuels used for household heating. Fluctuations in the PCB emissions (their increase) in 2003 and 2004 relates to the increased consumption of firewood for household heating.

PCB and PCDD/PCDF emissions from energy production in 2004



Source: SHMI

PAH emissions from energy production in 2004



Source: SHMI

Positive trend in the power management sector is recorded mainly by a dramatic reduction to **heavy metals emissions**. The following table shows a dramatic decrease in these emissions since 1990.

◆ Waste water from electricity production and gas management

Of all areas within the energy sector, electricity power management contributed the most to total volumes of discharged wastewater. Wastewater produced by electric power plants mainly includes water from technological and cooling processes, and also some runoff water. Wastewater from technologies is chemically contaminated. In case of nuclear power plants, water from the primary cycle also shows a degree of radio-chemical contamination. Water used as a coolant shows mostly thermic contamination. Greatest load exists in the chemical oxygen demand for the COD_{Cr} (dichromate) indicator, and insoluble substances (IS). In total, in 2005, volumes of discharged water from the electricity and gas energy sector decreased. On the contrary, heat management shows a negative trend.

Waste water discharged by energy production in 2005

Waste water from electricity production	Volume (thousand m ³ .y ⁻¹)	IS (t.y ⁻¹)	BOD ₅ (t.y ⁻¹)	COD _{Cr} (t.y ⁻¹)	ENP _{uv} (t.y ⁻¹)
Treated	17 824.171	125.800	42.957	270.796	0.513
Untreated	218 275.617	155.672	12.289	54.949	0.0
Subtotal	236 099.788	281.472	55.246	325.745	0.513
Waste water from heat production					
Treated	1 668.077	8.939	4.190	15.038	0.0
Untreated	1 761.507	11.240	0.0	2.098	0.003
Subtotal	3 429.584	20.179	4.190	17.136	0.003
Waste water from gas management					
Treated	0.0	0.0	0.0	0.0	0.0
Untreated	25.693	0.257	0.0	0.0	0.0
Subtotal	25.693	0.257	0.0	0.0	0.0
Total	239 555.1	301.908	59.436	342.881	0.516

Source: SHMI

◆ Waste water from electricity production and gas management

In 2005, the SE company, Inc. produced total volumes of 1 147 206 tons of waste of all categories, including 99.7 % from the „other waste“ category. Waste from thermal power stations of SE Inc. was **98.22 %** of total generated waste, while the SE Inc. nuclear waste was **1.56 %**, and waste from the aquatic SE Inc. power plants was **0.21 %** of total generated waste.

The SPP Inc. company produced 17 333 tons of waste in 2005, including 13 072 tons of other waste, and 4 261 tons of hazardous waste. Increase in the volumes of generated waste in 2005 was caused by a legislative change to the definition of the waste origin relating to service, cleaning and maintenance activities.

Transport

Current trend in transport is mostly influenced by the road passenger and cargo transport that is flexible enough to follow the economic situation at the expense of more environment-friendly ways of transport.

◆ Transport share on GDP production

Sector of transport represented 7.2 % of the GDP production in 2005.

Transport share on GDP production (%)

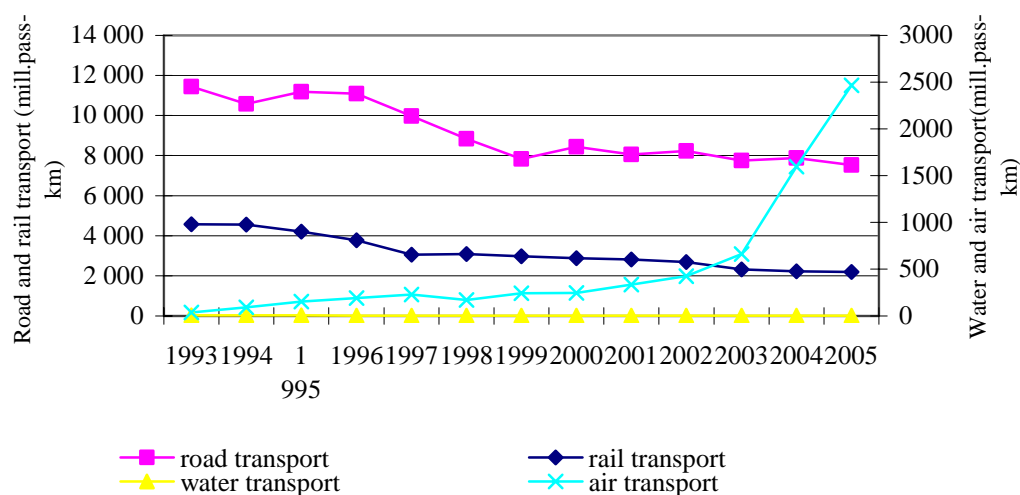
	1993	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Transport	6.1	8.3	7.5	7.6	7.8	7.5	7.6	7.6	7.1	6.8	7.2

Source: SO SR

◆ Passenger and freight transport

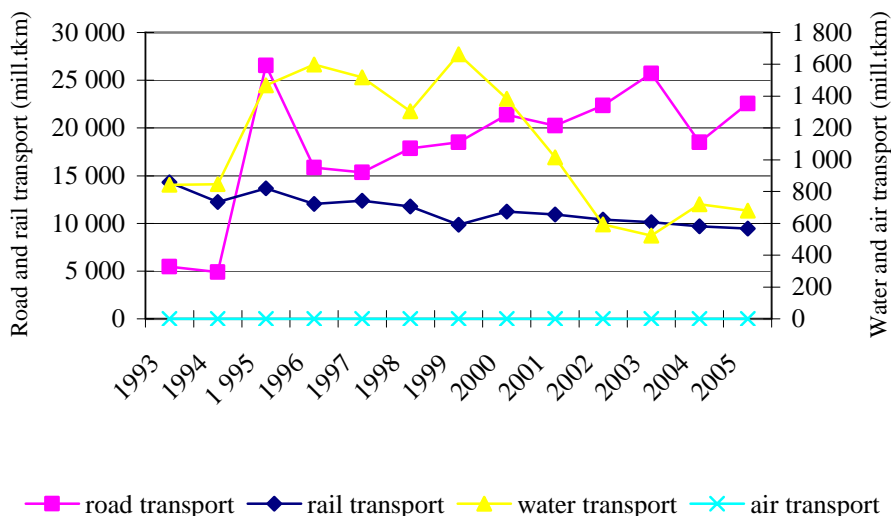
Compared to 1993, reduction in modal split in road passenger transport was more than 30 %, in case of the railway transport the reduction was even by more than 50 %. Modal split in water passenger transport dropped by more than 40 %. Road transport shows the greatest share on modal split by cargo transport - appr. 60 %. In 2005, modal split by railway transport dropped by more than 30 %, compared to 1993, while modal split by aquatic cargo transport in 2005 dropped by appr. 19 %, compared to 1993.

Passenger transport demand by mode (mill. pass-km)



Source: SO SR

Freight transport demand by mode (mill. tkm)



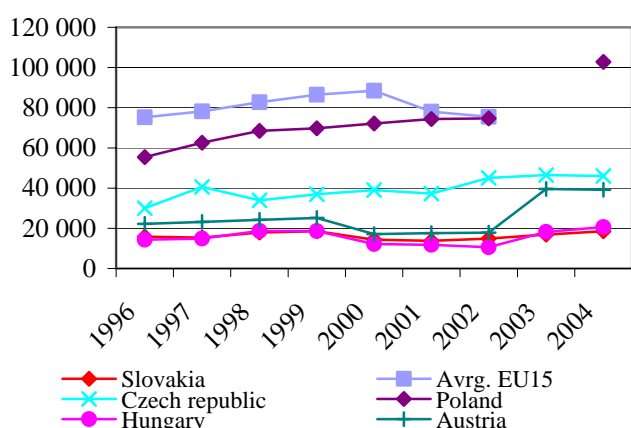
Source: SO SR

Indicators of city transport

Indicator	1993	1996	1998	1999	2000	2001	2002	2003	2004	2005
Total number of transported passengers (ths.)	525 744	543 246	509 862	485 472	404 539	373 269	370 018	394 465	383 118	
Trams										
Transported passengers (ths.)	188 768	143 259	126 488	117 714	100 185	98 719	96 553	104 560	104 391	109 101
Seat kilometres (mill. km)	2 734	1 960	1 942	1 888	1 802	1 866	1 780	1 764	1 818	1 822
Trolleybuses										
Transported passengers (ths.)	43 346	71 689	76 375	71 934	62 997	53 167	54 707	59 034	57 688	58 032
Seat (mill. km)	717	799	993	1 039	1 029	1 008	1 048	1 110	1 103	1 075
Buses										
Transported passengers (ths.)	293 629	328 298	306 999	295 824	241 357	221 383	218 758	230 871	221 039	227 931
Seat (mill. km)	4 998	4 265	4 489	4 638	4 011	3 996	3 990	3 899	3 881	3 846

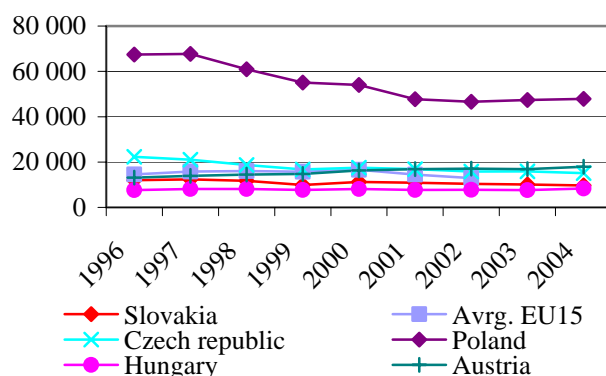
Source: SO SR

Freight transport demand by road (mill. tkm)



Source: EUROSTAT

Freight transport demand by rail (without passenger cars) (mill. tkm)



Source: EUROSTAT

◆ Number of vehicles

Notwithstanding a slight decrease in annual increments in the number of road motor vehicles, total number of motor vehicles in 2005 grew by 18 % over the period on 1993 - 2005. Major increase in the number of motor vehicles in 2005 was recorded in the categories of heavy trucks and pickup trucks

(grew by 58 %, compared to 1993), and passenger cars (grew by 31 %, compared to 1993). Number of transport vehicles in railroad and water transport types (being the most environmental-friendly transport modes for passengers and goods) dropped by appr. 20 % over the last 20 years.

Number of motor-vehicles by individual types (pcs)

Total number of vehicles	1993	1996	1998	2000	2001	2002	2003	2004	2005
Passenger cars	994 933	1 058 425	1 196 109	1 274 244	1 292 843	1 326 891	1 356 185	1 197 030	1 303 704
Trucks and Pick up vans	101 552	97 078	111 081	110 714	120 399	130 334	142 140	140 395	160 089
Special vehicles	46 121	45 430	43 690	39 188	36 082	34 150	32 033	22 672	22 648
Road tractors	*	*	1 721	3 281	4 994	6 837	8 851	11 435	14 141
Buses	12 655	11 321	11 293	10 920	10 649	10 589	10 568	8 921	9 113
Tractors	65 150	62 810	63 448	64 351	63 422	62 644	61 690	44 080	46 544
Motorcycles (excl. small)	81 263	79 479	100 891	45 647	46 676	47 900	48 709	51 977	56 366
Trailers and Semi-trailers (included bus)	167 174	176 246	191 241	201 269	206 627	213 167	218 517	170 491	188 411
Others	*	*	*	2 226	1 507	1 306	1 161	-	101
Total	1 468 848	1 530 789	1 719 474	1 751 840	1 783 199	1 833 818	1 879 854	1 647 001	1 801 117

Source: SO SR

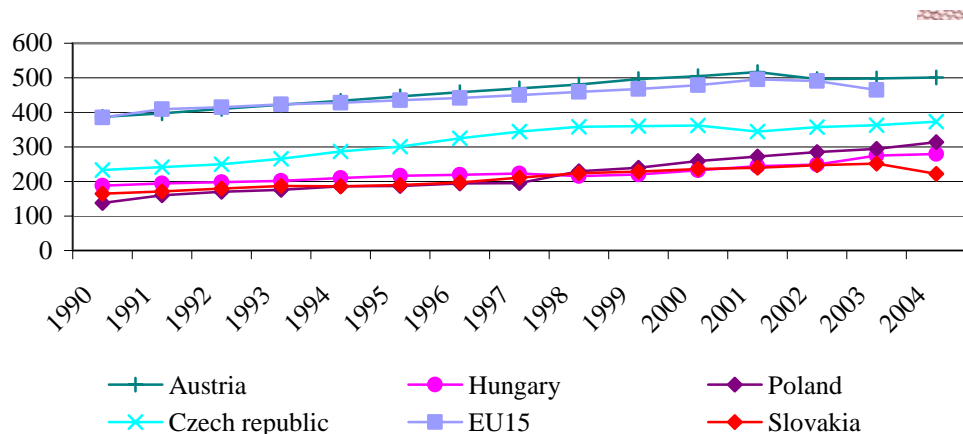
¹ in 1993-1996 included among special vehicles, since 1997 newly-purchased and monitored independently

Rail transport equipment (pcs)

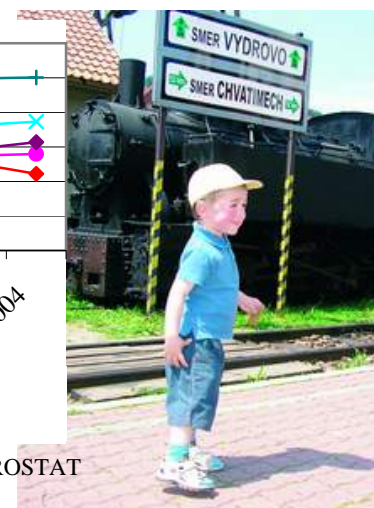
Total number of vehicles	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Locomotive	1 296	1 290	1 257	1 253	1 208	1 167	1 131	1 116	1 072	1 079
Diesel railcars	373	375	370	383	361	344	320	315	279	281
Wagons	35 898	34 424	32 621	29 710	26 975	24 587	24 796	23 973	24 936	25 515
Passenger railway vehicles	2 096	2 061	1 727	1 703	1 642	1 561	1 873	1 597	1 524	1 286
Combined transport	-	712	662	349	457	452	449	227	449	257
Total	39 663	38 862	36 637	33 398	30 643	28 111	28 569	22 522	27 811	28 161

Source: SO SR

Number of passenger cars per 1 000 inhabitants– international comparison



Source: EUROSTAT



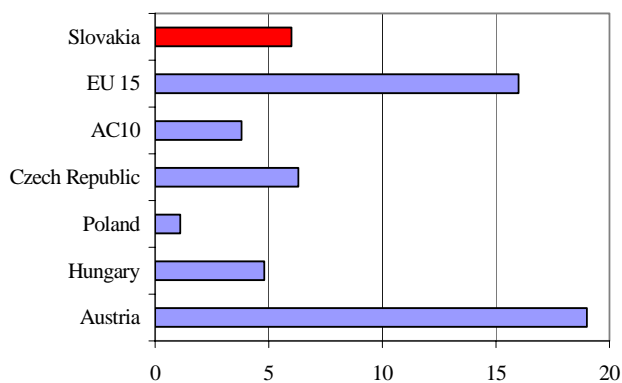
♦ Transport infrastructure

In 2005, the SR transport network included 17 803 km of roads and motorways. Highways represented 328 km of the network. The length of railways was 3 665 km, with 1 535 km of electrified tracks. The length of navigable watercourses remained unchanged at 172 km, with channel length of 38.45 km.

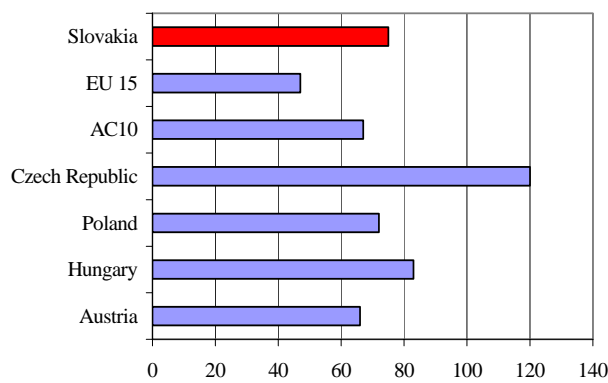
Basic data on the transport infrastructure (km)

	1993	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Length of roads and motorways	17 865	17 867	17 627	17 710	17 734	17 737	17 736	17 750	17 772	17 780	17 803
of which motorways	198	215	219	228	295	296	296	302	313	316	328
Length of railways	3 661	3 673	3 673	3 665	3 665	3 662	3 662	3 657	3 657	3 660	3 658
of which electrified lines	1 415	1 516	1 516	1 535	1 535	1 536	1 536	1 556	1 558	1 556	1 556
Length of navigable inland waterways and watercourses	172	172	172	172	172	172	172	172	172	172	172
of which watercourses	38.45	38.45	38.45	38.45	38.45	38.45	38.45	38.45	38.45	38.45	38.45

Source: SO SR

Density of the road network (km/1 000 km²) – international comparison

Source: EUROSTAT

Density of the railway network (km/1 000 km²) – international comparison

Source: EUROSTAT

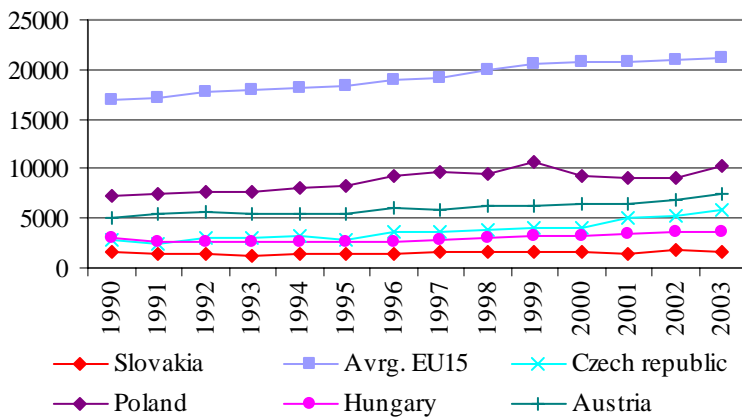
♦ Demand of transport on the utilisation of resources

Final energy consumption in the transport sector over the period of 14 years has more than doubled itself. Overall consumption of liquid fuels (96 %) represents the greatest share of energy consumption in the transport sector on the overall energy consumption, while the share of solid fuels, gaseous fuels and electricity overall consumption remains small. Road transport shows the greatest share on the overall energy consumption in the transport sector (95 %).

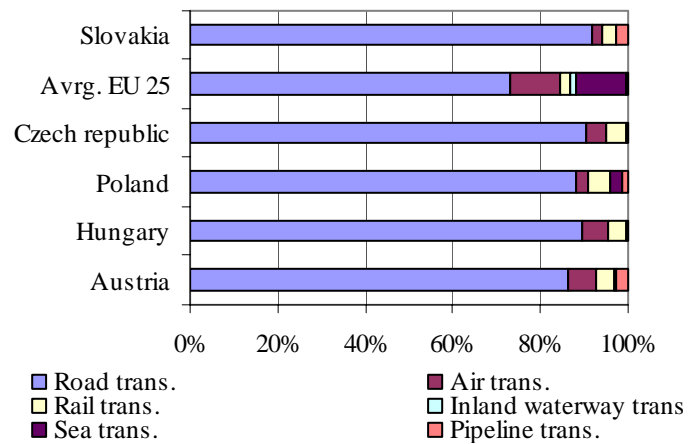
Final energy consumption by transport (1 000 toe) – Distribution of final energy consumption over individual types of transport in 2003 (%)

international comparisons

international comparisons



Source: EUROSTAT



Source: EUROSTAT

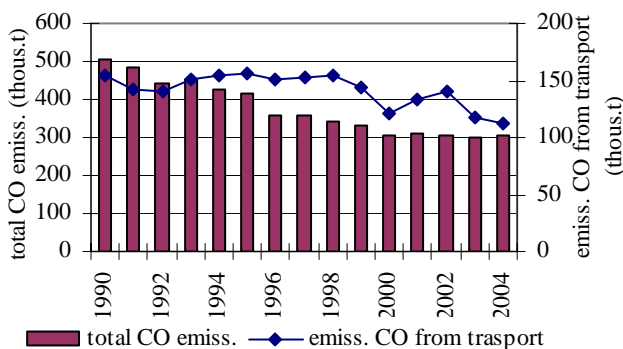
◆ **Impact of transport on environment**

Over the recent years, important changes in the SR were introduced by a significant increase in the number of motor vehicles. Corresponding changes to the transport situation were dominant mainly in cities and residential zones, where there is an increased load on environment and public health.

Emissions from transport

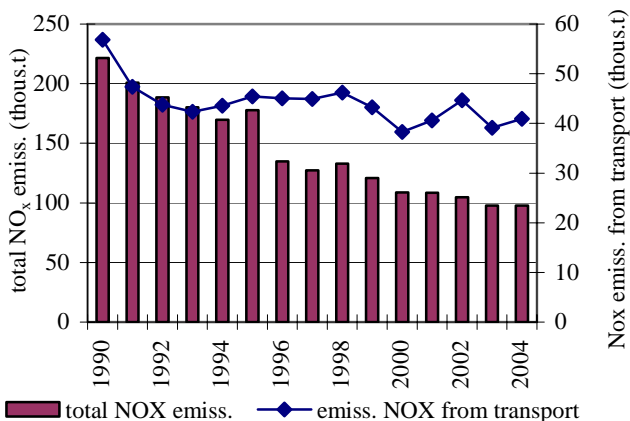
Over the recent years, trend in the produced emissions by transport in the SR, in terms of its impact on environment, has been influenced by two major factors: negative impact of the rapid growth in road transport, mainly by its most adverse component – the passenger car transport, its increasing modal split and fuel consumption which is positively off set by the growing favourable trend in new-generation cars with environment-friendly and better energy parameters, equipped with a three-way catalytic converter.

Trend in CO emissions from transport compared to total CO emissions in the SR



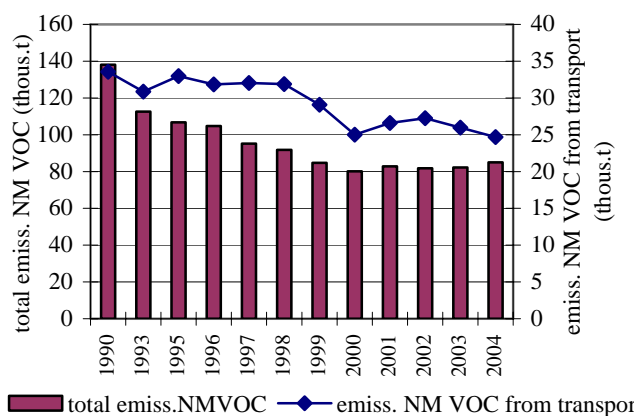
Source: SHMI

Trend in NO_x emissions from transport compared to total NO_x emissions in the SR



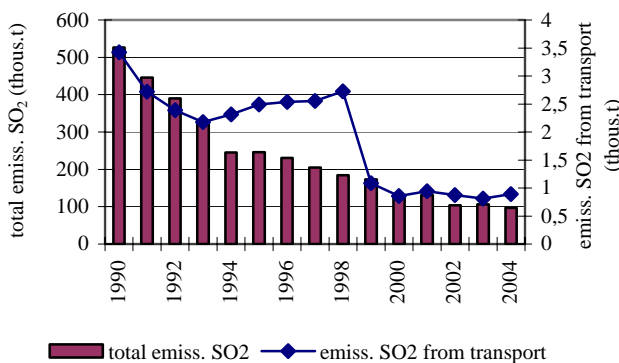
Source: SHMI

Trend in NM VOC emissions from transport compared to total NM VOC emissions in the SR



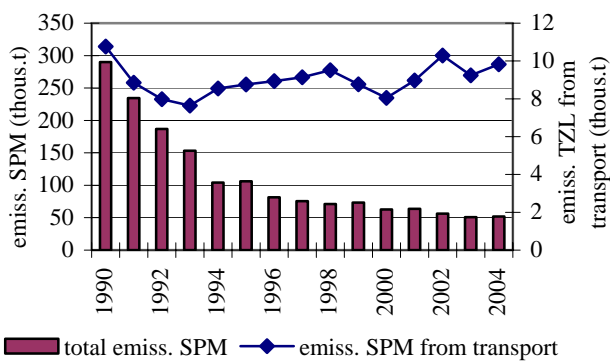
Source: SHMI

Trend in SO₂ emissions from transport compared to total SO₂ emissions in the SR



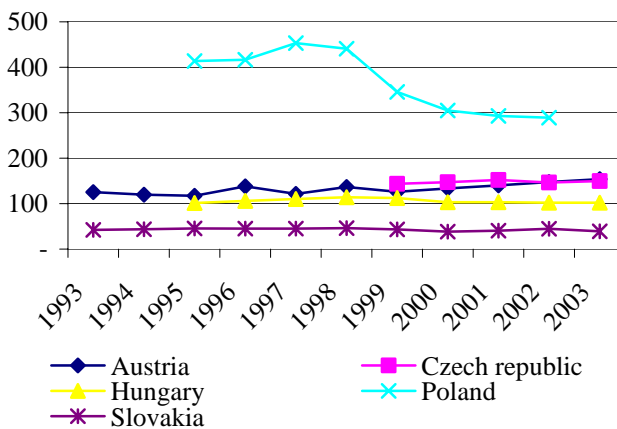
Source: SHMI

Trend in SPM emissions from transport compared to total SPM emissions in the SR



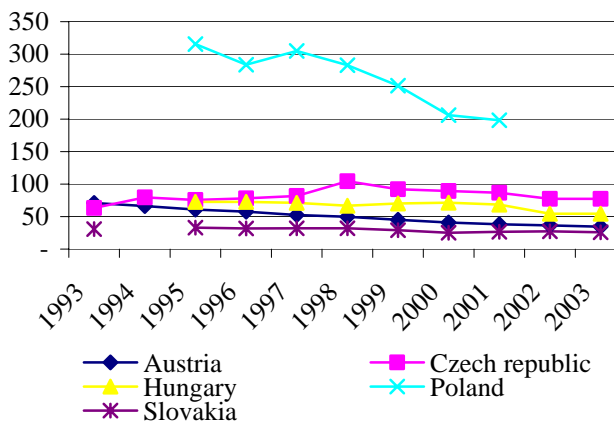
Source: SHMI

Trend in NO_x emissions from transport (thous. t) – international comparisons



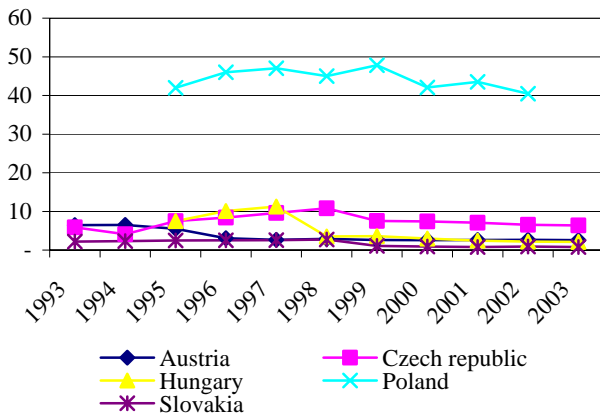
Source: OECD

Trend in NM VOC emissions from transport (thous. t) – international comparisons



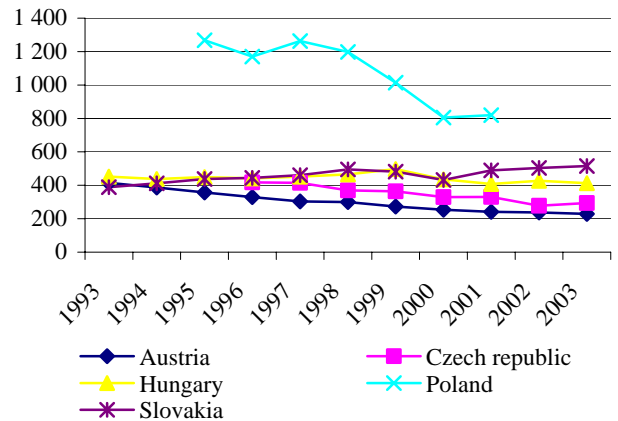
Source: OECD

Trend in SO₂ emissions from transport (thous. t) – international comparisons



Source: OECD

Trend in CO₂ emissions from transport (mill. t) – international comparisons



Source: OECD

In terms of transport's share on total emissions of the assessed pollutants for 2004, significant is transport's share on CO emissions – 37 %, 42 % in case of NO_x and 29 % in case of NM VOC.

Solid pollutants represented 19 % of all emissions in 2004, while the SO₂ emissions showed 0.9 %. Transport's share on the greenhouse gases emissions is approximately 11 %, with the CO₂ share of 14.2 %, and the N₂O share of 5.3 % being among the most dominant. Transport's share on heavy metal emissions is approximately 2.7%, with copper showing the greatest share on heavy metal emissions by transport (7.7 %) followed by zinc (2.4 %), and lead (2 %).

Waste from transport

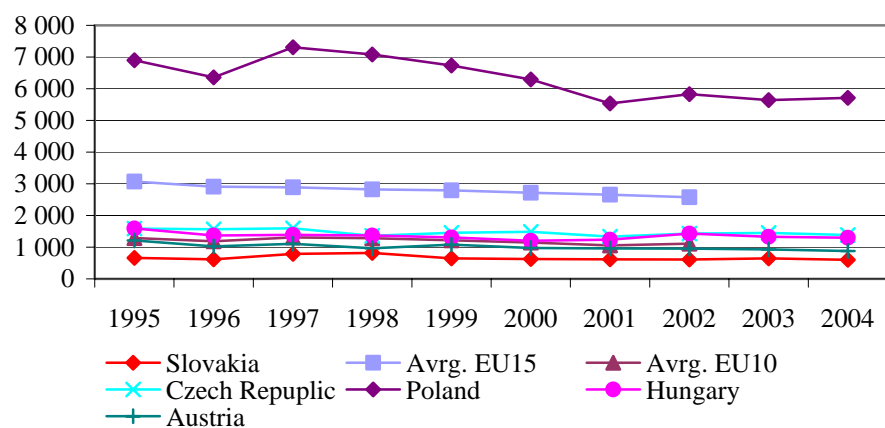
In 2005, there was 151 461 tonnes of waste generated in the area of transport and transport routes. This included 94 654 tons of hazardous waste, and 56 806 tons of other waste.

Traffic accident rate

There was a slight reduction in the number of traffic accidents in 2005, compared to the previous year. The same trend exists in traffic accidents analysis, with reduced number of traffic casualties, heavily injured, and injured, compared to 2004. However, over the monitored period of 1993 – 2005, the number of traffic accidents increased by 20 %. Traffic accidents aftermath analysis still shows a negative trend, with increasing numbers of traffic casualties, heavily injured, and lightly injured.



Number of people killed in road accidents – international comparisons



Source: EUROSTAT



Agriculture

◆ Economy of agriculture

In 2005, percentage of agriculture on gross domestic product was 4.7 %.

◆ Structure of agricultural land

In 2005, **total area of agricultural land** in the SR was 2 432 979 ha. The area of agricultural land decreased by 1 770 ha, compared to 2004. Loss in agricultural land was mostly the result of construction activity (988 ha), including the civil and household construction (367 ha), 464 ha of agricultural land was forested.

Structure of the agricultural land (state to the date 31st December 2005)

Type of land	Area(ha)	Share of agricultural land (%)
Agricultural land total	2 432 979	100.00
Arable land	1 429 040	58.73
Hop-fields	538	0.02
Vineyards	27 307	1.12
Gardens	76 865	3.16
Orchards	17 947	0.75
Permanent grassland	881 283	36.22
Total area of SR	4 903 467	-

Source: IGCC SR



Size of arable land per one inhabitant in 2005 was 0.27 ha.

Crop production

The year-to-year reduction in the majority of crop areas, together with reduction in hectare yields, influenced total production of plant commodities. The plant production decreased, especially in potatoes.

In comparison to 2004, genetic diversity of agriculture produce in 2005 increased in winter wheat, spring barley, and sugar beet. Potatoes and rapeseed produce decreased.

Number of agriculture plant's varieties in the SR

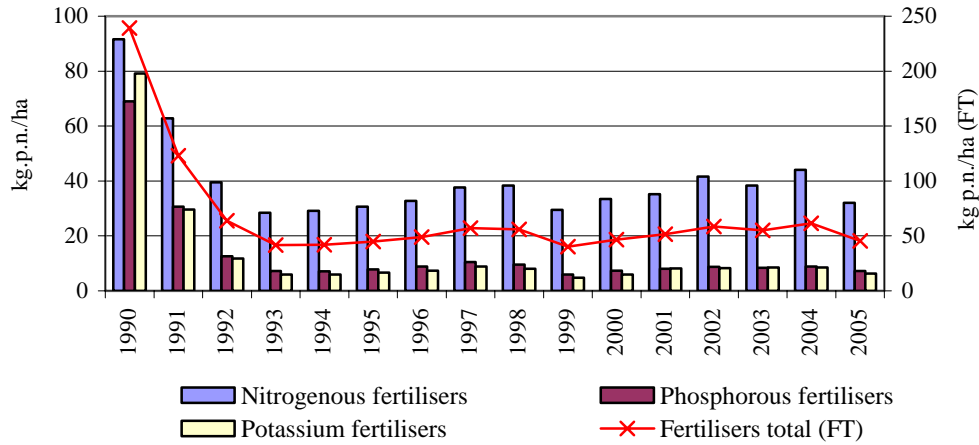
Agricultural plant	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Winter wheat	22	23	22	23	24	25	28	28	34	37	41	45	57
Winter barley	10	10	11	8	9	10	11	11	13	14	11	14	14
Spring barley	26	25	26	27	24	22	23	24	21	24	28	29	30
Potatoes	44	48	60	72	70	67	69	75	78	81	90	103	101
Rapeseed	7	10	14	12	12	9	14	16	19	22	25	32	29
Sugar beet	28	37	40	52	58	61	63	52	53	42	42	38	41
Fodder beet	12	16	16	13	12	6	8	8	8	8	7	6	6

Source: RIPP

Fertilisers consumption

In 2005, consumption of **industrial fertilisers** decreased from the previous year and reached the level of 45.49 kg of pure nutrients per hectare of agricultural land.

Fertiliser consumption in Slovakia (kg pure nutrient/ha)

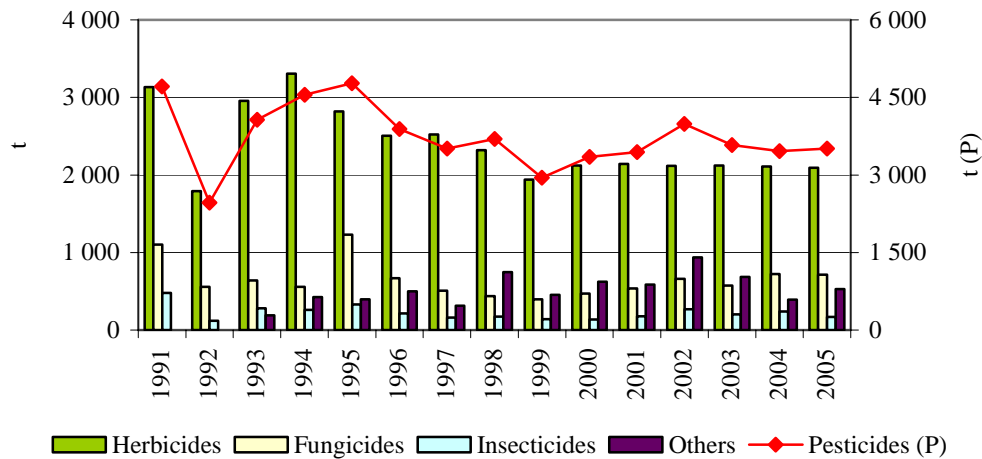


Source: CCTIA

Pesticides consumption

Compared to 2004, total consumption of pesticides in 2005 increased by 1.3%.

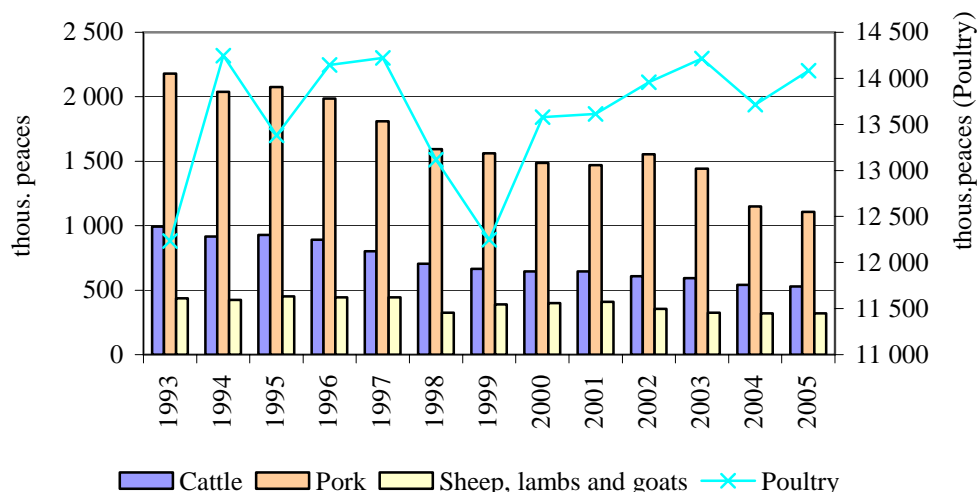
Pesticides consumption in Slovakia (t)



Source: CCTIA

Livestock production

In 2005, numbers of all livestock categories again decreased.

Livestock production in Slovakia (thousand peaces)


Source: SO SR, MoA SR

Genetic diversity expressed by number of livestock in the SR increased in cases of cattle and sheep, since 1993. There was a reduction in poultry and pork.

Number of livestock breed in the SR

Breed	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Cattle	5	5	5	5	6	6	11	11	11	11	11	11	12
Pork	15	15	15	15	15	15	16	15	13	11	11	11	11
Sheep	8	9	10	9	9	12	12	13	12	12	13	13	13
Goats	2	2	2	2	2	2	2	2	2	2	2	2	3
Poultry	15	17	15	17	19	22	19	22	15	7	7	7	7

Source: RIAP

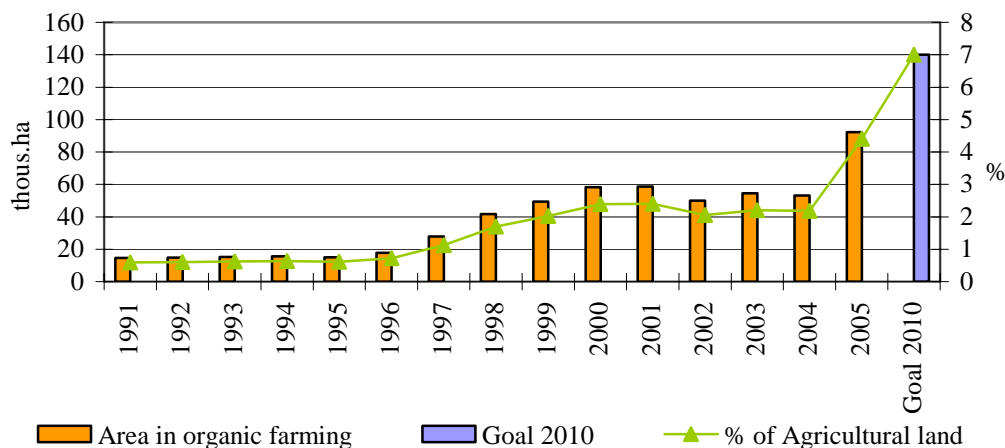
Melioration

After 2000, there was a falling trend in the size of irrigated territories, analogous as utilisation of water for irrigation purposes with certain fluctuations. In 2005, there was 44 789 ha of irrigated agricultural land.

Organic farming

In 2005, the system of organic farming in the SR included 210 subjects farming on 92 180 ha of agricultural land, which is 4.4 % of total agricultural land. The goal is to implement organic farming practices on 7 % of total agricultural land by 2010.

Trend in the organic farming area



Source: CCTIA

Agriculture demands in exploitation of resources

During 1998 – 2004, consumption of solid and liquid fuel in agriculture was falling, while the consumption of gas fuel increased.

Consumption of selected fuels in agriculture (thous. t)

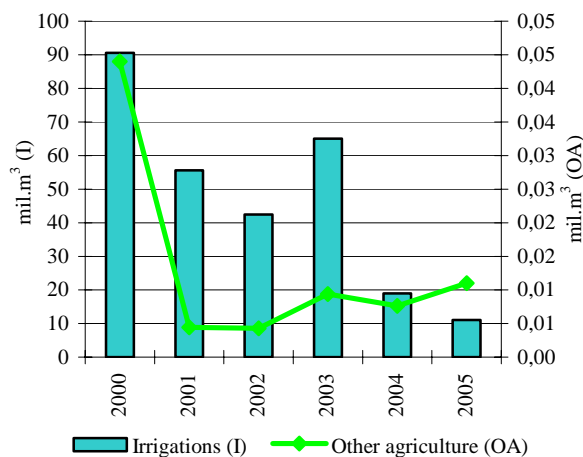
Kind of fuel	1998	1999	2000	2001*	2002*	2003*	2004*
Solid fuel	14 219	12 777	11 807	7 689	6 872	10 051	6 920
Liquid fuel	220 931	226 464	248 545	158 873	152 049	178 083	143 093
Gas fuel	14 445	13 559	14 542	61 528	74 834	71 492	64 469
Heat	129 156	114 675	83 258	78 155	77 950	42 809	60 213
Electricity	120 207	123 675	113 969	128 947	123 805	117 966	111 645
Renewable fuel sources and wastes	-	-	-	64	43	78	96

* new SO SR methodology

Source: SO SR

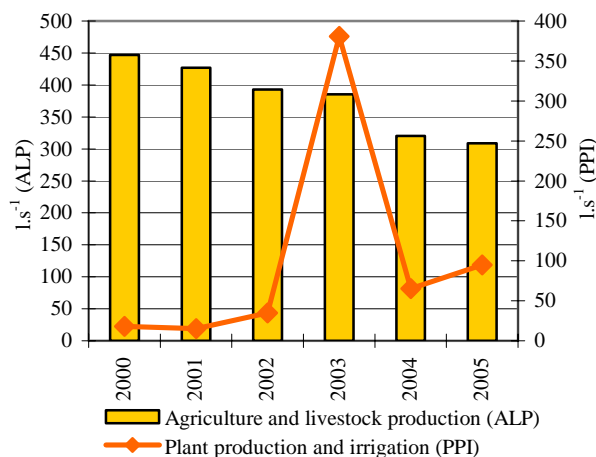
Compared to 2004, in 2005, there was a reduction in surface water volumes used in agriculture for irrigation purposes. Groundwater volumes used in agriculture and livestock production also dropped. On the other hand, volumes of groundwater used for crop production and irrigation increased.

Trend in surface water use in agriculture



Source: SHMI

Trend in underground surface water use in agriculture



Source: SHMI

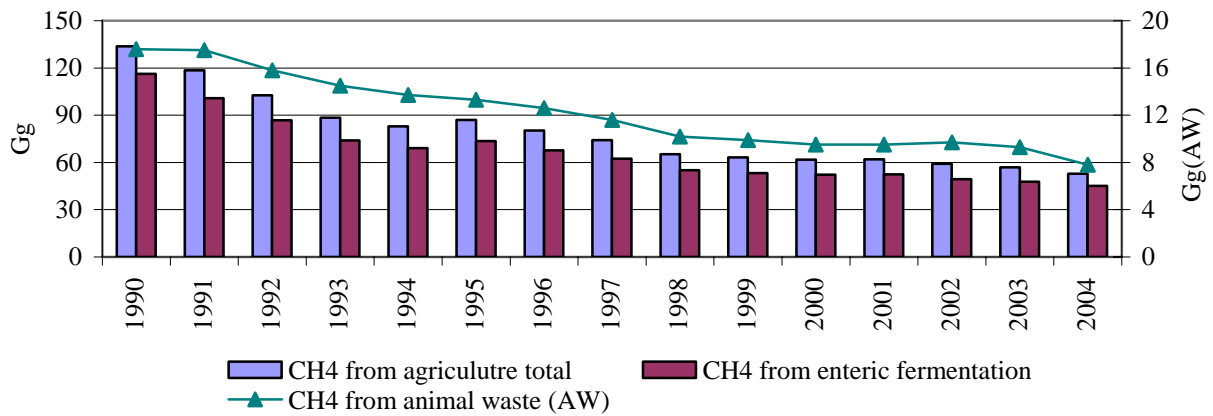
Production of renewable energy from agriculture

Despite its relatively high potential in Slovakia, use of the biomass for energy purposes is not satisfactory from the perspective of including energy-yielding produce into sowing technologies, as well as production of energy from biogas. In 2005, there were 3 biogas production facilities in operation in Slovakia. Biogas was produced from cattle manure at the volume of 470 thous.m³. It is possible to expect the annual production of biogas from cattle excrements at 241 mil.m³, and from pork excrements at 36 mil.m³.

Impact of agriculture on environment

Share of agriculture on total methane production is systematically falling, due to decreased number of livestock. In 2004, agriculture produced 52.9 thous. tons of methane. In 2004, agriculture produced 8.9 thous. tons of nitrogen monoxide.

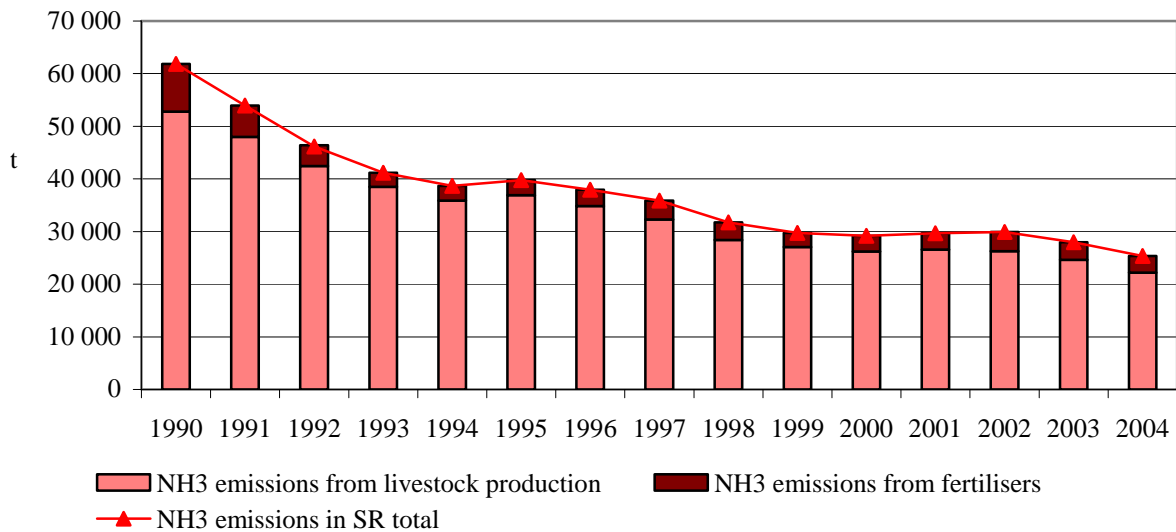
Trend in methane emissions from agriculture according to type of activity



Source SHMI

Agriculture is the biggest producer of ammonia (NH₃). NH₃ emissions showed a falling tendency since 1990.

Trend in ammonia emissions from agriculture



Source: SHMI

Impact of agriculture on water quality and quantity

In 2005, there was 561 689 m³ of discharged wastewater, related with agricultural activities.

Discharged amount of waste water in SR related to agriculture in 2005

Waste water from agriculture	Volume (m ³ ,yr ⁻¹)	Insoluble compounds (t.year ⁻¹)	BOD ₅ (t.year ⁻¹)	COD _{Cr} (t.year ⁻¹)	ENP (t.year ⁻¹)
Treated	186 589	17.918	7.873	45.537	0.047
Untreated	375 100	0.302	0.037	0.156	0.0
Total	561 689	18.220	7.910	45.693	0.047

Source: SHMI

Production of waste in agriculture

In 2005, there were 661 068.24 tons of total waste produced in agriculture, which is 60 290.24 tons more than in 2004. Of total produced waste, other waste was 645 893.40 tons, which is 59 003.4 tons more than in 2004. Produced hazardous waste in 2005 was 15 174.84 tons of total waste volumes, which is 1 286.84 tons more than in 2004.



Forestry

◆ Share of forestry on GDP production

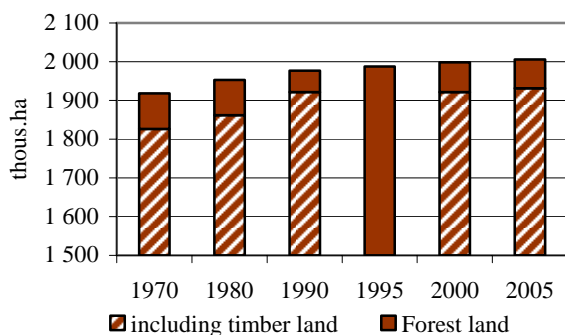
Forest management in 2005 contributed to the GDP production by 0.59 %. The share would be higher (3 %) if public benefits of forests and wood-processing industry are accounted for.



◆ Structure of forest land

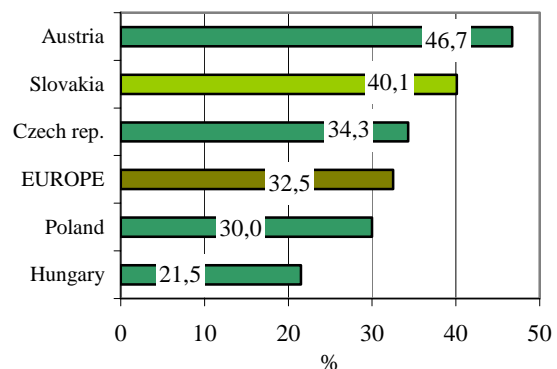
Slovak Republic belongs to the countries with the highest rate of **forestation**. **Forest land** in Slovakia in 2005 was **40.9 %** (2 006 172 ha) of total area of the state. Compared to 2004, it has been an increase by 574 ha. Timber land in 2005 represented app. 96.3 % (1 931 645 ha) of total size of forest land. Calculated to the number of inhabitants, this represents **3.72 km² per 1 000 inhabitants**. Size of forest land and timber land is increasing over a long run. Since 1970, size of forestland grew by 4.6 %, while the average annual increment over the monitored period is approximately 0.13 %.

Trend in forest land and timber land



Source: NFC

Comparison of forestation in selected countries

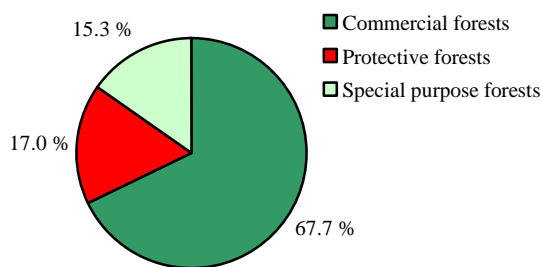


Source: Forest Resources of Europe, UN, 2000

The forest ownership and utilisation settling process governed by the restitution legislation has not yet finished. This causes permanent changes to forest structure by ownership and utilization. **State** organisations of forest management **administer 58.5 % of forests**, which is 16.7 % more than in the state ownership. In 2005, there was **10 954 ha** of forest land **returned** to original owners (7 863 ha less than in 2004). Forest land with no fully identified or documented ownership claims, or with no claims yet received from the entitled persons, take up **almost 6 %** of total SR forest land.

Due to the increased demand for public benefit functions of forests, there is a systematic increase in the area of protective forests (from 7.9 % in 1960 to the present 17 %).

Spatial representation of forest categories in 2005



Source: NFC

Overview of area according to function – protective forests (PF) and special purpose forests (SPF) (2005)

Function - PF	% of PF
Erosion control	12.7
Water management	3.8
Deflation control	0.2
Avalanche control	0.2
Bank protective	0.1
Function - SPF	% of SPF
Water protective	0.9
Recreational	1.9
Health resort-therapeutic	0.2
Nature protection	2.9
Air pollutants control	7.1
Game management	1.4
Education-research	0.9

Source: NFC

◆ Forest composition by species and age groups

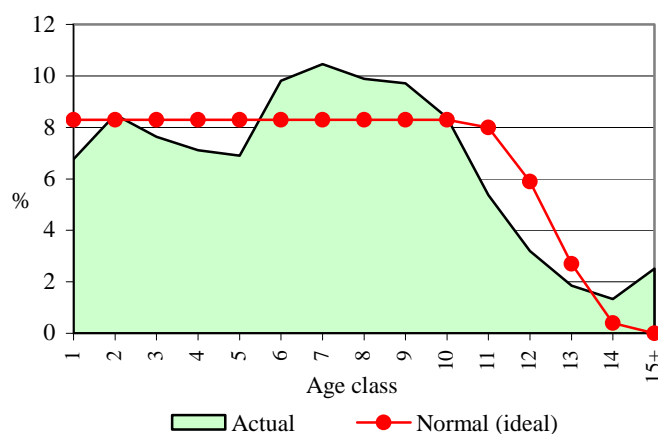
In terms of **forest composition by species**, there is a positive share of broad-leaved trees (59 %) compared to coniferous trees (41 %). There are **introduced tree types** commonly growing within broad-leaved tree vegetation areas. Their area has not increased over the recent decades (2.99 %), with the exception of *Robinia pseudoacacia*.

Comparison of present tree species composition in the forest of the SR with original and target-perspective one

Tree species	Tree species composition (%)		
	Original	Target - perspective	Actual
Spurce / Fir	4.9 / 14.1	18.2 / 6.7	26.3 / 4.1
Pine / Larch	0.7 / 0.1	4.2 / 6.7	7.2 / 2.3
Other coniferous	0.9	1.2	1.1
Coniferous together	20.7	37.0	41.0
Oak	19.9	17.7	13.4
Beech / Hornbeam	48.0 / 2.6	35.9 / 0.9	31.0 / 5.7
Maple / Ash	3.2 / 0.4	3.0 / 0.5	1.9 / 1.4
Robinia / Birch	- / 0.1	0.1 / 0.2	1.7 / 1.4
Elm / Alder	0.9 / 0.3	1.2 / 0.3	- / 0.8
Poplar / Willow	0.1 / 0.1	0.2 / 0.1	0.9 / -
Other broadleaved	3.7	2.9	0.4
Broadleaved together	79.3	63.0	59.0

Source: NFC

Age composition of the forest in 2005



Source: NFC

◆ Forest transport network

Average density of forest road network in Slovakia is 18.5 m.ha⁻¹, while the optimum density in our conditions fluctuates between 20 to 25 m.ha⁻¹. Length of outgoing forest roads in 2005 was **37 096 km**.

◆ Forestation and standing volume

In 2005, **13 504 ha were forested**, including 4 582 ha forested through **natural regeneration**. Share of natural regeneration has almost doubled since 1990 (currently, it represents 33.9 % of total forestation) and helps to enforce sustainable development practices in forests.

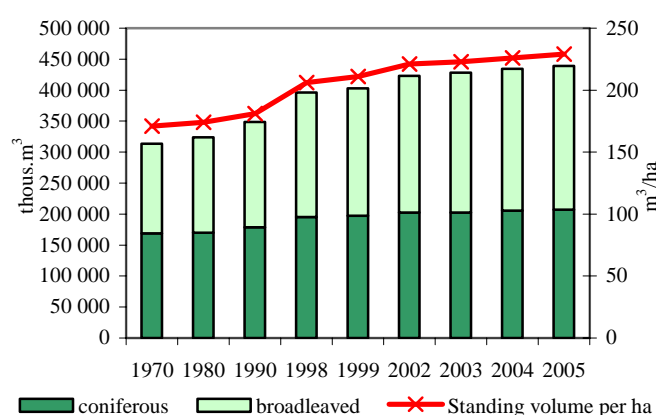
Standing volume in 2005 reached **438.9 mil. m³** of barkless wood matter, with average stock per hectare reaching 229 m³. Still increasing volume of wood stock is mainly influenced by the existing age composition of the Slovak forests, with abnormally high share of most-incremental medium age levels. **Total current increment** decreased since 1990 (through changes to the age composition) and is 11 584 thous. m³. This trend may be considered linear since 2000.

Total standing volume in 2004, 2005

Indicator	2004	2005
Standing volume together (thous. m ³ d _{bh} >7 cm under bark)	434 400	438 905
Of that: Coniferous	205 623	207 354
Broadleaved	228 776	231 551
Standing volume per ha (m ³)	226	229

Source: MoA SR

Trends in total standing volume

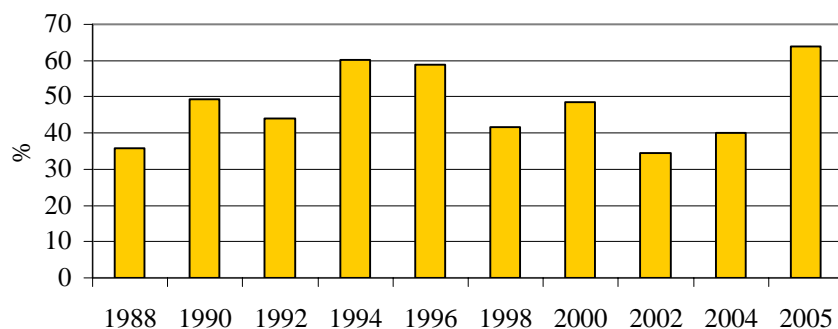


Source: NFC

◆ Timber felling

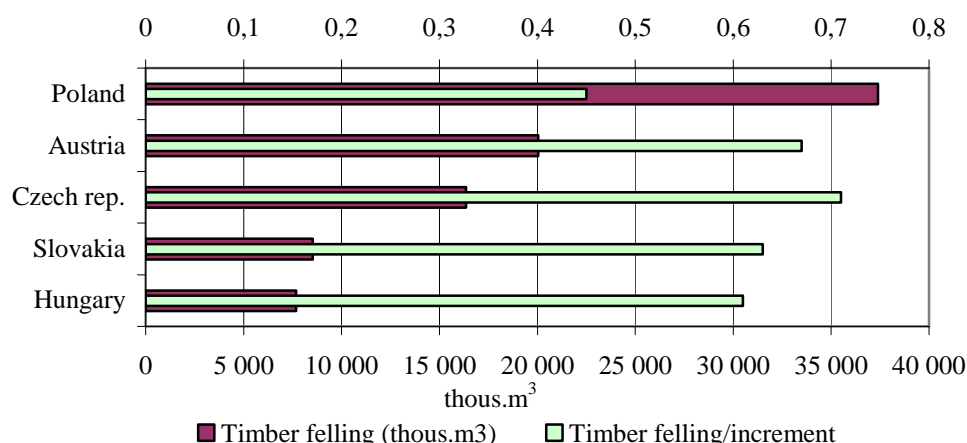
Timber felling in the Slovak forests shows an increasing tendency over a long range. In 2005, it was as much as **10.2 mil. m³**, including 6.9 mil. m³ of coniferous timber. Increased numbers were caused by the wind calamity of November 2004, which resulted in **64 % of incidental felling** of total timber felling (almost 89 % of coniferous and 12 % of broad-leaf trees harvested). Natural conditions in the SR forests allow implementing the shelter wood system on 70 % of timber land, selection harvest on about 10 %, and clear cutting on the remaining 20 % of timber land. **Intensity of forest resources utilisation** was as much as 88 % this year; however, it still points to the sustainable use of the SR forests (timber felling is lower than the annual increment).

Trend in share of incidental felling on total volume of timber felling in SR



Source: NFC

Comparison of utilisation of forest resources in selected countries

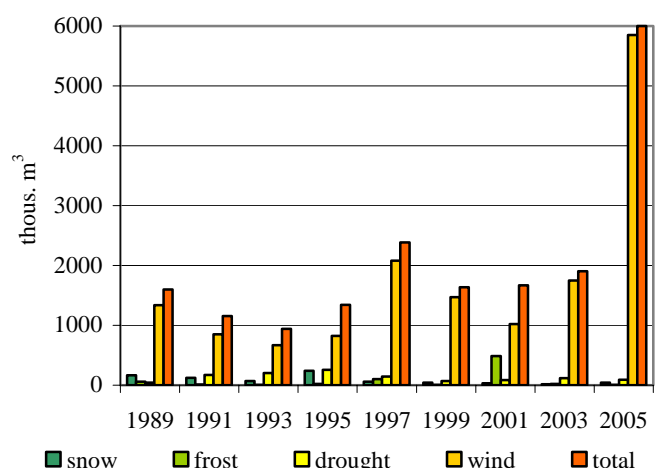


Source: UNECE/FAO (2000) and actualisation

◆ Injurious agents and forests condition

As a consequence of negative impacts of wind, snow, frost, drought, and unknown **abiotic factors**, there was **5 311 thous. m³** of wood matter **processed** this year, with almost 98 % caused by the wind. Incidental felling **by wind** in 2005 was the major factor from all abiotic harmful factors. During 2005, there were only small wind clearings of local character. Damage caused by **snow** was slightly below average over the last decade. **Frost** caused only insignificant damage on forest vegetation in 2005. Most frequent damage was done to beechwood (2 thous.m³). More significant damage was inflicted by **drought**. Drought shows a long-term negative impact on the pineries in Záhorie. **Unknown** abiotic factors damaged 14 thous. m³ – with the whole volume processed.

Trend in damages caused by abiotic agents



Source: NFC

Damages caused by abiotic agents in 2005

Injurious agents	Attacked	Processed
Wind	5 848 943	5 177 337
Snow	45 426	33 059
Frost	3 949	3 931
Drought	89 320	82 623
Unknown reasons	14 038	13 856
Total	6 001 676	5 310 806

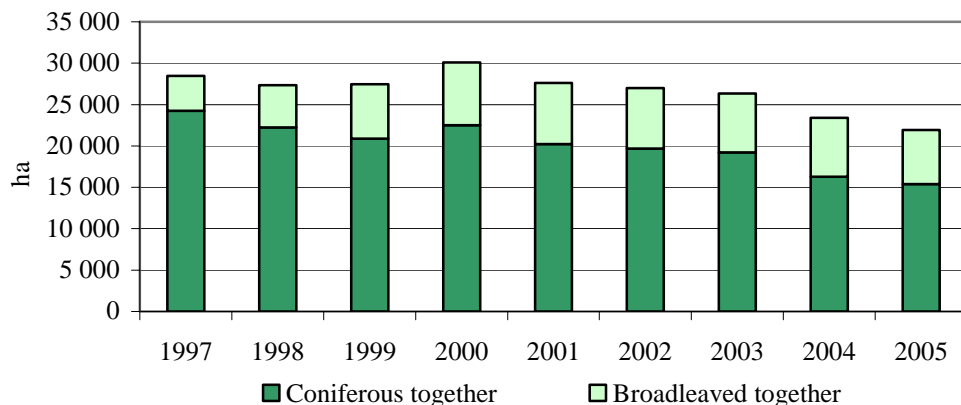
Source: NFC

Air pollution belongs among the major anthropogenic harmful factors. Forest land exposed and damaged by air pollution is more vulnerable to be damaged by abiotic and biotic factors. Damage by air

pollution was recorded on **21 917 ha** of forest land. Districts of Gelnica, Kežmarok, and Spišská Nová Ves show the most adverse situation.

There were **286 fires** on the territory of about 503 ha in Slovakia.

Trend of the air pollution forest damage



Source: SO SR

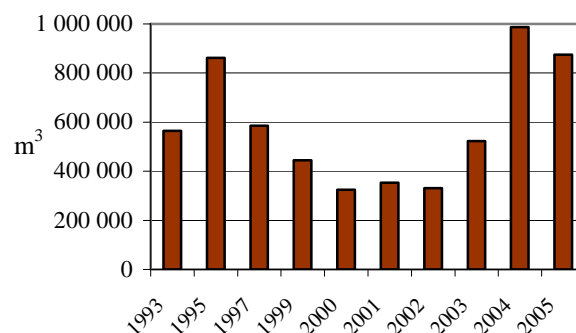
Of the **biotic harmful factors** of forest lands, bark-beetles and woodworms have the most dominant share on random incidental felling. Other harmful factors include leaf-eating and sucking insects, rots and tracheomycosis and game.

Ips typographus is the major harmful insect, attacking 899 thous. m³ of wood matter in 2005. In general, situation in damaged vegetation by bark-beetles and woodworms is considered very negative. Most damaging of the leave-eating and sucking insects impacting the broad-leaf trees was *Lymantria dispar*, culminating in 2005. Damage to timberland by other species of leaf-eating and sucking insects in 2005 was lower than in the previous year. *Armillaria ostoyae* and *Heterobasidion annosum* that is becoming a major harmful agent especially in spruce vegetations on acidic substrates in Kysuce, Orava, the sub-Tatras regions, and in Spiš, are the major harmful **phyto-patogenic micro-organisms**. From the economy aspect, **wood-eating fungi** cause major damage (especially root and trunk rottenness). Spruce belongs to the most affected tree type, followed by fir, beech and pine. Total recorded damage caused by **game** was 12.309 mil. SKK.

The volume of damages caused by biotic injurious agents in 2005

Phytopathogenic microorganisms	217 213 m ³
Rots and tracheomycosis	30 711 m ³
Leaf-eating and sucking insects	16 431 ha
Bark beetles a wood borers	874 566 m ³
Game	1 097.2 ha
Together	1 122 490.0 m³ 17 528.2 ha

Trend of damages caused by bark beetles and wood borers



Source: NFC

◆ Forest condition monitoring and assessment

National programme of **forest ecosystems health condition monitoring** was implemented also in 2005. The programme operated 112 permanent monitoring areas (PMA) within the 16x16 km network (extensive monitoring), and 7 research PMAs (intensive monitoring). Both monitoring levels are part of the European network of monitoring areas within the UN/ECE ICP Forest Programme.

The following table shows the percentage of coniferous, broad-leaf, and total tree types with varying degrees of damage, since the beginning of the monitoring activities in the SR from 1987 until 2005. **Ratio of trees in the 2-4 degrees of damage is the determining factor for assessment of deterioration or improvement to the health condition of forests.** The year 1989 is considered most critical, when as much as 49 % of trees were classified into degrees of damage 2-4.

Results of forest condition monitoring in SR in 1987-2005

Year	Tree types	Representation of trees in various damage degrees in %							
		0	1	2	3	4	1-4	2-4	3-4
1987	Coniferous	11	36	41	11	1	89	53	12
	Broadleaves	26	47	22	5	0	74	27	5
	Total	19	42	32	7	0	81	39	7
1997	Coniferous	13	45	38	3	1	87	42	4
	Broadleaves	22	55	21	2	0	78	23	2
	Total	18	51	28	2	1	82	31	3
2000	Coniferous	18	44	35	2	1	82	38	3
	Broadleaves	29	57	13	1	0	71	14	1
	Total	25	52	22	1	0	75	23	1
2001	Coniferous	12	49	37	1	1	88	39	2
	Broadleaves	18	55	26	1	0	82	27	1
	Total	16	53	30	1	0	84	31	1
2002	Coniferous	8	51	38	2	0	92	40	3
	Broadleaves	23	62	14	1	0	79	15	1
	Total	17	58	23	1	0	83	25	2
2003	Coniferous	4	56	39	1	0	96	40	1
	Broadleaves	14	61	24	1	0	86	25	1
	Total	10	59	30	1	0	90	31	1
2004	Coniferous	4	60	35	1	0	96	36	1
	Broadleaves	16	64	19	1	0	84	20	1
	Total	11	62	26	1	0	89	27	1
2005	Coniferous	6	59	33	2	0	94	35	2
	Broadleaves	21	65	13	1	0	79	14	1
	Total	14	63	22	1	0	86	23	1

Description of damage degrees of monitored trees:

Source: NFC

0 - defoliation of trees between 0 - 10 % no defoliation (healthy trees)

1 - defoliation of trees between 11 - 25 % slight defoliation (slightly injured trees)

2 - defoliation of trees between 26 - 60 % medium defoliation (medium injured trees)

3 - defoliation of trees between 61 - 99 % strong defoliation (strongly injured trees)

4 - defoliation of trees between 100 % dying and dead

Based on the results from foliage evaluation that have been collected since 1987 **the following may be concluded:**

- Of total number of 4 111 monitored trees in 2005, 22.9 % were damaged, i.e. with defoliation exceeding 25 % (degrees of defoliation 2-4).

- A worse situation exists with the coniferous trees, with 35.3 % of damage trees, while only 13.6 % of the broad-leaf trees are damaged. In 2005, percentage of damaged trees decreased, compared to the previous year. Mainly the numbers of damaged broad-leaf trees dropping by 6.3 % caused this situation.
- Average defoliation of all tree types together in 2005 is 22.3 %, including 26.2 % of coniferous, and 19.2 % of broad-leaf. Health condition of trees in 2005 was among the best recorded since 1987.
- In 2005, health condition of broad-leaf trees improved, compared to 2004. Changes to the health condition of coniferous trees were statistically insignificant.
- Major fluctuations recorded in individual years include climate factors, fruitage, and (especially being the case of oak) presence of leaf-eating insects. Health condition of coniferous trees has been **stabilised** since 1996 (average defoliation is between 26 – 28.3 %), in case of broad-leaf trees, the situation shows more fluctuations between individual years.
- On the basis of the number of trees classified into the damage degrees of 2-4, health condition is worse than the whole-European average, caused mainly by worse health condition of coniferous trees.
- The least-defined tree types are hornbeam and beech. In long term, tree types with the greatest level of defoliation are fir and spruce.
- Compared to 2004, in 2005, worsened health condition measured by defoliation was observed only in pine. Hornbeam and ash showed the most significant decrease in average defoliation.
- Orava, Kysuce, and Spiš-Tatras area belong to the areas with the worst long-term health condition of forest.
- Intensive monitoring sites in 2004 recorded a decrease in the average sulphur deposition, with values in open area ranging from 6 to 11 kg.ha⁻¹, and 7 – 16 kg. ha⁻¹ in forest land.
- Total nitrogen deposition was higher than sulphur deposition at all monitored areas, both in open area, as well as in forest land. This only proves that the acidification and eutrophication impacts of nitrogen gradually play a key role in relation to the health condition of forest vegetation.
- Properties of the soil solution also point to the rising significance of nitrogen ion transport in soil, compared to sulphur ions. A very strong local soil solution acidity exists, based on natural and deposition inputs.
- In 2004, ozone concentrations at monitored sites showed a typical annual trend with minimum average monthly concentrations in the winter season (October and December) and maximum average concentrations in the spring and summer seasons with double climax (March, August).

Results of tree defoliation in selected European countries in 2004

Country	Number of assessed trees	Degree of injury				
		0	1	2	3+4	2+3+4
Czech Republic	6 585	11.7	31.0	56.2	1.1	57.3
Hungary	28 313	39.9	38.6	15.6	5.9	21.5
Poland	25 520	8.3	57.1	32.5	2.1	34.6
Austria	3 582	51.4	35.4	10.4	2.8	13.1
Slovakia	4 216	11.3	62.0	25.7	1.0	26.7

Source: MoA SR

◆ Hunting

There were **1 806 hunting areas** in Slovakia in 2005, including 23 game protection territories and 16 pheasant territories. Average size of hunting areas was 2 456 ha (3 391 ha in 1990). Total size of the hunting territory is **4 436 461 ha**. There is 2 328 thous.ha of agricultural land, 1 980 thous.ha of forest land, 51 thous.ha of aquatic, and 78 thous.ha of other land. Number of hunting areas is increasing, while their average size is decreasing.

Spring initial numbers of the cloven-hoofed game excluding the wild boar as of December 31, 2005 were higher than in the previous year. This tendency exists since 1998. Further increase in the number of individual species of ungulates game, excluding roe deer, is undesirable because damage to the forest vegetation and agricultural produce inflicted by this game begin to increase again.

Shooting of **red deer, fallow deer, and mouflon** in 2005 was higher than in the previous year; however, the planned shooting quota was not reached. Shooting of **roe deer and wild boar** decreased. Spring initial numbers of pheasant, rabbit, and wild turkey increased. On the other hand, spring initial numbers of hare and partridge dropped. Numbers of **large predators**, with the exception of wildcat, increased statistically. These numbers are quite high. In terms of other **rare species** of animals, compared to the previous year, their numbers slightly decreased, with the exception of otter, black grouse, bison, and beaver. Hunting of rare game species is strictly regulated. Permitted shooting limit of **bear** was 66, while the actual number of shot animals was 35. Meeting the permitted shooting limit is stagnating over the recent years. Major cause of this situation is the limiting conditions set by the Ministry of Environment SR. 74 wolves and 8 alpine chamois were shot. A significantly higher number of chamois (625) was recorded than in the previous year (522).

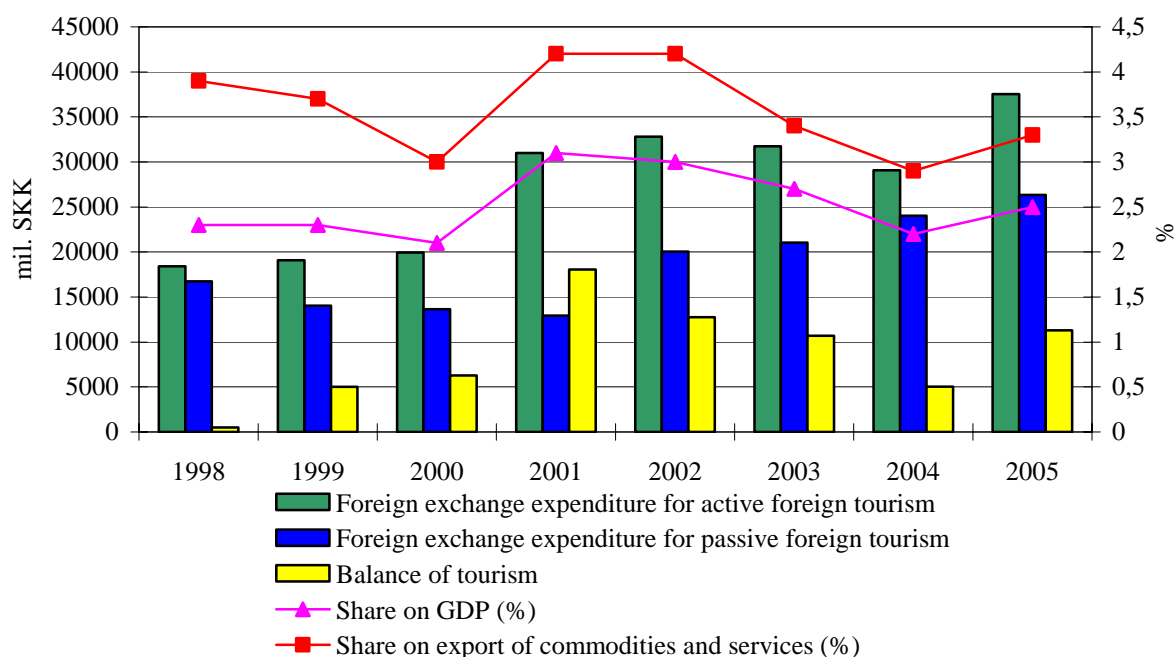


Recreation and tourism

◆ Tourism and its contribution to the GDP

There was again a significant increase in revenues from tourism and its share on the GDP and export and import of goods and services in 2005.

Tourism and its share on GDP and export between 1998 – 2005



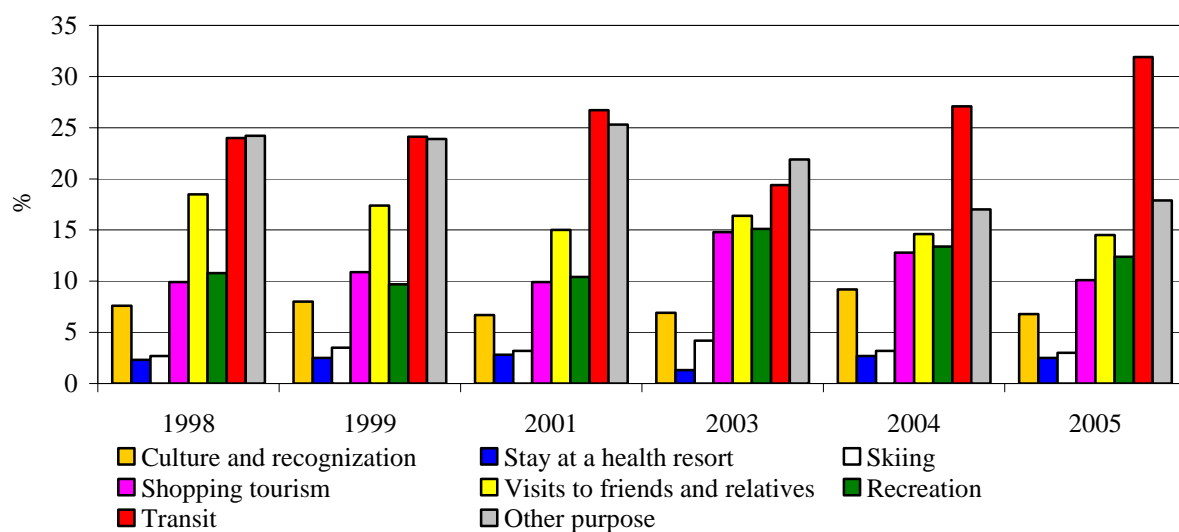
Source: SO SR

Note: Level of revenues in foreign exchange in 2001 is partially affected by transition to EUR toward the end of the year and the SR citizens placing foreign exchange on their foreign exchange accounts

◆ Specific analysis of recreation and tourism

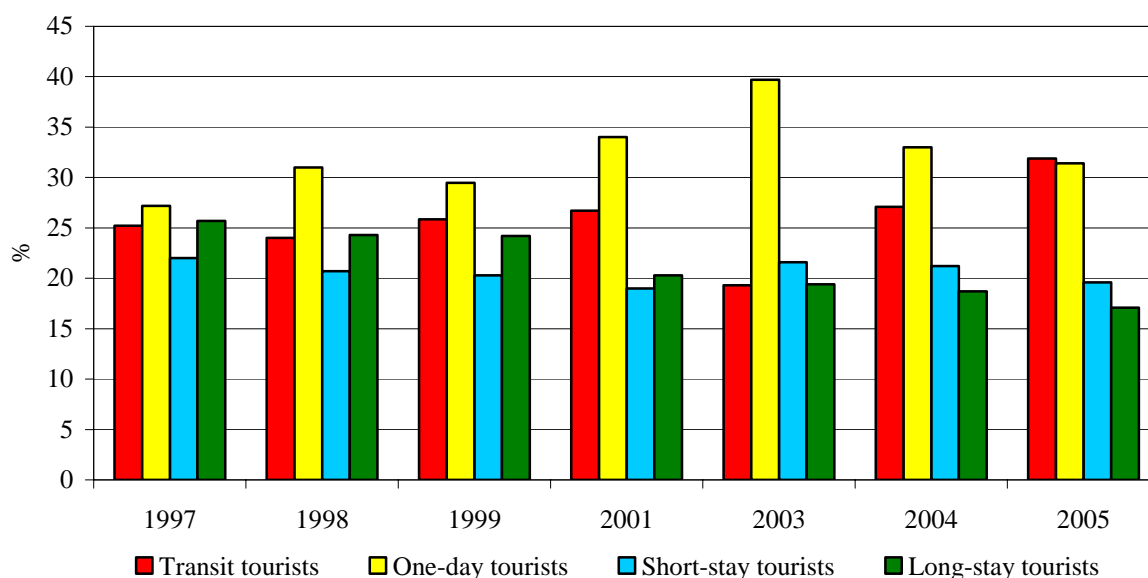
Dominant purposes of the international tourists to Slovakia **include activities in accordance with the requirements of sustainable development**; however, **high and significantly rising numbers** (especially in the years 2003 – 2005) of **transit tourists** that bring only a small economic growth into the country along with some negative environmental impacts, are a **major challenge**. The same may be said of the international clientele's broad number of interests over the course of the whole year, as well as individual types of tourism. Data collected for individual regions and towns may vary significantly.



Tourist purposes and profiles of the foreign visitors of Slovak Republic (%) between 1998 – 2005


Source: MoE SR

Structure of international visitors by the length of stay is not positive. On one hand, number of transit tourists was increasing in the years 2003-2005, on the other hand, number of short-stay and especially long-stay tourists decreased. Most significantly decreased factor **over the period of 1996-2005** was **the percentage of long-stay tourists**.

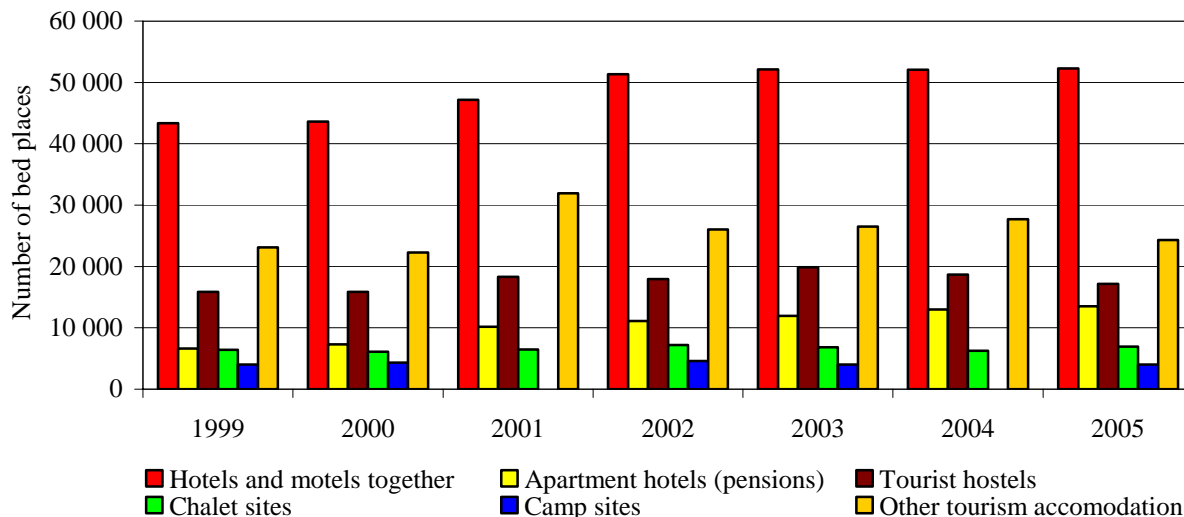
Types of the foreign visitors of Slovak Republic (%) between 1997 - 2005


Source: MoE SR

Increase in the bed capacity of accommodation facilities in 1998 - 2003 can be assessed positively as this increase has been caused especially by increase in the number of more affordable, small environment friendly accommodation facilities – pensions and hostels. **In 2004 - 2005**, this

positive trend stopped, while today there is **stagnation in the number of beds** in all categories of accommodation facilities.

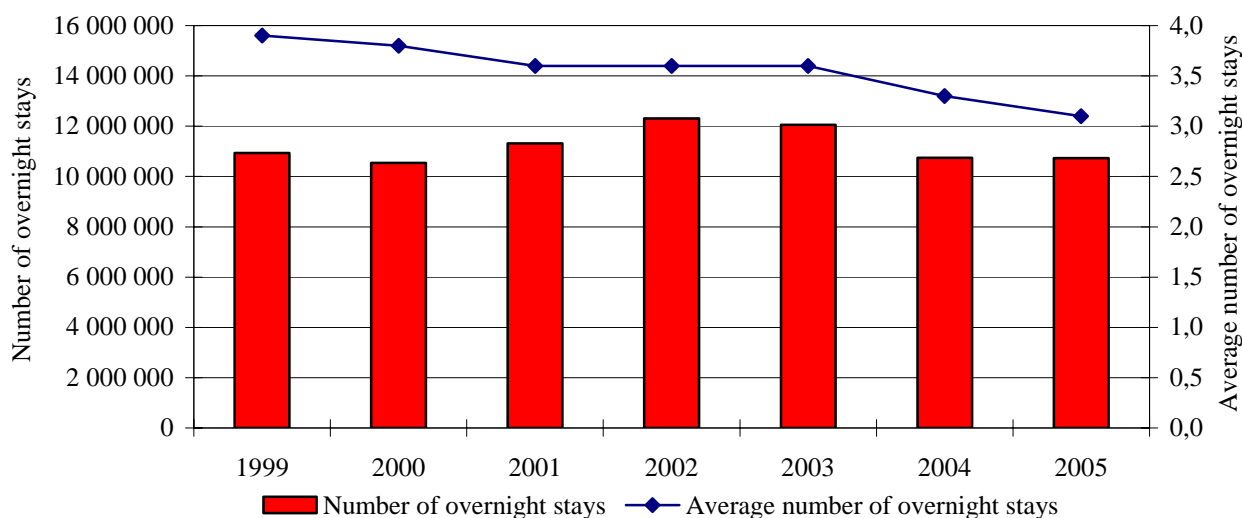
Capacity of tourism accommodation (number of bed places) in Slovak Republic between 1999 - 2005



Source: SO SR

Notwithstanding the fluctuating characteristics of statistical data, **number of overnight stays** is still stagnating. Most importantly; however, **average number of overnight stays** decreases continually. This relates to the attractiveness of the tourist destination and the level of development of its infrastructure. This is what influences the length of actual stays.

Overnight stays in tourism accommodation between 1999 – 2005



Source: SO SR

◆ **Demand of tourism on exploitation of resources**

In terms of national economy, **tourism with its little demand on material resources does not represent a significant demanding sector.** This fact is especially important for a country like Slovakia that depends much on export. **Demand of tourism on the exploitation of natural resources and land occupation is important especially on the local level.** This phenomenon is caused by major seasonal differences in the number of tourists to individual tourist destinations. Compared to other economic activities, it is not possible, for example, to supply data on the energy and material demand of tourism, because of the lack of good data retrieving and collecting mechanisms to meet specific indicators.

◆ **Environmental impact of recreation and tourism**

In terms of the environmental quality, there is a significant differentiation that represents a major potential for the development of tourism in Slovakia. On one hand, 65.74 % of the Slovak territory falls into the I. and II. environmental quality degrees (environment with high quality, i.e. acceptable), on the other hand, as much as 66.02 % of inhabitants live on the territory classified under the III., IV., and V. environmental quality degrees (environment slightly impaired, impaired, and extremely impaired).

Intensity of tourist visits is not regularly spatially distributed. Sites for mountain tourism activities are concentrated within The Tatranský National Park (Roháčska valley in the West Tatras, and Mlynická, Mengusovská, Velická, Malá, Veľká Studená, and Skalnatá valleys), The Nízke Tatry National Park (Demänovská and Jánska valleys, and northern slopes of Chopok, Bystrá valley, and southern slopes of Chopok), and The Malá Fatra National Park (Vrátna valley).

Especially by inclusion of territories of new national parks – The Slovenský kras National Park and The Veľká Fatra National Park since 2002, there has been **increase in distance of marked cycling trails and marked hiking trails** on the territory on national parks. In terms of density of such marked tourist trails, the most fragmented territories, in terms of their size, are areas of The Pieniny National Park, The Muránska planina National Park and The Slovenský raj National Park.



Number of locations for so called active sports in national parks behind the border of municipal construction zones (§14, part 1, letter b, c, d) of the Act No. 543/2002 Coll. on Nature and Landscape Protection between 2001 - 2005

Name of protected area	Mountain climbing and rock climbing	Skialpinism	Camping, bivouac	Ski areas	Cross country skiing **	Bicycle marked paths **	Hiking marked paths **
◆ The Tatranský National Park							
2001	whole area*	6				150/0.20	600/0.81
2002	whole area*	6				150/0.20	360/0.49
2003	whole area*	6	1	7	108/0.14	150/0.20	690/0.93
2004	whole area*	6	1	7	108/0.14	150/0.20	690/0.93
2005	whole area*	6	1	7	108/0.14	150/0.20	690/0.93
◆ The Nízke Tatry National Park							
2001	4	1				201/0.25	800/0.98
2002	4	1				201/0.25	800/0.98
2003	4	1	6	6		201/0.25	800/0.98
2004	4	6 (3 areas, 2 trails, 1 locality)	7	6	40 + suitable marked hiking paths	718/0.39 (include protective area of the national park)	800/0.44 (include protective area of the national park)
2005	4	6 (3 areas, 2 trails, 1 locality)	7	6	40 + suitable marked hiking paths	718/0.39 (include protective area of the national park)	800/0.44 (include protective area of the national park)
◆ The Malá Fatra National Park							
2001	1	1				0	157/0.69
2002	1	1				0	157/0.69
2003	1	1		2		0	157/0.69
2004	1	1	-	2	-	-	157/0.69
2005	5	-	4	2	15 + 157 km of marked hiking paths	35	157/0.69
◆ The Pieninský National Park							
2001	0	0				15/0.4	60/1.6
2002	0	0				15/0.4	60/1.6
2003	0	0	2	1	9	15/0.4	60/1.6
2004	-	-	1	1	9	15/0.4	60/1.6
2005	-	-	2	1	22	15/0.4	60/1.6
◆ The Slovenský raj National Park							
2001	1	0	3	5	1	60/0.3	275/1.39
2002	1	0	3	5	1	44,5/0.2	215/1.09
2003	5***	0	3	5	1	44,5/0.2	215/1.09
2004	5***	-	3	5	1	44,5/0.2	215/1.09

2005	5**	-	3	7	50 + suitable marked hiking paths (include protective area of the national park)	118,5/0.1 (include protective area of the national park)	215/1.09
♦ The Muránska planina National Park							
2001	3	0				0	318/1.57
2002	1	0				0	318/1.57
2003	1	0				0	318/1.57
2004	2	0	3	0	26	13/0.06	318/1.57
2005	2	-	3	-	26	13/0.06	318/1.57
♦ The Poloniny National Park							
2001	0	0				0	119/0.4
2002	0	0				0	119/0.4
2003	0	0	2	1	0	0	119/0.4
2004	0	0	2	1	0	0	119/0.4
2005	-	-	2	1	119/0,4	44	119/0.4
♦ The Slovenský kras National Park****							
2001							
2002	1	0				38/0.19	270/0.78
2003	1	0				38/0.19	270/0.78
2004	1	0				38/0.19	270/0.78
2005	1	-	-	-	-	38/0.19	270/0.78
♦ The Velka Fatra National Park****							
2001	3	0				100/0.25	200/0.5
2002	3	0				100/0.25	200/0.5
2003	3	0	0	3	0	100/0.25	299/0.74
2004	5			3		100/0.25	299/0.74
2005	8	1	6	3	300	103/0.26	300/0.74
♦ Together							
2001						526/0.16	2 529/0.8
2002	9 + The Tatranský National Park	8				548/0.17	2 499/0.79
2003	15 + The Tatranský National Park	8	14	25	118	548/0.17	2 928/0.92
2004	18 + The Tatranský National Park	13	17	25	184 + The Nízke Tatry National park	1 078.5 km	2 928 km
2005	25 + The Tatranský National Park	13	28	27	680 + suitable marked hiking paths	1 134.5	2 929 km

Source: SNC SR

* - except for 8 localities defined in the Visiting order of national park, where climbing is forbidden

** - in case of cross country skiing, cyclo-tourism and hiking, information is available on length of the marked tracks, marked bicycle paths and of the marked hiking paths in km or in km/km².

***- include climbing the ice falls

**** - Slovenský kras a Veká Fatra were proclaimed national parks in 2002

Increase in length of erosion-impacted tourist marked trails presents a significant environmental issue. These trails are in the zone above the upper forest border and in precipices where, due to extreme climate conditions, exist greatly deteriorated local conditions for regeneration of soil and the flora. **Critical soil erosion** may be seen at marked tourist trails **in the territory of The Nízke Tatry National Park, The Malá Fatra National Park** (substantial erosion increase over the years 2002-2003), and **The Muránska planina National Park** (substantial erosion increase over the years 2004-2005). **Significant erosion** exists also **in the territory of The Slovenský raj National Park**. In 2004-2005, **significant increase in erosion of marked tourist trails was recorded** also in the territory of the **The Tatranský National Park**.

Erosion of soils on marked hiking paths and marked bicycle paths on the territory of national parks between 2001 - 2005

Year	Overall length of the marked bicycle paths affected by erosion (km/% of the total length)	Overall length of the marked hiking paths affected by erosion (km/% of the total length)
2001	2/0.38	576/22.7
2002	7.5/1.37	630/25.2
2003	12/2.19	732/25.0
2004	13.8/1.3	778/26.6
2005	17/1.5	878/30.0

Source: SNC SR

Highest degree of endangerment of small-size protected areas from tourism exists in the following territories: The Tatranský National Park, The Nízke Tatry National Park, The Malá Fatra National Park, The Pieniny National Park, The Slovenský raj National park, The Malé Karpaty Protected Landscape Area, The Strážovské vrchy Protected Landscape Area, The Poľana Protected Landscape Area and The Vihorlat Landscape Area.