2
AIR MANAGEMENT*

Features

- Further reducing air emissions
- Air pollutants and health effects
- Air management and energy policy
- Air management and transport policy

* The present chapter reviews progress in the last ten years, and particularly since the previous OECD Environmental Performance Review of 2000. It also reviews progress with respect to the objectives of the 2001 OECD Environmental Strategy. It takes into account the latest IEA Energy review of Hungary.

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Recommendations

The following recommendations are part of the overall conclusions and recommendations of the environmental performance review of Hungary:

- strengthen *measures for reducing air emissions*, especially from the transport and residential sectors, so as to meet national emission ceilings and limit values for ambient air quality;
- maintain the *incentive value of emission charges* (e.g. the environmental load charge) by regularly reviewing their rates; ensure that incentives for energy efficiency provided by relatively high energy prices are not undermined by unjustified exemptions and subsidies;
- ensure *competitiveness in the energy sector*, in the EU context, to improve its environmental and economic performance; take further steps to increase *energy efficiency* in all sectors of the economy;
- reassess the support schemes for *renewables and biofuels*, and their overall impacts (including those on land use); consider introducing more market-oriented measures (e.g. green certificates);
- review *transport prices and taxes* (e.g. the vehicle tax) to better internalise costs and reflect vehicle environmental performance. Create incentives to influence transport decisions by businesses and individuals, to counteract projected traffic increases (e.g. gradually link road fees to distance travelled, reduce fringe benefits and tax rebates for private car use);
- further develop *traffic management in urban areas* (e.g. traffic restrictions in city centres, parking and road pricing) and continue to promote integrated public transport in major cities; give municipalities better control over their revenue sources and traffic management tools.

Conclusions

Since 1998, Hungary has *considerably reduced air pollutant emissions* and as a consequence has *improved ambient air quality*. Emissions of SO_2 and CO_2 have been further decoupled from economic growth, falling below the respective targets agreed at international and European levels. Per capita emissions of CO_2 are lower than the OECD-Europe average. Economic restructuring and the closing of several industrial plants have helped reduce emissions of particulate matter (–29%) and CO (–20%). The improvement in ambient air quality has resulted in a decreasing trend in morbidity and mortality associated with respiratory diseases. Concentrations of SO_2, CO, benzene and lead were kept below the limits throughout the country during the review period. The

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national air quality monitoring network was extended, doubling the number of on-line sampling points, and the vast majority of measuring stations were upgraded to collect data on particulate matter and aromatic hydrocarbons. *Air quality legislation was extensively revised* and is now consistent with international commitments and EU requirements. An "environmental load charge" applying to emissions of the main air pollutants from stationary sources was introduced. Investment in end-of-pipe equipment and improvement in fuel quality have contributed to a significant reduction in emissions from energy generation. Concerning *energy,* Hungary has made significant progress in opening energy markets; and *energy prices* for end-users have been further adjusted to achieve cost recovery. In 2006, the direct subsidy on natural gas for household heating was replaced by a more targeted social compensation scheme. The *energy intensity* of the economy has been reduced, gradually approaching the OECD Europe average. The *share of renewables* in total primary energy supply increased markedly following the introduction of a feed-in tariff in 2001, and the target for electricity generation from renewables was met well ahead of the 2010 deadline. Some large power plants shifted from coal to biomass, thus cutting SO_2 and CO_2 emissions. Concerning *transport*, increases in fuel prices, vehicle taxes and road tolls have helped moderate demand for road transport. Public transport is well developed and still prevails in the modal split for urban travel. Switching to less polluting fuels has been promoted via tax measures. Improvements in fuel quality and vehicle performance have helped to increase the energy efficiency of transport and to reduce related air emissions.

However, some positive trends that characterised the early 1990s slowed during the review period. *Emissions* of NO_x and VOCs have fluctuated slightly around the same level since 2001, and recent increases will make it more challenging to reach the respective emission ceilings. Similarly, the decline in emissions of heavy metals and persistent organic pollutants appears to have halted in recent years. Emissions of air pollutants and greenhouse gases from household and transport sectors are growing, partially offsetting progress achieved in the industrial and energy sectors, and potentially undermining improvements in *ambient air quality*, especially in urban areas. *Particles and ground-level ozone* are of particular concern: in 2006, daily limits were exceeded at most assessment stations, particularly in the capital city and large urban areas. The NO_x annual average threshold was also exceeded in some areas and in major cities of the country. The relatively low rates and exemptions for district heating providers may hinder the incentive function of air emission charges. Compliance with licensing regulations appears to remain the main driver for improving the environmental performance of large stationary sources. As in most EU countries, effective competitiveness in *energy markets* is still limited and a significant potential exists for increasing the efficiency of electricity generation. Whilst the feed-in tariff has helped to increase the share of renewables in energy supply, the support scheme might lead to over-subsidisation; cost-benefit analyses would help in

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assessing overall impacts. Further efforts are needed to increase energy efficiency in the residential and transport sectors, as reflected in the recently approved National Energy Efficiency Action Plan. Households still benefit from exemptions on energy taxes, which may discourage efficient use of energy. *Transport demand management* has proven inadequate to influence decisions on car use, partly because of persistent financial constraints faced by municipalities. Commuter subsidies are not sufficient to support public transport and income tax provisions encourage private vehicle use. The growing motor vehicle fleet, as well as the boom in road freight transport which followed EU accession, threatens to offset improvements in vehicle technology and fuel quality. Road prices are not proportional to distance travelled and vehicle taxes do not satisfactorily take account of environmental performance.

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1. Policy Objectives

Hungary extensively revised its air quality policy during the review period. Starting in 2001, several pieces of legislation on air protection were approved, with the aim of fulfilling international commitments and harmonising the country's air management regulation with EU requirements.

The general goals of the renewed air quality legislation framework and the *Second National Environmental Programme for 2003-2008* (NEP-II) are to significantly reduce emissions, including those from transport and energy production and use, and to improve *ambient air quality* in polluted target areas (Budapest and other major cities).

The NEP-II objectives for air quality are detailed in three *thematic action programmes.* The Climate Change Action Programme directly aims both to curb greenhouse gas (GHG) emissions and to improve regional air quality by: reducing air emissions from the energy sector (by improving efficiency in energy production and end use and fostering electricity production from renewables); reducing GHG and polluting emissions from transport; cutting GHG emissions from agriculture and waste and enlarging carbon sink capacities; and preventing atmospheric acidification and stratospheric depletion of the ozone layer. The Environmental Health and Food Safety Action Programme includes a specific objective on the abatement of health risk caused by outdoor and indoor air pollution by reinforcing air quality monitoring systems and the evaluation of health impacts. The Urban Environmental Quality Action Programme aims *inter alia* to reduce urban pollution originating from traffic by defining comprehensive transport plans.

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The NEP-II encompasses the 2010 *air emission targets* for sulphur dioxide (SO_2), nitrogen oxides *(NO_x)*, volatile organic compounds (VOCs) and ammonia stipulated by the Gothenburg Protocol to the Geneva Convention on Long-Range Transboundary Air Pollution (CLRTAP) and the EU National Emission Ceilings Directive (NEC Directive 2001/81/EC). Under the Kyoto Protocol, Hungary has committed to reduce its GHG emissions by 6% below the 1985-87 level by 2008-12 (Chapter 8).

Hungary's *ambient air quality target and limit values* are consistent with the EU Air Quality Framework Directive (Directive 96/62/EC) and related daughter directives. *Additional quantitative targets* set by the NEP-II include: reducing the share of polluted areas in the country from 11% in 2000 to 5-8% by 2008; reducing the share of population affected by air pollution from 40% in 2000 to 20-25% by 2008; and achieving a 20% cut in emissions of persistent organic pollutants by 2008.

The NEP-II air management objectives fully subsume the *recommendations* of the 2000 OECD Environmental Performance Review (EPR), including those related to energy and transport:

– continue to review and upgrade standards relating to air pollution, notably those for ambient air quality, with due regard to harmonisation with relevant EU standards;

– reform regulatory measures for stationary sources, to increase the incentive function of emissions fines, and implement the EU large combustion plant directive; invest in equipment to reduce SO_x and NO_x emissions from large coal/ lignite-fired power plants, where such investment is shown to be cost-effective;

– extend the national air quality monitoring system and improve data collection and reporting, increasing the number of pollutants measured to include size-fractions of particulate matter (e.g. $PM_{2.5}$ and PM_{10}), toxic substances and heavy metals;

– continue efforts to improve energy efficiency in the industrial sector;

– modernise district heating networks to reduce distributional losses; pursue efforts to reduce price distortions concerning heat supply and distribution for industrial and residential users;

– prepare and implement measures to improve energy efficiency in the residential sector, including mandatory building codes, metering systems and incentives for insulation improvement;

– encourage use of cleaner fuels and renewable energy sources (e.g. biomass);

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- review the Hungarian Transport Policy, giving special attention to the setting of investment priorities on the basis of economic analysis, covering environmental impact and energy efficiency of transport modes;
- improve enforcement of vehicle inspection programmes and develop incentives for scrapping old motor vehicles;
- review the mix of economic instruments influencing modal choice for passenger transport, and reassess the present system of income tax rebates for commuting by passenger car;
- review public transport fares (e.g. in Budapest), taking into account the pricing of other transport modes and seeking to create financial incentives to use public transport;
- develop a sustainable transport plan for Budapest, incorporating public transport, car-free zones, parking management, two-wheel vehicle lanes, spatial planning and other measures;
- give comprehensive consideration to transport project alternatives throughout the EIA process, including during stages of public consultation and participation;
- carry out noise abatement along major roads and railways, and improve enforcement of emissions limits for motor vehicles;
- develop and monitor indicators of environmental impacts of transport, including air, noise and solid waste emissions as well as impacts on nature and the landscape.

2. Air Pollution Trends

2.1 Further reducing air emissions

Emissions of SO_2 decreased by 78% between 1998 and 2005, reaching 129.3 kilotonnes (kt)/year, well below the 2010 emission ceiling of 500 kt/year stipulated by the Gothenburg Protocol and the EU NEC Directive. The energy sector has made the biggest contribution to the reduction in sulphur emissions. The SO_2-intensity of the Hungarian economy dramatically dropped over a short period, and it is now in line with the OECD-Europe average (Figure 2.1). In 2005, about 75% of total sulphur emissions came from industrial and non-industrial combustion. Industrial emissions fell by 41%, while emissions from non-industrial combustion rose, correlated to the growth in household heating emissions (+15.6%) (Table 2.1).

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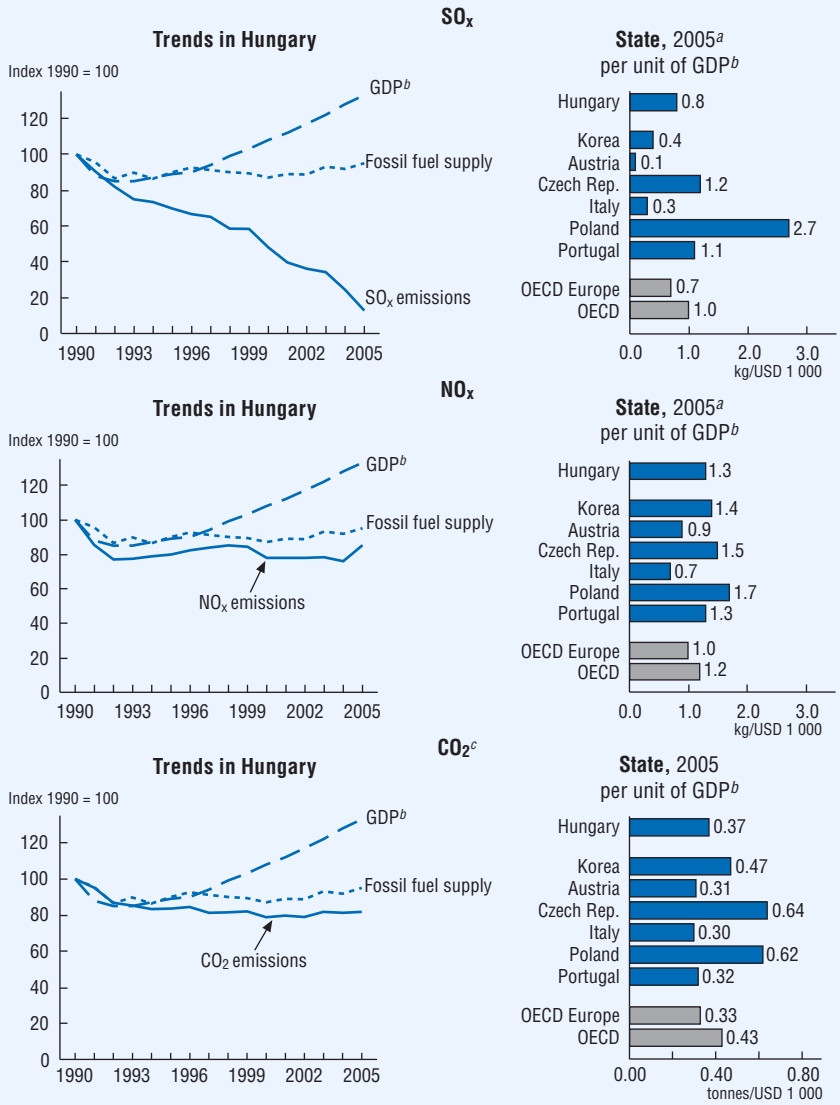
Figure 2.1 **Air pollutant emissions**



a) Or latest available year.
b) GDP at 2000 prices and purchasing power parities.
c) Emissions from energy use only; excludes international marine and aviation bunkers; sectoral approach.
Source: HCSO; OECD-IEA (2007), CO_2 Emissions from Fuel Combustion; OECD (2007), OECD Economic Outlook No. 82; OECD-IEA (2007), Energy Balances of OECD Countries 2004-2005.

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Table 2.1 **Atmospheric emissions,** by source, 1998-2005

		SO_2		NO_x		NMVOC[a]		CO		PM[b]		CO_2	
		1 000 t	(%)	1 000 t	(%)	1 000 t	(%)	1 000 t	(%)	t	(%)	1 000 t	(%)
Power	1998	462.7	*78.2*	49.9	*24.7*	1.5	*0.9*	15.4	*2.1*	19.2	*15.1*	23 970	*39.4*
Stations	2005	20.7	*16.0*	27.9	*13.8*	3.6	*2.0*	15.7	*2.7*	8.3	*9.2*	16 913	*27.4*
Industrial	1998	68.9	*11.6*	11.4	*5.6*	12.3	*7.3*	5.6	*0.8*	10.5	*8.2*	11 268	*18.5*
Combustion	2005	40.4	*31.2*	11.6	*5.7*	9.7	*5.5*	5.7	*1.0*	9.8	*10.8*	11 796	*19.1*
Non-industrial	1998	48.7	*8.2*	18.3	*9.0*	21.4	*12.6*	30.6	*4.1*	29.2	*22.9*	13 796	*22.7*
Combustion	2005	56.3	*43.5*	23.4	*11.5*	36.8	*20.7*	36.6	*6.2*	38.1	*42.0*	17 548	*28.4*
Industrial	1998	8.0	*1.4*	9.0	*4.4*	22.4	*13.2*	220.0	*29.9*	45.0	*35.3*	3 201	*5.3*
Processes	2005	10.0	*7.7*	4.9	*2.4*	40.3	*22.7*	98.2	*16.7*	9.7	*10.7*	3 326	*5.4*
Mobile	1998	3.5	*0.6*	114.0	*56.3*	63.7	*37.6*	465.3	*63.1*	19.6	*15.4*	8 193	*13.5*
Sources	2005	1.9	*1.5*	135.0	*66.6*	58.6	*33.0*	419.9	*71.5*	21.4	*23.6*	11 777	*19.1*
Solvents	1998	–	–	–	–	45.9	*27.1*	–	–	0.0	*0.0*	95	–
	2005	–	–	–	–	28.4	*16.0*	–	–	0.0	*0.0*	65	–
Miscellaneous	1998	–	–	0.0	*0.0*	2.4	*1.4*	0.0	*0.0*	3.9	*3.1*	267	*0.4*
	2005	–	–	0.0	*0.0*	0.0	*0.0*	10.9	*1.9*	3.4	*3.7*	382	*0.6*
Total	1998	591.8	*100.0*	202.6	*100.0*	169.6	*100.0*	736.9	*100.0*	127.4	*100.0*	60 790	*100.0*
	2005	129.3	*100.0*	202.8	*100.0*	177.5	*100.0*	587.0	*100.0*	90.7	*100.0*	61 808	*100.0*
Change (%) 2005/1998			*–78.1*		*0.1*		*4.6*		*–20.3*		*–28.8*		*1.7*

a) 1999-2005.
b) 1998-2004.
Source: Environmental Statistical Yearbook of Hungary, HCSO; UNFCCC.

Emissions of NO_x dropped sharply between 1998 and 2000, from 202.6 to 185.5 kt/year, due essentially to the restructuring of the power sector, and they hovered around the same level in the early 2000s. However, in 2005 there was a rise in emissions (203 kt), mostly caused by road transport, which would make it more difficult to reach the 2010 target (198 kt). The NO_x-emission intensity of the economy is slightly above that of the OECD (Figure 2.1). Transport remains the major source of NO_x, and non-industrial combustion (mainly household heating) represents a fast-growing source of emissions (Table 2.1).

Non-methane VOC emissions rose 4.6% over the review period, from 170 kt in 1999 to 177.5 kt in 2005, taking Hungary further away from its international and EU commitments (137 kt by 2010). Emissions from mobile sources declined by 8%, due to the penetration of catalytic converters in the vehicle fleet, which has outweighed the effect of traffic growth. However, transport remains the major source of VOCs, followed by

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industry, whose emissions have almost doubled since 1999, and district heating (+72%). Emissions from solvent use dropped steadily over the review period, as a result of the technological measures introduced by installations to comply with the EU Solvent Directive thresholds (Directive 99/13/EC) (Table 2.1). Further control measures would be required to cut VOC emissions, especially in the industrial and transport sectors.

Ammonia emissions increased by 23% between 2002 and 2005 but stayed below the 2010 target of 90 kt. NH_3 emissions were about 80 kt in 2005, mainly arising from animal breeding and fertilisers use.

Despite Hungary's economic growth, *GHG* gross emissions stayed broadly constant during most of the review period, at around 80 million tonnes of CO_2-equivalent, about two-thirds of the base-year (1985-1987) level and well below Hungary's Kyoto target (Figure 2.1). The carbon intensity of the Hungarian economy is slightly above the OECD-Europe average, whereas per capita emissions are about 70% of the OECD-Europe average. CO_2 emissions amounted to around 62 million tonnes in 2005, accounting for 77% of the GHG total. CO_2 emissions from energy production continued to decline during the review period, while emissions from transport rose by more than 40% and from households and services by 27%, exceeding the level of emissions generated by power plants (Table 2.1). Methane and nitrous oxide emissions amounted to nearly 7.8 and 9.9 million tonnes, respectively.

Total *particulate matter* (PM) emissions dropped nearly 30% between 1998 and 2004, although emissions of PM_{10} and $PM_{2.5}$ rose sharply between 2002 and 2005, by 21% and 28% respectively. In 2004, PM emissions from the energy and industrial sectors were about one-half and one-fifth of their respective 1998 levels. The energy sector continued to benefit from measures taken in the early 1990s (installation of electrostatic-precipitators). Emissions from households and mobile sources grew by 30% and 9% respectively; fuel combustion for household heating represents the major source of PM emissions (Table 2.1).

Total *carbon monoxide* (CO) emissions decreased, especially in the industrial sector (–55%). Improvements in vehicle performance brought a reduction in CO emissions from mobile sources, although transport remains the largest source of CO-related pollution (Table 2.1). Emissions from the residential and service sectors showed a major increase (+20%).

The downward trend in emissions of *heavy metals* that began in 1990 continued during the early part of the review period, but appears to have either slowed or reversed (copper) in the latter part, with the major exceptions of cadmium and lead. The reduction in lead emissions was mainly due to the gradual phase-out of leaded petrol (completed in 1999).

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Emissions of *persistent organic pollutants* (POPs) started to rise slightly in the latter part of the review period; this was especially the case for PAHs, HCB and dioxin, which are mainly linked to combustion of wood, coal and wastes by households. On the other hand, emissions of PCBs decreased. It appears that the emission abatement potential related to the shift from solid to gaseous fuels and the introduction of pollution removal equipment in the metal and mineral processing industry has weakened.

2.2 Meeting ambient air quality standards

In line with OECD recommendations, *Hungary extended and upgraded its air quality monitoring system* during the review period, with the contribution of EU funds. In 2002, management of the monitoring system was moved from the Ministry of Health to the Ministry of Environment and Water (MEW). The system consists of 59 automatic stations (11 in Budapest), 200 manual sampling points and six mobile measuring devices (buses). Nearly all automatic stations collect data on SO_2, NO_x, NO_2, PM_{10}, CO and ozone and almost half monitor some aromatic hydrocarbons (BTEX). Only four stations (one in Budapest) collect data on $PM_{2.5}$.

Economic restructuring and the closing-down of several industrial plants have helped to *improve ambient air quality in formerly heavily polluted areas*, such as Northern Hungary and Central Transdanubia. Since 2000, the share of national territory with poor ambient air quality has fallen from 11% to 6.3%, and the share of population affected by air pollution has dropped from 40% to 35.9%. Hungary has managed to keep concentrations of lead, benzene and carbon monoxide below limit values throughout the country. However, heavily polluted industrial sites still cause significant problems, and *air pollution from transport* affects the population in urban areas, mainly in Budapest, and in cities situated along transport routes (Box 2.1).

Background *concentrations of SO_2* have been considerably reduced, following the trend of the 1990s and corresponding to the decline in emissions. In 2006, SO_2 limit values were respected throughout the country. Concentrations are usually higher in winter due to the heating of buildings.

Background concentrations of *NO_2*, were slightly reduced during the review period. In 2006 peak (hourly) values did not exceed the limit of 200 µg/m^3 beyond the permitted frequency (18 times) anywhere in the country. However, the annual average (40 µg/m^3) was exceeded in three zones (Budapest, Győr-Mosonmagyaróvár, Sajó Valley), due mainly to heavy traffic.

Suspended *particulate matter* is of major concern. In 2006, the 24-hour limit (50 µg/m^3) was exceeded in all zones except one (Székesfehérvár-Veszprém), at about one-third

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of measuring stations. The annual average limit (40 µg/m^3) was exceeded in four zones, resulting in about half of the population being exposed to excessive levels of PM_{10}. High PM concentrations are mainly linked to heavy traffic in urban areas and in cities close to major roads and to residential heating. In some regions local industry represents a major source of pollution (especially in Győr-Mosonmagyaróvár and Komarom).

Ground-level ozone is an extensive problem throughout the country. Ozone standard exceedence varied during the review period, in both urban and rural areas. In 2006, all zones were far from the long-term objectives for health. Health protection standards were exceeded at all ozone assessment stations, resulting in the vast majority of the population being exposed to concentrations above the limits. As elsewhere in Europe, ozone concentrations are typically higher in summer and are mainly linked to transport. In some cities and regions (e.g. Dunaújváros), domestic heating is a major source of ozone precursors. Ecosystem impacts have been less significant: the vegetation protection standard was exceeded at one station only. Further efforts are needed to fully comply with the 2010 target values set by the EU Ozone Directive (2002/3/EC).

Box 2.1 **Transport-related pollution in Budapest**

The capital city of Budapest is Hungary's largest urban area, with over 1.8 million inhabitants inside the city and 2.5 million in the urban agglomeration.

In 2001 and 2002, tests were conducted to investigate the *population's exposure to air pollution from transport*. Nitrogen dioxide and benzene levels in ambient air were measured at 80 sites throughout the city, including points along heavily trafficked roads.

As expected, the downtown part of the city and the main roads had the highest exposure levels, with concentrations of NO_2 and benzene reaching 1.5 to 2 times the health limit value and 50% over the acceptable load for urban background areas. According to the tests, about 20% of the Budapest population lives in areas polluted by NO_2, and 10% lives in areas polluted by benzene. People over 65 appear to have the heaviest exposure to traffic-related air pollution: 28% of residents over 65 live in areas of the city where NO_2 concentrations exceed limit values, and 13% of them live where benzene concentrations exceed limit values.

In 2003, a special test was run to determine the *exposure of metro passengers* to particulate matter, NO_2, benzene and ozone. Measurements were taken at two metro stations (Nagyvárad Square and Klinikák) located at different depths. In both stations, the concentrations of PM_{10}, $PM_{2.5}$ and sub-2.5 micron particles were well above health limit values. On the other hand, NO_2, benzene and ozone levels were not significant.

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2.3 Human exposure to air pollution and health effects

Several studies have demonstrated a *strong correlation between air pollution and respiratory and cardiovascular diseases*. An assessment of the health effects of PM_{10} in Budapest and other cities, conducted on data from 2004, suggests that 170 premature deaths per 100 000 inhabitants per year can be attributable to long-term exposure to high PM concentrations (Jakab, 2004). Over the period 1997-2002, excess morbidity associated with chronic respiratory diseases and cancer was registered among males in the eastern part of the country, close to some of the major traditional industrial sites, and in the Western and Southern Transdanubia (Box 2.1).

The improvement in ambient air quality has resulted in a *decreasing trend in morbidity and mortality associated with respiratory diseases*, more evident since 2000. However, further investigation is needed to identify more recent trends and to isolate the health effects of outdoor air quality from the effects of cigarette smoking.

As for the *health impacts of climate change*, the 11 heat waves registered in Hungary in the period 2001-2006 are seen to have caused 377 excess deaths compared to expected rates under normal weather conditions (Box 7.1). A warning system (communication via media and leaflets) was introduced in 2004 to inform citizens and health-care workers about forecasted heat waves and their potential impacts on human health.

3. Measures to Prevent and Control Air Pollution

Governmental Decree No. 21/2001 introduced *major changes in air emissions and ambient air quality legislation*, making it consistent with relevant EU directives. The decree establishes 11 air quality management zones and requires implementation of action programmes in zones where air pollution limits are exceeded. The licensing and sanctioning regimes were also modified. Government Decree 21/2001 was complemented by a series of ministerial decrees adopted in 2001-2002. *National emission ceilings* for major air pollutants were introduced in 2003.[1]

EU standards for various air pollutants (SO_2, NO_x, PM, ground-level ozone, Pb, Cd, As, Ni, CO, benzene and PAHs) were laid down by Decree No. 17/2001 of the Minister of Environment and its implementing regulations, resulting in application of more stringent limit values. Smog alert decrees entered into force in 2003 in major cities (Budapest, Győr, Tatabánya, Miskolc, Pécs, Szeged, Debrecen).

Harmonisation with the EU legislative framework for air protection was completed by 2003, with the transposition of the *EU Large Combustion Plants Directive* (Directive 2001/80/EC) by Decree No. 10/2003 of the Minister of

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Environment and Water, which set up related emission limit values. Full implementation of the directive required a transitional period to facilitate operators' investment plans, especially for the installation of fuel desulphurisation equipment in two large power plants (Mátra and Oroszlány).

Permitting, monitoring and inspection activities related to air emissions (including when the EU Integrated Pollution Prevention and Control scheme applies) are mainly the responsibility of Regional Environment Nature and Water Inspectorates, but municipalities are also directly involved. Licensing is conditional on compliance with prescribed plant-specific emission limits, the application of best available technologies (also for non-IPPC plants), and ambient air quality in the interested area, on the basis of the air quality implementation plan. As for *compliance*, air management legislation had the second highest number of breaches in 2002-05, with more than 1 300 enforceable violations. Average fines varied between HUF 2.4 million in 2002 and HUF 4.3 million in 2005.

Most of *pollution abatement and control (PAC) investments in air protection* are incurred by businesses. In the first part of the review period, private PAC investments were mainly targeted at large point sources (large combustion plants), including the flue gas desulphurisation equipment at two power plants (Section 4.1) and the Budapest waste incineration plant (totalling HUF 40 billion). In 2004-05, PAC total investments amounted to about HUF 30 billion per year, accounting for 14% to 17% of overall environmental investments. Over half of the expenditures were sustained by transport operators and firms involved in the community, social and personal services sector, with the remaining almost equally split between the manufacturing and energy sectors.

Public subsidies to private firms for investment in air quality decreased over time and terminated in 2003. In the period 2000-03, more than 40% of subsidised environmental investment plans related to air emission management, averaging over 55% of total allocated funds.

As for economic instruments, an *air pollution charge* was introduced in 2003 within the framework of the so-called "environmental load charges" (Chapter 5). The charge is levied on SO_2, NO_x and non-toxic solid emissions at a unit rate of HUF/kg 50, 120 and 30, respectively, on the basis of the previous year's emission volume. The share of payment was initially set at 40% of the duty amount and has been gradually increased in the years that followed; full payment will be owed from 2008. The duty applies to operators of installations that are subject to a permit. Exemptions are granted to district heating providers and domestic heating appliances; operators who install emission abatement equipment may claim a 50% allowance for a maximum of two years. The relatively low rate of the charge may hinder its effectiveness;

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compliance with permitting regulations (e.g. IPPC) appears to remain the major driver for improving environmental performance.

As for GHG emissions, Hungary participates in the *EU emission trading scheme for CO_2*, which has been operational since 2005. Some 250 installations are involved, covering about 30 Mt of CO_2 emissions. Allocation of quotas and licensing for emission trading are the responsibilities of the MEW and the Chief Inspectorate, respectively. After the first year of operation, Hungary reported a considerable surplus of allowances, and operators acted as sellers on the market. This initial over-allocation was seen to be due to the low quality of the data on which the National Allocation Plan 2005-07 was based. The National Allocation Plan 2008-12 was approved by the European Commission on condition of reducing the number of emission allowances from 30.7 to 26.9 Mt CO_2, since the cap initially proposed by Hungary exceeded its 2005 verified emissions.

4. Integrating Air Management Objectives into Energy and Transport Policies

4.1 Air management and energy policy

Hungary's *energy production sector is a major source of air emissions*, especially of SO_2 and CO_2 (Table 2.1). Hungary managed to cut emissions of SO_2 from power plants by 95% between 1998 and 2005, thanks to the reduction in fuel sulphur content, the installation of desulphurisation equipment (mainly at the lignite-fired Mátra power plant in 2002 and the brown coal-fired Oroszlány plant in 2004), and the further decrease in the share of coal in the total primary energy supply, in favour of natural gas and nuclear energy (Box 2.2). In the same period, NO_x, CO_2 and PM emissions from fuel combustion for the production of energy fell by 44%, 30% and 56.7%, respectively. On the other hand, emissions from household heating increased considerably, suggesting that the effect of switching from coal to natural gas has exhausted its emission reduction potential.

Objectives related to curbing air pollutant and GHG emissions from energy, increasing energy efficiency, and promoting renewables have been integrated into *strategic and planning documents*, including those enabling use of EU Structural and Cohesion Funds (e.g. the Operational Programmes on Environment and Infrastructure 2004-06 and on Environment and Energy 2007-13). Several *institutions* are involved in matters relating to energy and the environment together with the respective ministries (Ministry of Economy and Transport and MEW). Three inter-ministerial committees are in charge of energy savings, renewable energy and Kyoto mechanisms. The Energy Centre established in 2000 acts as the

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Box 2.2 **The energy sector at a glance**

Hungary made significant progress during the review period in *restructuring and privatising the energy sectors and in opening energy markets,* in line with EU directives. However, the power of incumbents (MVM Hungarian Electricity Company and E.On-Rurhgas) hinders effective competitiveness in both electricity and gas markets.

Between 1998 and 2005, *total primary energy supply* (TPES) rose 9.3%, to 27.8 Mtoe. Energy production fell by 15% (from 12 Mtoe to 10.3 Mtoe). The structure of the TPES in 2005 shows a *dominance of natural gas* (44%), followed by oil (26%), nuclear (13%), coal (11%) and renewables (4.4%) (Figure 2.2). Biomass and solid wastes account for more than 90% of energy supply from renewable sources. Domestic energy production is mainly nuclear (35%), gas (22.6%) and coal (17%). Hungary is heavily dependent on the import of natural gas.

Total final consumption of energy (TFC) rose 18% between 1998 and 2005 (from 17.3 Mtoe to 20.4 Mtoe). In 2005, natural gas and oil had a market share of 39.5% and 33.6%, respectively, followed by electricity (13.6%) and heat (6.4%). The transport sector and residential/commercial activities account for nearly 70% of TFC (Figure 2.2). Consumption by transport increased by 36% between 1998 and 2005, and consumption by service activities and households grew by 22%. On the other hand, consumption by industry decreased by 9% over the same period.

Forecasts to 2020 suggest an increase of both TPES (to 30.6 Mtoe) and TFC (to 21.7 Mtoe). The share of coal is expected to decrease further, reaching 6.9%in TPES and 2.4% in TFC. On a time horizon to 2030, the Hungarian government predicts that the structure of TPES will be modified by a further increase in the share of *natural gas* and renewables.

implementing agency for energy efficiency and renewable energy projects. Nevertheless, some NGOs argue that effective integration of environment and energy policies is still lacking.

The 1993 Hungarian Energy Policy was replaced by *the Energy Policy 2008-20*, with the overarching goals of strengthening competitiveness, increasing the security of energy supply and promoting sustainable development. Air emission targets related to energy were previously established by the 1999 Energy Efficiency and Renewable Energy Programme, which aimed at cutting SO_2 and CO_2 emissions by 50 kt/year and 5 Mt/year, respectively, by 2010. The same programme set a 2010 deadline for: reducing energy intensity by 3.5% per year; saving 75 PJ/year in primary energy consumption; and increasing the amount of energy produced from renewable sources to

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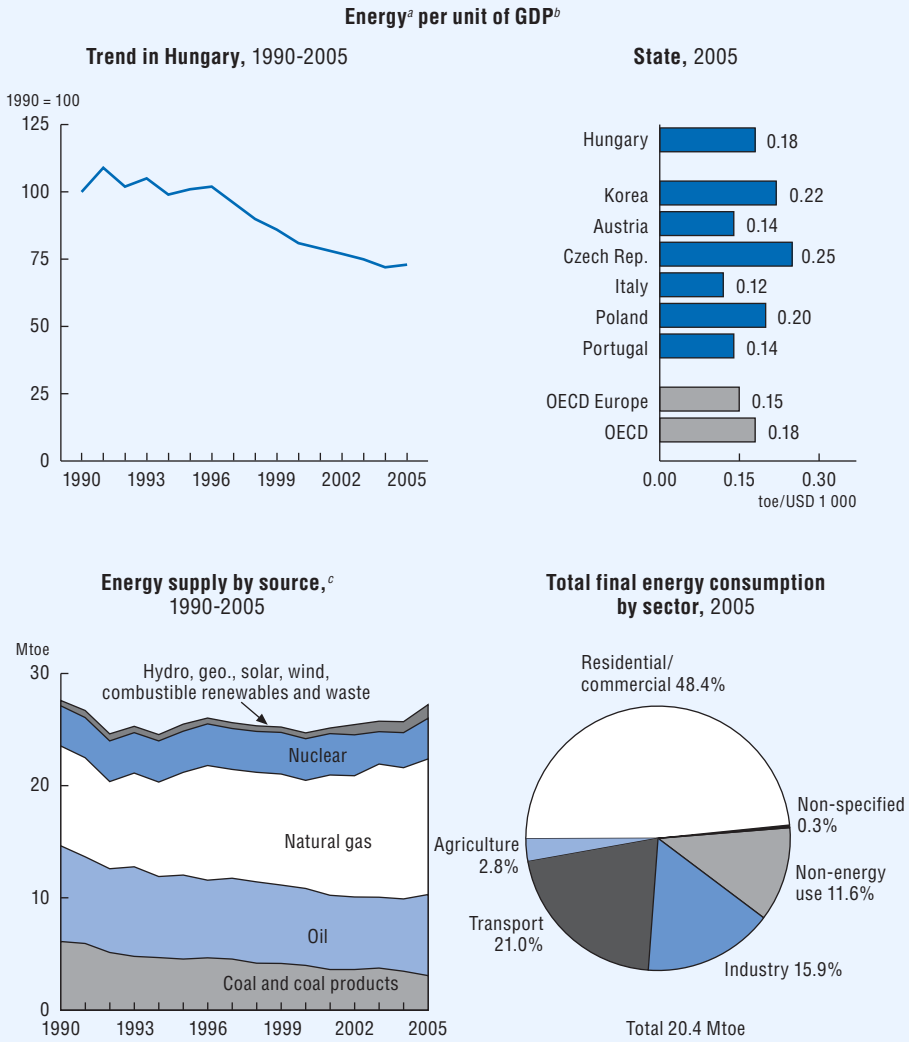
Figure 2.2 **Energy structure and intensity**



a) Total primary energy supply.
b) GDP at 2000 prices and purchasing power parities.
c) Breakdown excludes electricity trade.
Source: OECD-IEA (2007), Energy Balances of OECD Countries 2004-2005; OECD (2007), OECD Economic Outlook No. 82.

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1.2 Mtoe/year. Hungary is well on track to reach its energy-saving target and has already met its targets for SO_2 and renewables. However, despite progress in meeting its Kyoto target, this CO_2 goal appears to be more challenging.

Energy intensity

The *energy intensity* of the Hungarian economy continued to decrease in the period 1998-2005, from 0.22 to 0.18 Toe/1 000 USD GDP, gradually approaching the OECD-Europe average (Figure 2.2). On the other hand, TPES per capita, after falling in the 1990s, increased from 2.45 in the year 2000 to 2.75 in 2005. The generation park is relatively old, with almost half of generating capacity more than 25 years old, resulting in comparatively low efficiency (gas and coal-fired power plants). Hence, a significant potential for efficiency improvement exists (IEA-OECD, 2007). Final energy consumption from service activities, transport and households has dramatically increased, due partly to inadequate building and appliance standards and lower gas prices for households (Box 2.2). Full implementation of the EU Building Directive (Directive 2002/91/EC) would require a special effort; Hungary applied for a three-year extension for introducing the energy efficiency certification process and for the assessment of furnaces, boilers and air-conditioning appliances. Nevertheless, progress has recently been made in improving the quality of new buildings with a growing interest shown by the business sector (e.g. the Hungarian Association of Energy Auditors was established) (Gulyás E. et al., 2006).

Several measures were taken during the review period in the form of *financial support (direct subsidies and soft loans) for energy efficiency*: audits and investments by businesses and municipalities, renovation of private and public buildings, upgrading of district heating networks, installation of combined heat and power (CHP) and renewable energy units and tailored educational programmes. These investment programmes resulted in 17.7 PJ/year energy savings by 2006. Hungary's National Energy Efficiency Action Plan 2007-13 (pursuant to Directive 2006/32/EC) indicates that the government expects to achieve the required annual 1% energy savings, mainly maintaining the past energy saving measures.

Prices

Price distortions among different types of energy were reduced during the review period but are still problematic. Energy prices paid by the Hungarian industry for natural gas and electricity are higher than the OECD average, but oil prices are lower than the OECD-Europe average. Households pay significantly higher prices than industry for both electricity and natural gas; the household electricity price is 1.4 times the OECD-Europe average, while the natural gas price is far below the

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OECD average (Table 5.4). Households have traditionally benefited from direct subsidies for natural gas (averaging 12% of a household gas bill). In late 2006, the subsidy was replaced by a compensation scheme linked to social conditions, leading to a sharp increase in prices and to a partial return to dirtier solid fuels or biomass heating.[2] However, some concerns remain about capabilities for enforcing the compensation scheme, due to the high degree of hidden economy. Moreover, residential consumers are exempted from the energy tax on electricity (HUF 186/MWh) and natural gas (HUF 56/GJ), which was introduced in 2003.

Renewables

The share of *renewables* (including waste) in TPES more than doubled during the review period, from about 0.5 Mtoe in 1998 to 1.2 Mtoe in 2005, contributing to 4.4% of the energy supply in 2005. The government foresees reaching a 7.2% share by 2013. Nonetheless, further efforts would be needed to meet the more ambitious EU target by 2020. Biomass is the most important renewable source in Hungary, primarily in the form of fuel wood, and it is mainly used in heat production. Emission limits for medium-sized biomass plants (up to 50 MW_{th}) are stricter than EU limits, but small boiler emissions (up to 140 kW_{th}) have remained unregulated and may cause pollution. The Hungarian potential for biomass production is high, by virtue of the country's endowment of productive farmland and forests.

Electricity production from renewables grew seven-fold in the period 1998-2005 (from 267 to 1 942 GWh). Electricity from biomass and wind increased significantly; three large power plants shifted from coal to biomass, thus cutting their CO_2 and SO_x emissions. In 2005 renewable sources accounted for 4.6% of gross electricity consumption, well above the 2010 indicative target of 3.6% pursuant to EU Directive 2001/77/EC. The support regime introduced in 2001 has probably been the main driver behind this accomplishment: electricity generated from either renewables or small-scale CHP plants benefits from a very favourable feed-in tariff (over twice the average wholesale electricity price) and a must-buy requirement. Although effective, this support scheme might lead to over-subsidisation; cost-benefit analyses would help to evaluate overall impacts (including those on land use and biodiversity).

4.2 Air management and transport policy

Hungary is a *transit country* in Central and Eastern Europe, and transport has traditionally played an important economic role. Since the country's accession to the EU, road freight transport has begun to grow much faster than GDP (Figure 2.3). Motorisation of households has also increased and will likely continue to grow,

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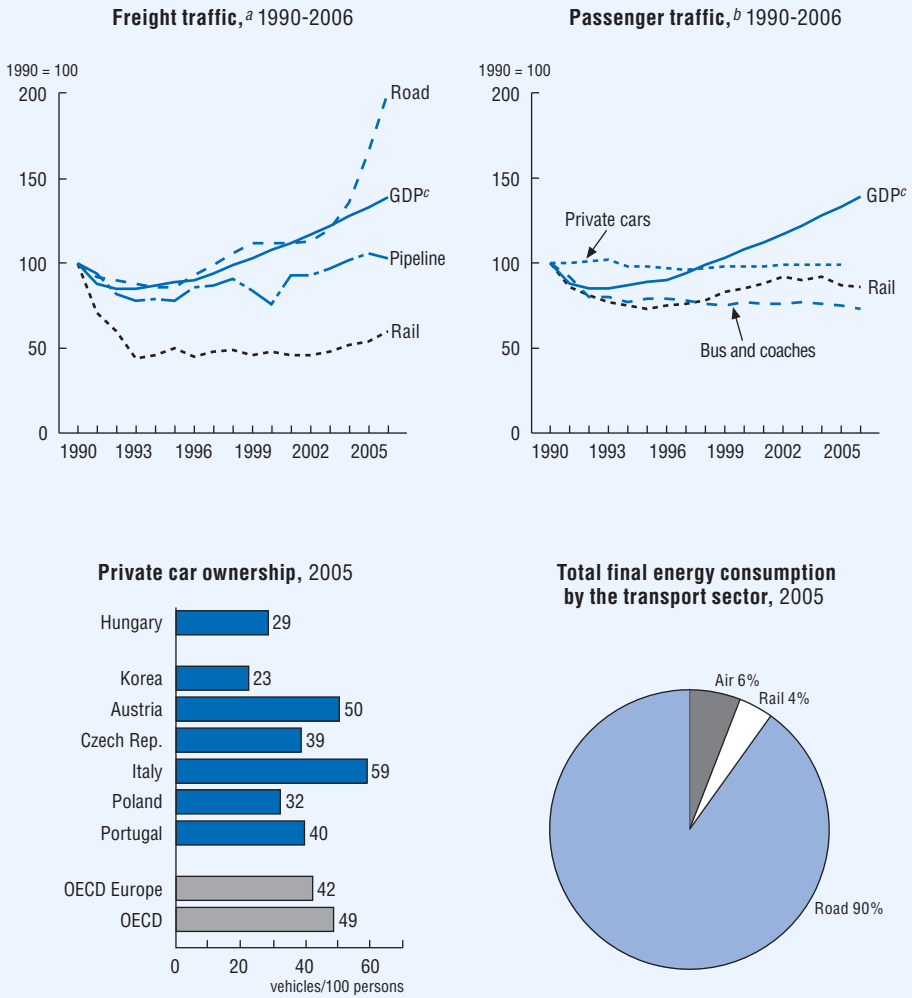
Figure 2.3 **Transport sector**



a) Index of relative change since 1990 based on values expressed in tonne-kilometres. National and international transport.
b) Index of relative change since 1990 based on values expressed in passenger-kilometres.
c) GDP expressed in 2000 prices and purchasing power parities.
Source: OECD Environment Directorate; OECD-IEA (2007), Energy Balances of OECD Countries 2004-2005.

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generating higher car traffic. The country's transport infrastructure is generally insufficient to cope with these trends (Box 2.3).

The *Hungarian Transport Policy 2002-15* encompasses EU transport objectives, and the national legislation relating to the environmental impacts of the transport sector, including air pollution, has been made consistent with EU requirements. The policy aims at developing an environmentally-friendly transport system, giving priority to completing the transport infrastructure network and the Trans-European corridors.

Infrastructure

Significant investments have been made on motorways, railways and inter-modal logistic centres, and are planned in the future, also with EU financial support (e.g. the Transport Operational Programme 2007-13). Transport infrastructure projects that might have negative impacts on the environment are subject to *environmental impact assessment* (EIA). EIA has helped to integrate environmental considerations in shaping project alternatives.

Traffic demand management

Urban and inter-urban passenger public transport systems are both well developed but problems remain, mainly linked to the aged and insufficient vehicle fleet and inadequate infrastructure in urban areas (Box 2.3). Urban transport infrastructure and services as well as traffic management are the responsibility of municipalities, which often face financial constraints. Municipalities provide cost subsidies to urban public transport operators (mostly municipality-owned) to cover their operational losses; however, they do not control the source of revenues, since fares must be approved by the Ministry of Finance. The central government compensates transport operators for obligatory fare discounts to some population groups (e.g. students and people over 65).

Larger cities (e.g. Budapest, Debrecen, Szeged) have designed *local transport plans*, which include speed limits of 20-30 km/h in residential areas, no-traffic zones and cycling routes. The city of Budapest has put in place a few park-and-ride sites and plans to extend the cycling network, with the objective of 5% cycling in the modal split by 2010. Only Budapest has established an *integrated transport system*, as part of a 1995-2001 World Bank project. Combined tickets permit use of urban and sub-urban services (provided by the Budapest Transport Company, the Volán state-owned inter-city bus company and the Hungarian State Railways). The system is expected to be fully operational by 2010.

Measures to moderate demand for private car use in urban areas have not been sufficiently used and have generally been limited to parking fees and awareness-

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Box 2.3 **The transport sector: state and trends**

The *volume of freight transport* per GDP (in tonne-kilometres/GDP) decreased steadily over the first part of the review period but has increased rapidly since EU accession. In particular, road freight transport has increased at a higher rate than GDP (Figure 2.3). In 2006, the modal share (in tonnes per kilometre) was 64.3% road, 21% rail, 11.5% pipeline and 3% inland waterway. The share of rail in freight transport is much higher than the EU-15 average (14%).

The *volume of inland passenger traffic* (in passenger-kilometres) experienced a moderate increase (+2.7%) between 1998 and 2005. The share of rail travel in the passenger transport modal split increased from 12.2% in 1998 to 13.2% in 2005, whereas the share of car travel remained broadly constant at about 62.5%. Bus accounted for 24.3% passenger trips. Waterway travel represented a negligible share. Air transport has sharply increased since accession to the EU. In 2005 it was almost three times the 1995 volume. Despite an 8% drop between 2000 and 2006, urban public transport still accounts for the majority of urban passenger trips.

In 2005, the number of *road vehicles* and *passenger cars* per 100 inhabitants was 33 and 29, respectively, well below OECD averages (56 and 49) (Figure 2.3). The number of passenger cars has steadily increased since 1998 (+30% from 1998 to 2005). On the contrary, the bus fleet has been steadily decreasing, despite the growth in passenger traffic by bus. The car fleet is relatively old: about 26% of the cars are more than 16 years old, and more than 40% are between 6 and 15 years old. Most cars are equipped with catalytic converters and 15% use diesel fuel. The truck fleet has grown by 25% since 1998. Renewal of heavy goods vehicles has been faster, spurred by the stringent technical and environmental standards needed to travel abroad. Other road vehicles, mainly motorcycles and buses, are also old.

In 2005, the Hungarian *road network* had a total length of 30 800 kilometres. During the review period, the expressway network was consistently extended, from 500 to 765 km. The density of the country's motorways is about half the EU-15 average (8 km/1 000 km^2). The public *railway network*covers 7 902 km. The length of electrified railways increased between 1998 and 2005, from 2 594 km to 2 791 km. On the other hand, railways with more tracks have remained unchanged (1 292 km). Railway density is much higher than the OECD-Europe average (about 84 km/1 000 km^2). The overall quality of the road and rail infrastructures is poor. Both the rail and the motorway networks are concentrated in the Budapest region. The *combined transport* infrastructure includes four transhipment points (in the Budapest region, Győr, Sopron and Szeged), and nine other logistic centres are planned. The density of *permanently navigable inland waterways* is among the highest in Europe (15 km/1 000 km^2).

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raising initiatives (e.g. in 2003, about 50 municipalities held "European Car-Free Days" and "Mobility Weeks"). Despite the relatively low public transport fares compared to other European countries, prices are becoming increasingly expensive for certain population groups, resulting in a decrease in travel demand and rising fare evasion (ECMT, 2004). Commuter subsidies and income tax provisions may make travelling by car more convenient. On the one hand, whilst about 80% of inter-urban commuting expenses are eligible for reimbursement by employers, rebates on expenses for travel within the urban contour are available for employees in the public sector only. On the other hand, the use of individually owned cars for private purposes and commuting is often illegally accounted as business use for tax purposes.[3]

Since 2000 *a motorway usage fee* has been imposed on a travel-time basis. In 2007 tolls were extended to the main routes of national roads for heavy goods vehicles (over 12 tonnes). Express roads and motorway sections that by-pass large settlements are exempted. Transport demand appears to be quite elastic to road pricing, resulting in heavy congestion on toll-free roads. Payment is not proportional to distance travelled and an electronic toll system is under preparation.

Vehicles

Since 2004 a *vehicle registration tax* has been charged on passenger vehicles. The charge is based on size, age and environmental performance and varies between HUF 250 000 and HUF 9 622 000 per vehicle. Together with the higher rate on imported used cars (phased out in 2007), the registration tax has been effective in reducing the importation of old second-hand cars from Western European countries. The annual *vehicle tax* is based on weight for trucks and buses (HUF 1 200/100 kg per year) and on horse power for passenger cars, with partial rebates for cars equipped with a catalytic converter. The tax rate increases relative to car power but decreases relative to vehicle age, ranging from HUF 120/kW for cars that are 16 years and older to 300/kW for new cars up to 3 years old. These taxes have provided an incentive to buy smaller and less polluting cars, but could slow fleet renewal in the future.

Hungary has adopted all *international specifications on vehicles* and the EU label on fuel consumption and CO_2 emissions for new vehicles (EU Directive 1999/94/EC). An *inspection programme* has been implemented, with the introduction of an electronic certification system. The periodicity of inspections is linked to European environmental classification.[4] The share of inspected vehicles violating emission standards decreased only slightly during the review period.

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Fuels

Fuel prices and taxes have been repeatedly adjusted upward and are in line with those of most OECD countries but still below the OECD-Europe average. Nevertheless, fuel taxes have been decreasing in real terms (Figure 5.2). Excise duties are differentiated by types of fuel: HUF 88/litre on diesel and HUF 106.54/litre on unleaded petrol. The tax share in fuel prices (including standard VAT) is about 40% for diesel and 55% for petrol; diesel-power ships and trains are exempted. Despite a rising trend, lower diesel prices have encouraged the purchase of diesel cars, though petrol vehicles prevail. The overall increase in fuel prices has exacerbated smuggling at the Hungarian-Ukrainian border, implying the potential introduction into the country of massive quantities of poor quality and more polluting fuels.

Switching to less polluting fuels has been promoted via tax measures: liquefied petroleum gas (LPG) and compressed natural gas (CNG) benefit from a lower tax rate (HUF 47.9/kg for LPG and HUF 24.5/Nm^3 for CNG), and differentiated excise duties have been applied to low and high sulphur content fuels (HUF 3 600/tonne and HUF 40 000/tonne, respectively). The sulphur content of diesel fuels has been gradually reduced to 0.05%, and leaded petrol was phased out in 1999. The quality of fuels produced in Hungary (by MOL, the Hungarian Oil and Gas Company) is above EU standards (IEA-OECD, 2007). Several measures have been taken or are planned (e.g. in the Environment and Energy Operational Programme 2007-13) to foster *biofuels for transport*, especially bioethanol from cereals. Mixed fuels with a 4.4% minimum share of biofuels are exempted from excise taxes (since 2007 for petrol and from 2008 for diesel), whereas blends with lower biofuel content pay an extra tax. These support schemes also aim at sustaining the rural economy (by converting agricultural production surpluses) and have led to a boost in investments. Hungarian authorities expect to be able to reach the ambitious EU targets for biofuels.

Overall assessment

Despite the rising rate of car ownership, increasing fuel prices, vehicle taxes and road tolls have helped moderate demand for private car use and fuel consumption. Improvements in fuel quality and vehicle performance have contributed to increase the efficiency of transport and to reduce related air emissions, although at a lower rate than in the 1990s. Nevertheless, *energy use by the transport sector* increased some 35% during the review period; consumption of all types of fuel increased, especially diesel oil. Transport accounts for 21% of TFC; 90% of energy consumption by the transport sector is attributable to road transport (Figure 2.3). Emissions of *SO_2, VOCs* and *CO* have decreased by 45%, 12% and 10%, respectively, since 1998. On the other hand, *NO_x emissions* increased by 18% in 1998-2005 (Table 2.2). *Lead emissions* have reached a negligible level since the phase-out of leaded petrol. Transport

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remains the major source of NO_x, VOCs and CO and contributes to the *continuous growth in CO_2* emissions. Emissions of *particulate matter* have continued to increase as a consequence of both the ageing vehicle fleet and the gradual shift towards diesel vehicles. Road transport is the prevailing contributor for each pollutant.

Recent trends indicate that the growth in both the traffic volume (especially freight) and the vehicle fleet has begun to outstrip improvements in vehicle technology and fuel quality. Urban sprawl and commercial development in city outskirts generate higher transport demand. Hence, more effort would be needed to counteract expected increases in energy consumption and air emissions.

Table 2.2 **Air emissions from transport,** 2002 and 2005

	Emissions 2002					Emissions 2005		
	Road		Other modes (1 000 tonnes/year)					
	1 000t/year	Share in transport emissions (%)	Rail	Air	Water	1 000t/year	Change 1998-2005 (%)	Share in total emissions (%)
CO_2	10 420.0	*92.9*	180.0	72.0	542.0	11 777.0	*43.7*	*19.1*
CO	409.6	*99.0*	0.8	0.1	3.2	419.9	*–9.8*	*71.5*
SO_2	1.1	*67.1*	0.2	0.0	0.3	1.9	*–44.7*	*1.5*
NO_x	102.1	*88.3*	4.0	0.3	9.4	135.0	*18.4*	*66.6*
VOCs	–	–	–	–	–	58.6	*–12.3*	*33.0*
PM[a]	20.4	*95.3*	0.3	0.0	0.7	21.4	*9.2*	*23.6*

a) 1998-2004.
Source: MEW, 2005; Hungarian Central Statistical Office, 2004; UNFCCC.

Notes

1. Joint Decree No. 7/2003 of the Minister of Environment and Water and the Minister of Economic Affairs and Transport.
2. The compensation scheme is addressed to people with per capita daily income below EUR 6.
3. Although VAT rebates on expenses for car use are rather limited.
4. Every two years for euro 2 and younger vehicles during the first six years of use, and once a year for all others. Periodic inspections consider technical and environmental requirements separately.

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Selected Sources

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REFERENCES

I.A Selected environmental data

I.B Selected economic data

I.C Selected social data

II.A Selected multilateral agreements (worldwide)

II.B Selected multilateral agreements (regional)

III. Abbreviations

IV. Physical context

V. Selected environmental websites

I.A: SELECTED ENVIRONMENTAL DATA (1)

		CAN	MEX	USA	JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN
LAND													
Total area (1000 km^2)		9971	1958	9629	378	100	7713	270	84	31	79	43	338
Major protected areas (% of total area)	*2*	8.7	9.2	25.1	17.0	9.6	18.5	32.4	28.0	3.4	15.8	11.1	9.1
Nitrogenous fertiliser use (t/km^2 of agricultural land)		2.5	1.2	2.7	9.0	20.1	0.2	2.6	2.9	10.7	6.9	7.8	5.9
Pesticide use (t/km^2 of agricultural land)		0.06	0.04	0.08	1.24	1.20	-	0.02	0.09	0.69	0.10	0.11	0.06
Livestock densities (head of sheep eq./km^2 of agr. land)		192	256	191	1011	1560	62	685	492	1790	287	912	290
FOREST													
Forest area (% of land area)		45.3	33.9	32.6	68.9	63.8	21.4	34.7	41.6	22.4	34.1	12.7	75.5
Use of forest resources (harvest/growth)		0.4	0.2	0.6	0.4	0.1	0.6	..	0.7	0.9	0.7	0.7	0.7
Tropical wood imports (USD/cap.)	*3*	1.6	0.2	2.1	10.7	6.1	4.0	3.4	0.4	24.2	0.3	3.8	1.4
THREATENED SPECIES													
Mammals (% of species known)		20.3	31.8	16.8	23.3	11.4	23.8	18.0	22.0	30.5	20.0	22.0	10.8
Birds (% of species known)		9.8	16.2	11.7	13.1	6.3	13.0	21.0	27.7	28.1	50.0	16.3	13.3
Fish (% of species known)		29.6	27.6	31.7	36.0	8.9	1.0	10.0	50.6	23.8	41.5	15.8	11.8
WATER													
Water withdrawal (% of gross annual availability)		1.5	15.9	19.2	20.4	36.2	4.8	1.7	5.0	32.5	12.7	4.1	2.1
Public waste water treatment (% of population served)		72	35	71	67	79	..	80	86	46	71	88	81
Fish catches (% of world catches)		1.2	1.4	5.3	4.7	1.7	0.2	0.6	-	-	-	1.1	0.1
AIR													
Emissions of sulphur oxides (kg/cap.)		64.0	25.9	44.8	5.9	8.5	123.6	20.4	3.2	13.8	21.4	4.0	13.0
(kg/1000 USD GDP)	*4*	2.1	2.9	1.2	0.2	0.4	4.2	0.9	0.1	0.5	1.2	0.1	0.4
% change (1990-2005)		-34	-3	-37	-24	-50	58	54	-64	-60	-88	-88	-73
Emissions of nitrogen oxides (kg/cap.)		73.6	14.0	57.3	15.0	27.1	78.0	39.6	27.3	25.6	27.2	34.3	33.5
(kg/1000 USD GDP)	*4*	2.4	1.6	1.5	0.6	1.4	2.7	1.7	0.9	0.9	1.5	1.1	1.1
% change (1990-2005)		-1	14	-26	-6	50	25	58	7	-26	-63	-32	-40
Emissions of carbon dioxide (t./cap.)	*5*	17.0	3.7	19.6	9.5	9.3	18.5	8.5	9.4	10.7	11.6	8.8	10.6
(t./1000 USD GDP)	*4*	0.55	0.40	0.53	0.35	0.47	0.63	0.37	0.31	0.38	0.64	0.29	0.36
% change (1990-2005)		28	33	20	15	98	45	63	34	3	-23	-6	1
WASTE GENERATED													
Industrial waste (kg/1000 USD GDP)	*4, 6*	..	..	..	40	40	20	10	..	50	30	10	110
Municipal waste (kg/cap.)	*7*	420	340	750	400	380	690	400	560	460	290	740	470
Nuclear waste (t./Mtoe of TPES)	*8*	6.2	0.1	1.0	1.5	3.2	-	-	-	2.2	1.7	-	1.9

.. not available. - nil or negligible.

1) Data refer to the latest available year. They include provisional figures and Secretariat estimates.
Partial totals are underlined. Varying definitions can limit comparability across countries.

2) IUCN management categories I-VI and protected areas without IUCN category assignment; national classifications may differ.

3) Total imports of cork and wood from non-OECD tropical countries.

4) GDP at 2000 prices and purchasing power parities.

Source: OECD Environmental Data Compendium.

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OECD EPR / SECOND CYCLE

FRA	DEU	GRC	**HUN**	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD*	OECD*
549	357	132	**93**	103	70	301	3	42	324	313	92	49	506	450	41	779	245	35042
13.3	31.5	5.2	**8.9**	9.5	1.2	19.0	17.1	18.9	6.4	29.0	8.5	25.2	9.5	9.5	28.7	4.3	30.1	16.4
7.6	10.4	2.9	**5.8**	0.7	7.9	5.2	-	13.8	10.1	4.8	2.3	3.7	3.5	5.2	3.6	3.6	6.3	2.2
0.27	0.17	0.12	**0.17**	-	0.05	0.58	0.33	0.41	0.08	0.06	0.40	0.16	0.14	0.05	0.10	0.06	*0.21*	*0.07*
514	689	245	**207**	65	1139	488	4351	2142	845	315	498	226	339	409	794	290	*674*	208
31.6	30.2	22.8	**19.5**	1.3	9.4	23.3	34.5	9.5	39.2	30.0	36.9	41.6	33.3	73.5	30.8	27.0	11.6	34.4
0.6	0.5	0.6	**0.5**	-	0.7	0.5	0.5	0.6	0.5	0.6	0.8	0.5	0.5	0.7	0.8	0.5	0.6	0.6
6.8	1.8	2.7	**0.1**	2.8	11.2	7.2	-	15.6	3.6	0.3	17.6	0.1	6.2	2.2	0.6	0.5	2.7	4.0
19.0	37.9	37.8	**37.8**	-	1.8	40.7	51.6	18.6	13.7	13.5	26.2	21.7	13.3	18.3	32.9	14.3	*15.8*	..
19.2	27.3	1.9	**14.5**	44.0	5.4	18.4	23.1	21.6	16.1	7.8	38.1	14.0	26.9	17.5	36.4	3.7	*16.2*	..
36.1	68.2	26.2	**43.2**	-	23.1	35.1	27.9	22.1	9.4	21.0	62.9	24.1	51.4	10.9	38.9	11.1	*11.1*	..
17.5	18.9	12.1	**4.8**	0.1	2.3	44.0	3.3	10.0	0.9	18.3	12.0	1.3	33.3	1.5	4.7	19.1	*22.4*	*11.5*
79	93	56	**60**	50	70	69	95	99	76	59	60	52	55	85	97	42	*98*	*68*
0.7	0.3	0.1	**-**	1.9	0.3	0.3	-	0.6	2.7	0.2	0.2	-	0.9	0.3	-	0.5	0.7	26.2
7.6	6.8	49.1	**12.8**	27.5	17.0	7.1	6.3	3.8	5.2	33.2	20.7	16.5	28.9	4.4	2.3	26.9	11.8	25.7
0.3	0.3	2.2	**0.8**	0.8	0.5	0.3	0.1	0.1	0.1	2.7	1.1	1.2	1.3	0.1	0.1	3.4	0.4	1.0
-65	-90	16	**-87**	12	-62	-77	-80	-67	-54	-61	-31	-84	-42	-63	-59	28	-81	-45
19.8	17.5	29.9	**20.1**	94.0	28.0	19.0	30.3	21.1	42.6	21.3	24.6	18.1	35.1	22.7	11.5	15.0	27.1	32.1
0.7	0.7	1.3	**1.3**	2.8	0.8	0.7	0.5	0.7	1.1	1.7	1.3	1.3	1.5	0.8	0.4	1.9	1.0	1.2
-34	-50	19	**-15**	1	-5	-43	-39	-38	-7	-49	4	-55	22	-35	-47	66	-45	-22
6.4	9.9	8.6	**5.7**	7.5	10.6	7.7	24.9	11.2	8.0	7.8	6.0	7.1	7.9	5.6	6.0	3.0	8.8	11.0
0.23	0.38	0.39	**0.37**	0.22	0.31	0.30	0.42	0.38	0.20	0.62	0.32	0.52	0.34	0.19	0.19	0.39	0.31	0.43
9	-16	36	**-18**	16	42	14	8	16	29	-15	59	-33	65	-4	9	70	-5	16
50	20	..	**30**	10	40	20	30	40	20	120	50	130	30	110	-	30	30	50
540	600	440	**470**	520	740	540	710	620	760	250	470	270	650	480	650	430	580	560
4.2	1.2	-	**1.7**	-	-	-	-	0.1	-	-	-	3.0	1.2	4.1	1.9	-	1.0	1.5

UKD: pesticides and threatened species: Great Britain; water withdrawal and public waste water treatment plants: England and Wales.

5) CO_2 from energy use only; sectoral approach; international marine and aviation bunkers are excluded.

6) Waste from manufacturing industries.

7) CAN, NZL: household waste only.

8) Waste from spent fuel arising in nuclear power plants, in tonnes of heavy metal, per million tonnes of oil equivalent of total primary energy supply.

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I.B: SELECTED ECONOMIC DATA (1)

		CAN	MEX	USA	JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK
GROSS DOMESTIC PRODUCT												
GDP, 2006 (billion USD at 2000 prices and PPPs)		1017	1028	11319	3537	1008	611	96	255	304	195	170
% change (1990-2006)		55.4	60.9	59.1	23.3	136.7	68.4	62.4	42.6	37.6	31.5	43.0
per capita, 2006 (1000 USD/cap.)		31.2	9.8	37.8	27.7	20.9	29.7	23.3	30.8	29.0	19.1	31.3
Exports, 2006 (% of GDP)		36.3	31.9	11.1	16.1	43.2	20.9	29.3	56.3	87.5	76.3	52.0
INDUSTRY	*2*											
Value added in industry (% of GDP)		32	27	23	31	43	26	25	32	27	40	27
Industrial production: % change (1990-2005)		46.7	51.3	55.9	3.2	210.9	30.5	29.5	70.1	21.0	11.8	38.3
AGRICULTURE												
Value added in agriculture (% of GDP)	*3*	3	4	2	1	4	4	7	2	1	4	3
Agricultural production: % change (1990-2005)		25.6	41.5	27.6	-12.3	19.3	25.4	47.9	9.9	13.0	..	0.7
Livestock population, 2005 (million head of sheep eq.)		118	275	787	53	30	283	99	17	25	12	24
ENERGY												
Total supply, 2005 (Mtoe)		272	177	2340	530	214	122	17	34	57	45	20
% change (1990-2005)		29.9	42.0	21.4	19.3	128.9	39.3	22.9	37.1	15.2	-7.7	9.6
Energy intensity, 2005 (toe/1000 USD GDP)		0.27	0.18	0.21	0.15	0.22	0.20	0.18	0.14	0.19	0.25	0.12
% change (1990-2005)		-14.1	-7.5	-21.5	-1.2	1.5	-15.3	-22.9	-0.8	-13.8	-25.3	-20.7
Structure of energy supply, 2005 (%)	*4*											
Solid fuels		10.2	4.9	23.8	21.1	23.1	44.5	11.9	11.9	9.1	43.6	19.1
Oil		35.5	58.8	40.8	47.4	45.0	31.1	40.4	42.5	40.7	21.6	42.1
Gas		29.4	25.0	21.8	13.3	12.8	18.9	18.9	24.2	25.2	16.6	22.6
Nuclear		8.8	1.6	9.0	15.0	17.9	-	-	-	22.1	14.0	-
Hydro, etc.		16.1	9.7	4.7	3.2	1.2	5.5	28.9	21.4	2.9	4.2	16.3
ROAD TRANSPORT	*5*											
Road traffic volumes per capita, 2004 (1000 veh.-km/cap.)		9.8	0.7	16.2	6.5	3.2	9.8	12.3	9.3	9.0	4.6	7.8
Road vehicle stock, 2005 (10 000 vehicles)		1883	2205	24119	7404	1540	1348	271	502	559	439	245
% change (1990-2005)		13.8	129.3	27.8	31.1	353.5	37.9	47.0	36.0	31.2	69.4	29.5
per capita (veh./100 inh.)		58	21	81	58	32	66	66	61	54	43	45

.. not available. - nil or negligible.

1) Data may include provisional figures and Secretariat estimates. Partial totals are underlined.

2) Value added: includes mining and quarrying, manufacturing, gas, electricity and water and construction; production: excludes construction.

Source: OECD Environmental Data Compendium.

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FIN	FRA	DEU	GRC	**HUN**	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD	OECD
161	1743	2225	257	**162**	11	151	1556	28	494	188	505	198	79	1036	282	245	603	1760	31225
44.5	34.9	30.1	62.5	**38.6**	64.7	174.6	23.5	108.2	49.4	65.0	79.2	40.2	46.5	60.7	42.1	22.2	86.3	47.7	48.7
30.5	28.5	27.0	23.1	**16.1**	34.6	35.6	26.4	61.7	30.2	40.4	13.3	18.7	14.7	23.5	31.1	32.7	8.2	29.2	26.6
44.5	26.9	45.1	18.6	**77.8**	32.2	79.8	27.9	166.4	73.2	46.6	40.3	31.1	85.7	26.0	51.3	52.5	28.2	28.4	26.0
32	25	30	23	**31**	27	42	29	20	26	38	30	29	32	30	28	27	31	26	29
75.6	18.2	16.9	19.5	**92.2**	..	312.8	10.5	57.6	20.8	35.5	113.0	15.1	19.5	27.0	55.3	27.6	78.3	8.6	34.6
4	3	1	7	**4**	9	3	3	1	3	2	3	4	5	3	2	1	12	1	3
-3.9	0.9	-4.7	10.1	**-10.5**	5.4	2.6	10.7	13	-9.2	-9.4	-15.8	1.1	..	7.4	-10.2	-4.3	18.2	-8.0	..
8	156	117	21	**12**	1	50	64	6	42	9	58	19	6	100	13	12	111	113	2639
35	276	345	31	**28**	4	15	185	5	82	32	93	27	19	145	52	27	85	234	5548
19.8	21.1	-3.2	39.7	**-2.8**	66.9	47.5	25.2	33.7	22.6	49.3	-6.9	53.1	-11.7	59.4	9.7	8.6	60.9	10.3	22.6
0.23	0.16	0.16	0.13	**0.18**	0.36	0.11	0.12	0.18	0.17	0.18	0.20	0.14	0.26	0.15	0.19	0.11	0.15	0.14	0.18
-13.0	-8.2	-23.3	-10.4	**-27.1**	5.7	-43.2	3.3	-31.9	-15.5	-6.9	-44.8	10.6	-34.7	3.0	-19.3	-8.2	-8.4	-23.2	-15.1
14.8	5.1	23.7	29.2	**11.3**	2.7	17.8	9.1	1.8	10.2	2.3	58.1	12.6	22.2	14.1	5.0	0.6	26.3	16.2	20.4
32.0	32.5	35.8	57.7	**26.5**	24.5	56.7	45.2	70.3	41.0	42.8	23.6	59.8	18.1	49.1	28.3	48.1	35.0	36.3	40.6
10.8	14.6	23.4	7.7	**44.4**	-	23.0	39.0	26.2	44.0	15.6	13.0	14.1	30.8	20.5	1.6	10.5	26.7	36.4	21.8
18.1	41.9	12.3	-	**13.3**	-	-	-	-	1.3	-	-	-	24.4	10.3	35.9	23.0	-	9.1	11.0
24.3	5.9	4.8	5.4	**4.5**	72.7	2.6	6.7	1.7	3.6	39.3	5.3	13.5	4.5	6.0	29.2	17.9	11.9	2.0	6.2
9.7	8.6	7.1	8.7	**2.3**	10.2	9.5	8.9	8.9	8.0	7.8	3.9	7.4	2.7	4.8	8.2	8.0	0.8	8.2	8.4
282	3617	4803	552	**333**	21	198	3894	34	806	252	1472	552	150	2516	463	419	843	3217	64939
26.2	27.1	28.8	118.7	**49.4**	59.8	108.5	30.2	68.0	40.7	29.9	126.8	151.3	44.4	74.2	17.9	28.9	257.1	35.0	38.7
54	59	58	50	**33**	72	48	66	74	49	55	39	52	28	58	51	56	12	54	56

3) Agriculture, forestry, hunting, fishery, etc.

4) Breakdown excludes electricity trade.

5) Refers to motor vehicles with four or more wheels, except for Italy, which include three-wheeled goods vehicles.

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I.C: SELECTED SOCIAL DATA (1)

		CAN	MEX	USA	JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK
POPULATION												
Total population, 2006 (100 000 inh.)		326	1049	2994	1278	483	206	41	83	105	103	54
% change (1990-2006)		17.8	24.9	19.9	3.5	12.7	20.7	23.1	7.3	5.5	-1.1	5.7
Population density, 2006 (inh./km^2)		3.3	53.6	31.1	338.2	484.9	2.7	15.3	98.8	344.3	130.0	126.1
Ageing index, 2006 (over 64/under 15)		76.4	17.4	61.3	152.6	51.0	68.6	58.6	106.0	100.5	97.0	81.8
HEALTH												
Women life expectancy at birth, 2005 (years)		82.6	77.9	80.4	85.5	81.9	83.3	81.7	82.2	81.6	79.1	80.2
Infant mortality, 2005 (deaths /1 000 live births)		5.3	18.8	6.8	2.8	5.3	5.0	5.1	4.2	3.7	3.4	4.4
Expenditure, 2005 (% of GDP)		9.8	6.4	15.3	8.0	6.0	9.5	9.0	10.2	10.3	7.2	9.1
INCOME AND POVERTY												
GDP per capita, 2006 (1000 USD/cap.)		31.2	9.8	37.8	27.7	20.9	29.7	23.3	30.8	29.0	19.1	31.3
Poverty (% pop. < 50% median income)		10.3	20.3	17.0	15.3	..	11.2	10.4	9.3	7.8	4.4	4.3
Inequality (Gini levels)	*2*	30.1	48.0	35.7	31.4	..	30.5	33.7	26.0	26.0	25.0	24.0
Minimum to median wages, 2000	*3*	42.5	21.1	36.4	32.7	25.2	57.7	46.3	x	49.2	32.3	x
EMPLOYMENT												
Unemployment rate, 2006 (% of civilian labour force)	*4*	6.3	3.2	4.6	4.1	3.5	4.8	3.8	4.7	8.2	7.1	3.9
Labour force participation rate, 2006 (% 15-64 years)		79.4	64.4	75.2	79.5	69.1	77.2	80.3	79.1	67.8	71.1	81.7
Employment in agriculture, 2006 (%)	*5*	2.6	14.1	1.5	4.3	7.7	3.5	7.1	5.5	2.0	3.8	3.0
EDUCATION												
Education, 2005 (% 25-64 years)	*6*	85.2	21.3	87.8	84.0	75.5	65.0	78.7	80.6	66.1	89.9	81.0
Expenditure, 2004 (% of GDP)	*7*	6.1	6.4	7.4	4.8	7.2	5.9	6.9	5.4	6.1	4.9	7.2
OFFICIAL DEVELOPMENT ASSISTANCE	*8*											
ODA, 2006 (% of GNI)		0.29	..	0.18	0.25	..	0.30	0.27	0.47	0.50	..	0.80
ODA, 2006 (USD/cap.)		113	..	79	88	..	103	62	181	188	..	411

.. not available. - nil or negligible. x not applicable.

1) Data may include provisional figures and Secretariat estimates. Partial totals are underlined.

2) Ranging from 0 (equal) to 100 (inequal) income distribution; figures relate to total disposable income (including all incomes, taxes and benefits) for the entire population.

3) Minimum wage as a percentage of median earnings including overtime pay and bonuses.

Source: OECD.

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OECD EPR / SECOND CYCLE

FIN	FRA	DEU	GRC	**HUN**	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD	OECD
53	612	824	111	**101**	3	42	589	5	163	47	381	106	54	441	91	75	731	603	11753
5.6	8.0	3.8	10.2	**-2.9**	19.2	20.9	3.8	19.8	9.3	10.1	0.3	7.2	1.7	13.4	6.1	11.5	30.2	5.4	12.6
15.6	111.5	230.7	84.3	**108.3**	2.9	60.3	195.3	177.9	393.6	14.4	122.0	115.1	109.9	87.1	20.2	181.3	93.8	246.3	33.5
94.7	89.5	144.5	129.6	**103.6**	53.9	54.4	138.3	77.3	79.0	75.5	83.4	111.5	72.3	115.0	101.2	101.4	21.3	90.2	73.5
82.3	83.8	81.8	81.7	**76.9**	83.1	81.8	83.2	82.3	81.6	82.5	79.4	81.4	77.9	83.9	82.8	83.9	74.0	81.1	..
3.0	3.6	3.9	3.8	**6.2**	2.3	4.0	4.7	2.6	4.9	3.1	6.4	3.5	7.2	4.1	2.4	4.2	22.6	5.1	..
7.5	11.1	10.7	10.1	**8.1**	9.3	7.5	9.0	7.4	9.2	8.7	6.2	10.2	7.1	8.3	9.1	11.3	7.6	8.3	..
30.5	28.5	27.0	23.1	**16.1**	34.6	35.6	26.4	61.7	30.2	40.4	13.3	18.7	14.7	23.5	31.1	32.7	8.2	29.2	26.6
6.4	7.0	9.8	13.5	**8.2**	..	15.4	12.9	5.5	6.0	6.3	9.8	13.7	..	11.5	5.3	6.7	15.9	11.4	10.2
25.0	28.0	28.0	33.0	**27.0**	35.0	32.0	33.0	26.0	27.0	25.0	31.0	38.0	33.0	31.0	23.0	26.7	45.0	34.0	30.7
x	60.8	x	51.3	**37.2**	x	55.8	x	48.9	47.1	x	35.5	38.2	..	31.8	x	x	..	41.7	..
7.7	9.2	9.8	8.9	**7.4**	2.9	4.4	6.8	4.7	3.9	3.5	13.8	7.7	13.3	8.5	7.0	4.1	9.7	5.3	6.1
75.2	68.8	77.7	65.4	**60.7**	85.7	73.5	63.2	67.5	79.1	79.7	62.9	78.1	68.7	72.4	78.7	87.6	52.5	76.4	71.8
4.7	3.4	2.3	12.0	**4.9**	6.3	5.7	4.3	1.3	3.0	3.3	15.8	11.8	4.4	4.8	2.0	3.7	27.3	1.3	5.5
78.8	66.3	83.1	57.1	**76.4**	62.9	64.5	50.1	65.9	71.8	77.2	51.4	26.5	85.7	48.8	83.6	83.0	27.2	66.7	68.1
6.1	6.1	5.2	3.4	**5.6**	8.0	4.6	4.9	3.6	5.1	6.6	6.0	5.4	4.8	4.7	6.7	6.5	4.1	5.9	5.7
0.40	0.47	0.36	0.17	**..**	..	0.54	0.20	0.89	0.81	0.89	..	0.21	..	0.32	1.02	0.39	..	0.51	0.31
158	173	127	38	**..**	..	241	62	632	334	633	..	37	..	87	436	220	..	207	63

4) Standardised unemployment rates; MEX, ISL, TUR: commonly used definitions.

5) Civil employment in agriculture, forestry and fishing.

6) Upper secondary or higher education; OECD: average of rates.

7) Public and private expenditure on educational institutions; OECD: average of rates.

8) Official Development Assistance by Member countries of the OECD Development Assistance Committee.

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II.A: SELECTED MULTILATERAL AGREEMENTS (WORLDWIDE)

Y = in force S = signed R = ratified D = denounced

				CAN	MEX	USA
1946	Washington	Conv. - Regulation of whaling	Y	D	R	R
1956	Washington	Protocol	Y	D	R	R
1949	Geneva	Conv. - Road traffic	Y	R		R
1957	Brussels	Conv. - Limitation of the liability of owners of sea-going ships	Y	S		
1979	Brussels	Protocol	Y			
1958	Geneva	Conv. - Fishing and conservation of the living resources of the high seas	Y	S	R	R
1959	Washington	Treaty - Antarctic	Y	R		R
1991	Madrid	Protocol to the Antarctic treaty (environmental protection)	Y	R		R
1960	Geneva	Conv. - Protection of workers against ionising radiations (ILO 115)	Y		R	
1962	Brussels	Conv. - Liability of operators of nuclear ships				
1963	Vienna	Conv. - Civil liability for nuclear damage	Y		R	
1988	Vienna	Joint protocol relating to the application of the Vienna Convention and the Paris Convention	Y			
1997	Vienna	Protocol to amend the Vienna convention	Y			
1963	Moscow	Treaty - Banning nuclear weapon tests in the atmosphere, in outer space and under water	Y	R	R	R
1964	Copenhagen	Conv. - International council for the exploration of the sea	Y	R		R
1970	Copenhagen	Protocol	Y	R		R
1969	Brussels	Conv. - Intervention on the high seas in cases of oil pollution casualties (INTERVENTION)	Y		R	R
1973	London	Protocol (pollution by substances other than oil)	Y		R	R
1969	Brussels	Conv. - Civil liability for oil pollution damage (CLC)	Y	D	D	S
1976	London	Protocol	Y	R	R	
1992	London	Protocol	Y	R	R	
1970	Bern	Conv. - Transport of goods by rail (CIM)	Y			
1971	Brussels	Conv. - International fund for compensation for oil pollution damage (FUND)		D	D	S
1976	London	Protocol	Y	R	R	
1992	London	Protocol (replaces the 1971 Convention)	Y	R	R	
2000	London	Amendment to protocol (limits of compensation)	Y	R	R	
2003	London	Protocol (supplementary fund)	Y			
1971	Brussels	Conv. - Civil liability in maritime carriage of nuclear material	Y			
1971	London, Moscow, Washington	Conv. - Prohib. emplacement of nuclear and mass destruct. weapons on sea-bed, ocean floor and subsoil	Y	R	R	R
1971	Ramsar	Conv. - Wetlands of international importance especially as waterfowl habitat	Y	R	R	R
1982	Paris	Protocol	Y	R	R	R
1987	Regina	Regina amendment	Y	R	R	
1971	Geneva	Conv. - Protection against hazards of poisoning arising from benzene (ILO 136)	Y			
1972	London, Mexico, Moscow,	Conv. - Prevention of marine pollution by dumping of wastes and other matter (LC)	Y	R	R	R
1996	London	Protocol to the Conv. - Prevention of marine poll. by dumping of wastes and other matter	Y	R	R	S
1972	Geneva	Conv. - Protection of new varieties of plants (revised)	Y	R	R	R

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OECD EPR / SECOND CYCLE

Y = in force S = signed R = ratified D = denounced

JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	**HUN**	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R		R	R		R	R	R	R	R		R	
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R		R	R		R	R	R	R	R		R	
R	R	R	R	R	R	R	R	R	R		R	**R**	R	R	R	R	R	R	R	R	R	R	R	S	R	R	
D		D			D		D	D	D	D			R		S		D	D	R	R		R	D	R		D	
		R			R			S		S						R			R	R		R		R		D	
		R	S		R		R	R	R				S	S			R			R		R		R		R	
R	R	R	R	R	R	R	R	R	R	R	R	**R**			R		R	R	R		R	R	R	R	R	R	
R	R	R	R	S	R	R	S	R	R	R	R	**S**			R		R	R	R		S	R	R	S		R	
R					R	R	R	R	R	R	R	**R**			R		R	R	R	R	R	R	R	R	R	R	
	S				S					S				S			R			R							
						R						**R**							R		R	S				S	
					S	R	R	R	S	R	R	**R**			R		R	R	R	S	R	S	R	S	R	S	
						S						**S**			S				S								
R	R	R	R	R	R	R	R	R		R	R	**R**	R	R	R	R	R	R	R	S	R	R	R	R	R	R	
					R		R	R	R	R			R	R			R	R	R	R		R	R			R	
					R		R	R	R	R			R	R			R	R	R	R		R	R			R	
R	S	R	R		R		R	R	R	R	S		R	R	R		R	R	R	R		R	R	R		R	
		R	S		R		R	R	R	R				R	R		R	R	R	R		R	R	R		R	
D	D	D	D		D		D	D	D	D	D		D	D	D	D	D	D	D	D		D	D	D		D	
R	R	R			R		R	R	R	R	R		R	D	R	R	R	R	R	R		R	R	R		D	
R	R	R	R		R		R	R	R	R	R	**R**	R	R	R	R	R	R	R	R		R	R	R	R	R	
				R	R	R	R	R	R	R	R	**R**		R	R	R	R	R	R	R	R	R	R	R	R	R	
D	D	D	D		D		D	D	D	D	D		D	D	D		D	D	D	D		D	D	D		D	
R		R			R		R	R	R	R	R		R	D	R		R	R	R	R		R	R			D	
R	R	R	R		R		R	R	R	R	R	**R**	R	R	R	R	R	R	R	R		R	R	R	R	R	
R	R	R	R		R		R	R	R	R	R		R	R	R	R	R	R	R	R		R	R	R	R	R	
R					R		R	R	R	R	R	**R**		R	R		R	R		R		R	R			R	
					R		R	R	R	R					R		R	R		S		R	R			S	
R	R	R	R	R	R	R	R	R		R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R		R	R	R	R	R	R	**R**	R	R		R	R	R	R				R	R	R	R	
						R		R	R	R	R	**R**			R						R	R		R			
R	R	R	R		R		R	R	R	R	R	**R**	R	R	R	R	R	R	R	R		R	R	R		R	
		R	R		R		R		R	R			R	R	R	R	S	R				R	R	R		R	
R	R	R	R	R	R	R	R	R	R	R		**R**	R	R	R		R	R	R	R	R	R	R	R		R	R

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II.A: SELECTED MULTILATERAL AGREEMENTS (WORLDWIDE) (*cont.*)

Y = in force S = signed R = ratified D = denounced

			CAN	MEX	USA
1978	Geneva	Amendments	Y R	R	R
1991	Geneva	Amendments	Y		R
1972	Geneva	Conv. - Safe container (CSC)	Y R	R	R
1972	London, Moscow, Washington	Conv. - International liability for damage caused by space objects	Y R	R	R
1972	Paris	Conv. - Protection of the world cultural and natural heritage	Y R	R	R
1973	Washington	Conv. - International trade in endangered species of wild fauna and flora (CITES)	Y R	R	R
1974	Geneva	Conv. - Prev. and control of occup. hazards caused by carcinog. subst. and agents (ILO 139)	Y		
1976	London	Conv. - Limitation of liability for maritime claims (LLMC)	Y	R	
1996	London	Amendment to convention	Y S		
1977	Geneva	Conv. - Protection of workers against occupational hazards in the working environment due to air pollution, noise and vibration (ILO 148)	Y		
1978	London	Protocol - Prevention of pollution from ships (MARPOL PROT)	Y R	R	R
1978	London	Annex III	Y R		R
1978	London	Annex IV	Y		
1978	London	Annex V	Y	R	R
1997	London	Annex VI	Y		S
1979	Bonn	Conv. - Conservation of migratory species of wild animals	Y		
1991	London	Agreem. - Conservation of bats in Europe	Y		
1992	New York	Agreem. - Conservation of small cetaceans of the Baltic and the North Seas (ASCOBANS)	Y		
1996	Monaco	Agreem. - Conservation of cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area	Y		
1996	The Hague	Agreem. - Conservation of African-Eurasian migratory waterbirds	Y		
2001	Canberra	Agreem. - Conservation of albatrosses and petrels (ACAP)	Y		
1982	Montego Bay	Conv. - Law of the sea	Y R	R	
1994	New York	Agreem. - relating to the implementation of part XI of the convention	Y R	R	S
1995	New York	Agreem. - Implementation of the provisions of the convention relating to the conservation and management of straddling fish stocks and highly migratory fish stocks	Y R		R
1983	Geneva	Agreem. - Tropical timber	Y R		R
1994	New York	Revised agreem. - Tropical timber	Y R	R	R
2006	Geneva	Revised agreem. - Tropical timber		S	R
1985	Vienna	Conv. - Protection of the ozone layer	Y R	R	R
1987	Montreal	Protocol (substances that deplete the ozone layer)	Y R	R	R
1990	London	Amendment to protocol	Y R	R	R
1992	Copenhagen	Amendment to protocol	Y R	R	R
1997	Montreal	Amendment to protocol	Y R	R	R
1999	Beijing	Amendment to protocol	Y R	R	R
1986	Vienna	Conv. - Early notification of a nuclear accident	Y R	R	R
1986	Vienna	Conv. - Assistance in the case of a nuclear accident or radiological emergency	Y R	R	R

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JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	**HUN**	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU
R	R	R	R	R		R	R	R	R	R		**R**	R	R	R		R	R	R	R	R	R	R	R		R	R
R	R	R		R		R	R	R		R		**R**	R				R		R			R	R			R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R		R	R	R	R	R	R	R	R	R	R	S	R	
R	R	R	R	R	R	R	R	R	R	R	R	**R**	S	R	R	R	R	R	R		R	R	R	R		R	
R	R	R	R	R	R	S	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R					R	R	R	R	R	R		**R**	R	R	R			R		R	R		R	R			
R		R	R		R		R	R	R	R	R			R		R	R	D	R			R	R	R	R	R	
R		R					R	R	R	R						R	S	R				R	R			R	
					R	R	R	R	R	R		**R**			R			R	R	R	R	R	R			R	
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R		R	
R	R	R		R	R	R	R	R	R	R	R	**R**			R	R	R	R	R	R	R	R	R	R		R	
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R			R		R	R	R	R	R				R	R	R	R	R			R	R			R	
		R	R	R	R	R	R	R	R	R	R	**R**		R	R	R	R	R	R	R	R	R	R	R		R	R
				R	R	R	R	R	R	R		**R**		R		R	R	R	R	R	R		R			R	
					R		R	R	R	R							R		R				R			R	S
									R		R				R					R		R					
					R	R	R	R	R	R	S	**R**		R	R	R	R			R	R	R	R	R		R	R
		R	R						R									R				R				R	
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	S		R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	S		R	R
S	S	R	R	R	R		R	R	R	R	R		R	R	R	R	R	R	R	R		R	R			R	R
R	R	R	R	R	R		R	R	R	R	R			R	R	R	R	R		R		R	R	R		R	R
R	R	R	R	R	R		R	R	R	R	R			R	R	R	R	R		R		R	R	R		R	R
R											S							S						S			R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R	R	S	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	

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II.A: SELECTED MULTILATERAL AGREEMENTS (WORLDWIDE) (*cont.*)

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			CAN	MEX	USA
1989 Basel	Conv. - Control of transboundary movements of hazardous wastes and their disposal	Y	R	R	S
1995 Geneva	Amendment				
1999 Basel	Prot. - Liability and compensation for damage				
1989 London	Conv. - Salvage	Y	R	R	R
1990 Geneva	Conv. - Safety in the use of chemicals at work (ILO 170)	Y		R	
1990 London	Conv. - Oil pollution preparedness, response and co-operation (OPRC)	Y	R	R	R
2000 London	Protocol - Pollution incidents by hazardous and noxious substances (OPRC-HNS)	Y			
1992 Rio de Janeiro	Conv. - Biological diversity	Y	R	R	S
2000 Montreal	Prot. - Biosafety (Cartagena)	Y	S	R	
1992 New York	Conv. - Framework convention on climate change	Y	R	R	R
1997 Kyoto	Protocol	Y	R	R	S
1993 Paris	Conv. - Prohibition of the development, production, stockpiling and use of chemical weapons and their destruction	Y	R	R	R
1993 Geneva	Conv. - Prevention of major industrial accidents (ILO 174)	Y			
1993	Agreem. - Promote compliance with international conservation and management measures by fishing vessels on the high seas	Y	R	R	R
1994 Vienna	Conv. - Nuclear safety	Y	R	R	R
1994 Paris	Conv. - Combat desertification in those countries experiencing serious drought and/or desertification, particularly in Africa	Y	R	R	R
1996 London	Conv. - Liability and compensation for damage in connection with the carriage of hazardous and noxious substances by sea (HNS)		S		
1997 Vienna	Conv. - Supplementary compensation for nuclear damage				S
1997 Vienna	Conv. - Joint convention on the safety of spent fuel management and on the safety of radioactive waste management	Y	R		R
1997 New York	Conv. - Law of the non-navigational uses of international watercourses				
1998 Rotterdam	Conv. - Prior informed consent procedure for hazardous chemicals and pesticides (PIC)	Y	R	R	S
2001 London	Conv. - Civil liability for bunker oil pollution damage				
2001 London	Conv. - Control of harmful anti-fouling systems on ships			R	S
2001 Stockholm	Conv. - Persistent organic pollutants	Y	R	R	S

Source: IUCN; OECD.

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JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	**HUN**	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
			R	R	R	R	R	R	R	R		**R**				R	R	R	R	R	R	R	R	R	R	R	R
							S	S	S			**S**				S								S	S		S	
		R	R		R		R	R	R	R	R		R	R	R		R	R	R			R	R	R		R	
	R														R			R	R				R				
R	R	R	R				R	R	R	R	R		R	R	R		R	R	R	R		R	R	R	R	R	
		R					S	S	S	S	R						R		R	R		R	R				
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R		R	R	R	R	R	R	R	R	R	**R**	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R		R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
					R												R						R				
R	R	R	R															R						R			R
R	R	R		R	R	R	R	R	R	R	R	**R**	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
							S	S		S							S	S					S			S	
		S				S									S												
R	R	R		R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R		R	
								R		R		**R**				S	R	R		R			R				
R	R	R	R	R	R	R	R	R	R	R	R	**R**		R	R	R	R	R	R	R	R	R	R	R	S	R	R
										R	R				S	R						R	S			R	
R		R					R	S	R		R					R		R	R			R	R				
R	R	R	R	R	R	R	R	R	R	R	R	**R**	R	S	S	R	R	R	S	R	R	R	R	R	S	R	R

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II.B: SELECTED MULTILATERAL AGREEMENTS (REGIONAL)

			CAN	MEX	USA
1950	Paris	Conv. - Protection of birds	Y		
1957	Geneva	Agreem. - International carriage of dangerous goods by road (ADR)	Y		
1975	New York	Protocol	Y		
1958	Geneva	Agreem. - Adoption of uniform conditions of approval and reciprocal recognition of approval for motor vehicle equipments and parts	Y		
1958	Bucharest	Conv. - Fishing in the waters of the Danube	Y		
1960	Paris	Conv. - Third party liability in the field of nuclear energy	Y		
1963	Brussels	Supplementary convention	Y		
1964	Paris	Additional protocol to the convention	Y		
1964	Paris	Additional protocol to the supplementary convention	Y		
1982	Brussels	Protocol amending the convention	Y		
1982	Brussels	Protocol amending the supplementary convention	Y		
1988	Vienna	Joint protocol relating to the application of the Vienna Convention and the Paris Convention	Y		
1968	Strasbourg	Agreem. - Restriction of the use of certain detergents in washing and cleaning products	Y		
1983	Strasbourg	Protocol	Y		
1968	Paris	Conv. - Protection of animals during international transport	Y		
1979	Strasbourg	Protocol	Y		
1969	London	Conv. - Protection of the archaeological heritage	Y		
1979	Bern	Conv. - Conservation of European wildlife and natural habitats	Y		
1979	Geneva	Conv. - Long-range transboundary air pollution (CLRTAP)	Y	R	R
1984	Geneva	Protocol (financing of EMEP)	Y	R	R
1985	Helsinki	Protocol (reduction of sulphur emissions or their transboundary fluxes by at least 30%)	Y	R	
1988	Sofia	Protocol (control of emissions of nitrogen oxides or their transboundary fluxes)	Y	R	R
1991	Geneva	Protocol (control of emissions of volatile organic compounds or their transboundary fluxes)	Y	S	S
1994	Oslo	Protocol (further reduction of sulphur emissions)	Y	R	
1998	Aarhus	Protocol (heavy metals)	Y	R	R
1998	Aarhus	Protocol (persistent organic pollutants)	Y	R	R
1999	Gothenburg	Protocol (abate acidification, eutrophication and ground-level ozone)	Y	S	R
1980	Madrid	Conv. - Transfrontier co-operation between territorial communities or authorities	Y		
1995	Strasbourg	Additional protocol	Y		
1998	Strasbourg	Second protocol	Y		
1980	Bern	Conv. - International carriage of dangerous goods by train (COTIF)	Y		
1989	Geneva	Conv. - Civil liab. for damage caused during carriage of dang. goods by road, rail, and inland navig. (CRTD)			
1991	Espoo	Conv. - Environmental impact assessment in a transboundary context	Y	R	S
2001	Sofia	Amendment			
2003	Kiev	Prot.- Strategic environmental assessment			
1992	Helsinki	Conv. - Transboundary effects of industrial accidents	Y	S	S
2003	Kiev	Prot. - Civil liability and compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters			
1992	Helsinki	Conv. - Protection and use of transboundary water courses and international lakes	Y		
1999	London	Prot. - Water and health	Y		
2003	Kiev	Prot. - Civil liability and compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters			

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JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	**HUN**	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU
				S	R				S		S		R		R	R	R			S		R	R	R	R		
				R	R	R	R	R	R	R	R	**R**		R	R	R	R	R	R	R	R	R	R	R		R	
				R	R		R	R	R	R		**R**			R	R	R	R	R	R		R	R	R		R	
R	R	R	R	R	R	R	R	R	R	R	R	**R**			R	R	R	R	R	R	R	R	R	R	R	R	R
												R															
				S	R		R	R	R	R	R				R	S	R	R		R		R	R	S	R	R	
				S	R		R	R	R	R					R	S	R	R				R	R	S		R	
				S	R		R	R	R	R	R				R	S	R	R		R		R	R	S	R	R	
				S	R		R	R	R	R					R	S	R	R				R	R	S		R	
				S	R		R	R	R	R	R				R	S	R	R		R		R	R	S	R	R	
				S	R		R	R	R	R					R	S	R	R				R	R	S		R	
					S	R	R	R	S	R	R	**R**			R		R	R	R	S	R	S	R	S	R	S	
					R		R		R	R					R	R	R					R		R		R	
							R			S						R	R					R		S		R	
				R	R	R	R	R	R	R	R		R	R	R	R	R	D		R		R	D	R	R	R	
				R	R	R	R	R	R	R	R		R	R	R	R	R	D		R		R	D	R	R	R	
				R	R		D		D	R	D		R		R	R				D		R	D	D		D	
				R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
				R	R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
				R	R	R	R	R	R	R	R	**R**		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
				R	R	R	R	R	R	R		**R**			R	R	R	R			R		R	R				
				R	R	R	R	R	R	R	R	**R**		R	R	R	R	R	S		R	R	R	R		R	R	
				R	R	R	R	R	R	R	S	**R**			R	R	R	R		S	R	R	R	R		R	S	
				R	R	R	R	R	R	R	R	**R**		R	R	R	R	S		R	R	R	R	R		R	R	
				R	R	R	R	R	R	R	S	**R**	S	S	S	R	R	R	S	S	R	S	R	R		R	R	
				R	R	R	R	R	R	R	S	**R**	R	S	R	R	R	R	S	S	R	S	R	R		R	R	
				S	R	R	R	R	R	R	S	**R**		S	S	R	R	R	S	R	R	R	R	R		R	R	
				R	R	R	R	R	R	R		**R**	S	R	R	R	R	R	R	R	R	R	R	R	R			
				R	S				R	R			S		S	R	R			S	R		R	R			
				R	S				R	R			S			R	R			S	R		R	R		R	
				R	R	R	R	R	R	R	R	**R**		R	R	R	R	R	R	R	R	R	R	R	R	R	R	
										S																	
				R	R	R	R	R	R	R	R	**R**	S	R	R	R	R	R	R	R	R	R	R	R	R		R	R
						R				R						R			R				R				
		S			S	R	S	R	S	R	S	**S**		S	S	S	S	R	S	S	S	S	R			S	S
				R	R	R	R	R	R	R	R	**R**			R	R	S	R	R	R	R	R	R	R		R	R
				S	S		S	S			S	**R**				S		S	S	S			S			S	
				R	R	R	R	R	R	R	R	**R**			R	R	R	R	R	R	R	R	R	R			S	R
					R	R	S	R	R	R	S	**R**	S		S	R	S	R	R	R	R	S	S	R			S	
				S	S		S	S			S	**R**				S		S	S	S			S			S	

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II.B: SELECTED MULTILATERAL AGREEMENTS (REGIONAL) (*cont.*)

		CAN MEX USA
1992 La Valette	European Conv. - Protection of the archaeological heritage (revised)	Y
1992 Vienna	Agreem. - Forecast, prevention and mitigation of natural and technological disasters	
1993 Lugano	Conv. - Civil liability for damage resulting from activities dangerous to the environment	
1994 Lisbon	Treaty - Energy Charter	Y
1994 Lisbon	Protocol (energy efficiency and related environmental aspects)	Y
1994 Sofia	Conv. - Co-operation for the protection and sust. use of the Danube river	Y
1998 Aarhus	Conv. - Access to env. information and public participation in env. decision-making	Y
2003 Kiev	Prot. - Pollutant Release and Transfer Registers (PRTR)	
1998 Strasbourg	Conv. - Protection of the environment through criminal law	
2000 Florence	Conv. - European landscape convention	Y
2000 Geneva	Agreem. - International carriage of dangerous goods by inland waterways (AND)	
2003 Kiev	Conv. - Framework Convention on the Protection and Sustainable Development of the Carpathians	Y

Source: IUCN; OECD.

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OECD EPR / SECOND CYCLE

JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	**HUN**	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU
					S	R	R	R	R	R	R	**R**		R	S	S	R	R	R	R	R	S	R	R	R	R	
				R								**R**			R				R		R						
								S			S		S		S	S	S			S							
R		S		R	R	R	R	R	R	R	R	**R**	S	R	R	R	R	S	R	R	R	R	R	R	R	R	R
R		S		R	R	R	R	R	R	R	R	**R**	S	R	R	R	R	S	R	R	R	R	R	R	R	R	R
				R		R				R		**R**									R						R
				R	R	R	R	R	R	R	R	**R**	S	S	R	R	R	R	R	R	R	R	R	S		R	R
				S	S	S	S	S	S	R	S	**S**		S	S	R	R	S	S	S		S	S	R		S	R
				S	S		S	S	S	S	S		S		S	S							S				
					R	R	R	R	R		S	**R**		R	R	R	R	R	R	R	R	R	S	S	R	R	
				R		S			S	S		**R**			S	R	R				S						
						R						**R**							R		R					R	

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Reference III

ABBREVIATIONS

AEP	Agri-environmental payment
ARDOP	Agricultural and Rural Development Operational Programme
CAP	Common Agricultural Policy (EU)
CEHAP	Children's Environmental Health Action Plan
CHP	combined heat and power
CITES	Convention on International Trade in Endangered Species
CLRTAP	Convention on Long-Range Transboundary Air Pollution
CNG	Compressed natural gas
CO	Carbon monoxide
CO_2	Carbon dioxide
COD	Chemical oxygen demand
DWIP	Drinking Water Quality Improvement Programme
EAFRD	European Agricultural Fund for Rural Development
EAGGF	European Agricultural Guidance and Guarantee Fund
EEOP	Environment and Energy Operational Programme
EIA	Environmental Impact Assessment
ESA	Environmentally Sensitive Area
EU	European Union
FDI	Foreign direct investment
GDP	Gross domestic product
GEF	Global Environment Facility
GHG	Greenhouse Gas
ha	hectare
HCSO	Hungarian Central Statistic Office (KSH)
IPM	Integrated pest management
IPPC	Integrated Pollution Prevention and Control
ISPA	Instrument for Structural Policies for Pre-Accession (to the EU)
IWRM	Integrated Water Resource Management
LIFE	EU financial instrument supporting environmental and nature conservation projects
LPG	Liquified petroleum gas
MEW	Ministry of Environment and Water

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Mtoe	Million tonnes of oil equivalent
NAEP	National Agri-Environmental Programme
NAP	National allocation plan (for GHG emissions trading)
NDP	National Development Plan
NDPC	National Development Policy Concept
NEAP	National Environmental Action Programme
NEC	National Emissions Ceiling (EU Directive)
NEHAP	National Environmental Health Action Programme
NEP	National Environmental Programme
NGO	Non-governmental organisation
NHDP	New Hungary Development Plan
NIEH	National Institute for Environmental Health
NIP	National Implementation Programme (urban waste water collection and treatment)
NO_x	Nitrogen oxides
NPDs	National Park Directorates
NRDP	National Rural Development Plan
NRDSP	National Rural Development Strategy
NSDC	National Spatial Development Concept
ODA	Official development assistance
PHARE	Polish and Hungarian Assistance for Economic Reconstruction
PAC	Pollution abatement and control
PAH	Polycyclic aromatic hydrocarbons
Phare	Poland and Hungary Assistance for Restructuring of the Economy (European Commission)
PM	Particulate matter
POP	Persistent organic pollutant
PPP	Polluter Pays Principle
PPPs	Purchasing power parities
PRTR	Pollutant Release and Transfer Register
SAPARD	Special Accession Programme for Agriculture and Rural Development
SCI	Site of Community Importance (EU Habitats Directive)
SEA	Strategic environmental assessment
SMEs	Small and medium-sized enterprises
SO_2	Sulphur dioxide
SPA	Special Protection Area (EU Birds Directive)
TAP	Thematic Action Programme (under NEP II)
toe	tonnes of oil equivalent
TFC	Total final energy consumption

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TPES	Total primary energy supply
VAT	Value-added tax
VOCs	Volatile organic compounds
VTT	Vásárhelyi Plan (for flood prevention)
WFD	Water Framework Directive

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Reference IV
PHYSICAL CONTEXT

Located in Central Europe, *the Republic of Hungary* shares borders with Austria, Croatia Romania, Serbia, Slovakia, Slovenia and Ukraine. This landlocked country of 93 030 km^2 lies between the Carpathian Mountains and the Alps. Its widest extensions are 268 kilometres north-south and 526 kilometres east-west. Hungary can be broadly divided into *four geographical regions:* the Great Plain (nearly half its territory) and the Northern Mountains, both east of the Danube; and Transdanubia (a third of its territory) and the Small Plain, both west of the Danube.

Hungary is a *lowland country:* 84% of its territory lies less than 200 metres above sea level. A chain of mountains of medium height runs across it. The Transdanubian Mountains west of the Danube are 400 to 700 metres high, while the Northern Mountains to the east rise from 500 to 1 000 metres. The country's highest point is Mount Kékes (1 015 metres). Transdanubia is a hilly region. The *climate* is temperate continental, with cold winter and warm summer. Annual average rainfall is 500 to 550 mm on the plains, and 600 to 800 mm at higher altitudes.

Scarcely 5% of Hungary's surface waters have their origins in the country itself. The two most important *rivers*, the Danube (with a 417 kilometre stretch within Hungary) and the Tisza (598 kilometres), cross the country from north to south. The Danube, flowing through Budapest, links Hungary to the Black Sea; it joins the North Sea via the Rhine-Main-Danube canal. There are 1 200 natural and artificial *lakes* in Hungary. Lake Balaton is the largest freshwater lake in Central Europe and an important international tourist attraction. Hungary has long been known for its abundance of thermal waters.

Arable and permanent cropland covers nearly 52% of the total land area, permanent grassland 13% and forest and other wooded land 19%. The main crops are wheat and maize; pig meat is the main livestock product. About 320 000 hectares are irrigable. Over the last three decades there has been a 10% decrease in the amount of agricultural land (including grassland) and a 20% increase in forested area.

Hungary is not well endowed with *natural resources*. Its fertile soil is the most important asset. Around half its primary energy requirements must be imported, mainly oil and gas from Russia. There are brown coal and open-cast lignite mines in the Northern and Transdanubian ranges. Natural gas is exploited in the southern part of the Great Plain.

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Reference V
SELECTED ENVIRONMENTAL WEBSITES

Website	Host institution
Government	
www.keh.hu/keh	Office of the President of the Republic of Hungary
www.meh.hu/english	Prime Minister's Office
www.kulugyminiszterium.hu	Ministry of Foreign Affairs
www.fvm.gov.hu	Ministry of Agriculture and Rural Development
www.kvvm.hu	Ministry of Environment and Water
www.bm.hu	Ministry of Local Government and Regional Development
www.mkogy.hu/parl_en.htm	Hungarian National Assembly
http://portal.ksh.hu	Hungarian Central Statistics Office
www.met.hu	Hungarian Meteorological Service
www.oktt.hu	National Environmental Council
www.orszagoszoldhatosag.gov.hu	National Inspectorate for Environment, Nature and Water
www.antsz.hu	National Public Health and Medical Officer Service

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SUSTAINABLE DEVELOPMENT

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Boxes

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Signs

The following signs are used in Figures and Tables:
.. : not available
– : nil or negligible
. : decimal point
* : indicates that not all countries are included.

Country Aggregates

OECD Europe: All European member countries of the OECD (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey and United Kingdom).

OECD: The countries of OECD Europe plus Australia, Canada, Japan, the Republic of Korea, Mexico, New Zealand and the United States.

Country aggregates may include Secretariat estimates.

Currency

Monetary unit: forint (HUF)
In 2007 HUF 183.75 = USD 1.
In 2007 HUF 251.32 = EUR 1.

Cut-off Date

This report is based on information available up to 30 April 2008.

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Map of Hungary

Source: OECD.

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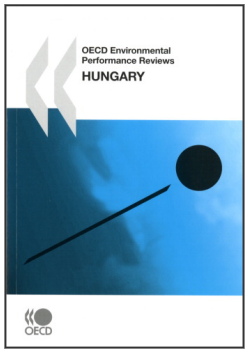

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