5. Expenditure and Financing, Charges and Economic Instruments

5.1 *Expenditure on air, water and waste management*

Overall public expenditure on *pollution abatement and control (PAC)* for air, water and waste management, which had reached a high of 0.8% of GDP in the mid-1990s, fell to 0.6% in 1998 and to 0.5% in 2000, then rose again to almost 0.9% in 2003 (Table 4.7). In 2003, sewerage and waste water treatment accounted for 62% of public PAC expenditure, waste management accounted for 31% and air pollution management for 7%. *Business PAC expenditure*, which had been around 1.5% of GDP during much of the 1990s, dropped to 1.2% in 1998 and to 0.5% in 2000, the latest year for which figures are available. Whereas in the 1990s the major investments had been in air pollution control, the review period saw a gradual shift towards sewerage and waste water treatment and, more recently, towards waste management.

Public PAC expenditure on *air management* fell by about one-quarter during the review period, to CZK 1.4 billion or 0.06% of GDP (Table 4.7). Nevertheless, SEF investment in this area remained stable. Business expenditure on air pollution control, which had constituted a major share of the high overall business PAC expenditure during the 1990s, declined massively.

Public PAC expenditure on *sewerage and waste water treatment* in 2003 amounted to CZK 13.4 billion (approximately EUR 430 million) or 0.55% of GDP, of which current spending amounted to CZK 1.9 billion and investment came to CZK 11.4 billion (0.47% of GDP). This rate of investment appears to be about the right order of magnitude to meet the 2010 deadline of the EU Waste Water Directive.

Public PAC expenditure on *waste management* roughly doubled during the review period to reach CZK 6.6 billion, or 0.27% of GDP, in 2003 (Table 4.7). Operating expenditure represented 82% of the total in that year, leaving less than CZK 1.2 billion for investment, down from an all-time high of CZK 4.7 billion in 1998 (current prices). Investment in waste management will need to grow considerably during the next decade, in view of the CZK 36 billion (2001 prices) estimated to be required, mainly for the implementation of EU Directives (CZK 27 billion). Order-of-magnitude estimates of business operating and investment PAC expenditure on waste management suggest that it may have fallen from about CZK 6 billion at the start of the review period to about CZK 4 billion around 2000 (latest data available).

5.2 Financing

The *financing of public environmental expenditure* is achieved through a mix of sources including the State budget, the SEF, and regional and municipal budgets. The relative share contributed by each of these sources is quite different for air, water and waste. Public investment in air management is primarily financed by the SEF; investment in water comes mostly from local sources; and investment in waste management is about equally derived from the SEF and local sources. Operating expenditure for waste management is predominantly financed at a local level by municipalities, except in the case of hazardous waste management, which is largely financed through the State budget. The SEF has also in recent years taken a more prominent role in financing investment in waste facilities, reflecting the availability of EU funding for this purpose.

The *SEF receives part of its revenue from funds collected through the use of economic instruments*. This part represented 60% of the SEF's total income in 2003 and included just over CZK 1.5 billion from economic instruments related to the management of air (36.5%), water (52.9%) and waste (10.6%). In the same year, the Fund allocated more than CZK 4.3 billion to these three areas (including renewable energy sources), of which CZK 0.7 billion as refundable loans. The SEF also administers the EU environmental subsidies allocated to the Czech Republic. EU subsidies generally ranged between 65 and 75% of eligible project costs: total funds approved from the ISPA pre-accession fund, for projects whose scope was somewhat wider than pollution abatement and control (e.g. including drinking water supply, monitoring of water quality), amounted to CZK 0.98 billion in 2001, CZK 2.25 billion in 2002, and CZK 2.55 billion in 2003 (Chapter 4).

5.3 Pricing of municipal services

Prices for municipal *water and waste water services* are set by individual utilities, but are subject to price control exercised by the Ministry of Finance. The combined price of both services increased on average by 40% (current prices) during 1999-2003 and is still rising slowly. In 2003, the average water supply charge amounted to CZK 21.56/m^3 (with a range of CZK 10.26-28.24) and the average sewerage charge equalled CZK 18.22/m^3 (with a range of CZK 8.88-28.26). Combined prices for the sum of water supply, sewer and treatment charges varied between CZK 18.96/m^3 and 56.13/m^3, with an average price of CZK 39.77/m^3 (all prices include VAT). Prices include operating as well as capital costs, in a cost-recovery logic; capital costs are calculated on the basis of asset value, so that subsidies from the national government or the EU do not distort prices.

Concerning municipal *waste services*, households pay an explicit waste charge dependent on the number of people living in the house. The charge was previously capped at CZK 500 per person, but a 2002 amendment to the Waste Act now allows municipalities to charge more and to structure waste charges so as to encourage waste separation. Where warranted, municipalities may also enter into individual contracts for waste collection. However, revenue from these charges has so far covered not more than one-third of the actual cost of municipal waste collection and disposal.

Agriculture

Environmentally sound agriculture was practised on 810 farms (6% of the total agricultural land) in 2003 with a predominance of permanent grasslands (90%) and arable land (8%). Inspection for compliance with the act on environmentally sound agriculture was carried out on 717 farms in 2002.

The objectives of *agri-environmental subsidies* are usually linked to nature conservation and landscape protection. They are provided for reducing water run-off and soil erosion (e.g. by planting grasslands on arable land, creating buffer strips around fields and grass strips on slopes, and growing interim plants), for supporting biodiversity (e.g. by maintaining meadows and pastures, permanently wet and peat meadows, and bird habitats on grasslands, as well as by planting bio-strips on arable land), for reducing fertiliser use in meadows and pastures, and for supporting extensive management. The effectiveness of existing agri-environmental subsidies is to be evaluated within the horizontal rural development plan. There will be new opportunities under the Common Agriculture Policy (e.g. encouragement of environmentally beneficial farming methods, promotion of eco-labelled products, encouragement of broader rural development options) where nature, biodiversity and landscape amenities are considered assets for economic growth and social progress.

Forestry

Forests currently cover 2.6 million hectares, or 33% of the country, a slight increase from 1990. The intensity of forest use (harvest/annual growth) has increased since 1990, but remained within a sustainable range during the review period. Most forest land belongs to the State (60%) and the remainder belongs to municipalities and regions (15%), forest co-operatives (1%) and private owners (23%). This situation has remained almost unchanged over the last ten years. Overall, 76% of total forested areas are recognised as commercial forest and the rest provide environmental services.

The Forest Act 1995, which conforms to the Convention on Biological Diversity, requires the development of *forest management plans* and the full integration of biodiversity in all forms of forestry practice. The Forestry Act sets minimum shares of so-called "MZD species" (i.e. broad leaved species and fir) during regeneration processes to increase biodiversity. The fraction of broadleaved tree species, especially beech and oak, has gradually increased (Box 3.2). The minimum shares set for offering subsidies and providing compensation for increased costs could be raised. Consistency should be ensured among the Forest Act, which offers a long-term vision of forest management, and the forthcoming National Biodiversity Strategy. *Certification of sustainable forest management* has developed with the overall certified forest area equal to almost two-thirds of the total forest area.

Environmental impact assessments are performed for deforestation of areas larger than 25 hectares. Deforestation of 5 to 25 hectares requires "investigative proceedings", called "little EIAs". The 2001 Environmental Impact Assessment Act

lists construction projects that significantly affect biodiversity in forests. While a strategic environmental assessment was made of the Forest Policy prior to EU accession, EIA does not apply to the ten-year forest management plans. Neither local nor State nature protection administrations nor non-governmental organisations (NGOs) take part in the preparation and approval of forest management plans and regional forest development plans, as the Forest Act does not require these plans to go through administrative procedure.

Tourism

The idea of sustainable tourism is found in the State Tourism Policy of the Czech Republic 2002-07. The Ministry of the Environment is developing an *action plan for sustainable tourism* in the frame of the National Biodiversity Strategy. The action plan will describe objectives, means and indicators relating to sustainable tourism, and will contain actions for each specially protected area. The Czech Republic is promoting the creation of a national system of certification of environmentally sound tourism services.

3.6 Economic aspects of nature conservation and biodiversity protection

Expenditure and financing

Direct public funding is the main source of financing for *nature conservation and landscape protection*. In 2003, the *State* contributed CZK 2.6 billion to this purpose (out of CZK 6.0 billion of the State budget for environmental protection). The *State Environmental Fund* contributed CZK 345 million in direct funding and CZK 0.5 million in the form of a loan for 171 new projects in nature and landscape conservation. Expenditure from *local authorities* amounted to CZK 5.4 billion.

Government Regulation No. 344/1999 permits *support for non-productive agricultural functions* that have a favourable environmental impact. The Ministry of Agriculture increased the support provided under this regulation to almost CZK 2.9 billion in 2003. Current programmes include subsidies for environmentally sound agriculture (CZK 230 million was provided in 2003), for maintenance of grassland (CZK 749 million) and for establishing the elements for ecological stability (CZK 1.4 million) (Chapter 4).

To avoid contradictory signals or perverse incentives in the use of financial support (e.g. State funds, EU Cohesion or Structural Funds), *co-operation at the project preparation stage* might be improved, with participation of nature conservation authorities in the early definition phase of relevant projects. Valuation methodologies were prepared concerning forest functions and habitats.

An action plan (of March 2004) focuses on the development of *organic farming* up to 2010, partly as a response to developments in the EU. At the end of 2003, 810 organic farms covered 255 000 hectares (i.e. 6% of the total agricultural land). In 2003, subsidies paid to organic farming amounted to about CZK 230 million (approximately EUR 7.7 million) as compared with CZK 48 million (approximately EUR 1.6 million) in 1998.

1.3 Sustainable development and market based integration

Sectoral subsidies

In the *energy sector*, direct subsidies (including State financial contributions for investments in the desulphurisation of power plants and restoration of closed mines), indirect support and cross-subsidies amounted to an estimated CZK 207 billion during 1994-98. Since then, *subsidies, and particularly cross-subsidies, have fallen considerably* owing to the application of full VAT, efforts at price adjustment and the phasing out of direct subsidies for heat. The restructuring process to rationalise production and *reduce coal subsidies* is still ongoing. From 1999 to 2003 the amount of direct State subsidies to coal mining decreased from CZK 2.7 billion to CZK 2.0 billion. State subsidies for hard coal or brown coal mines have been used to close some mines and mitigate environmental damage and social hardship, but have not been used to support production. In mid-2003, the government initiated the procedure to privatise the two remaining large State-owned brown coal mines, Severočeské doly (in Northern Bohemia) and Sokolovska Uhelna (in Western Bohemia).

The State has gradually raised *energy prices* since the early 1990s. Most notably, *cross-subsidies from industry to households ended* in 2002. As a result, household electricity prices jumped some 15% bringing them closer to cost-recovery levels. Natural gas prices for households also rose significantly between 2000 and 2003 (Table 2.1). Further energy price increases for households might have negative social consequences, which should be addressed.

In the *agricultural sector*, policies have developed in the context of a transition toward a market economy and in preparation for entry into the EU. Agricultural support declined sharply during 1986-97 but has been increasing *since 1998*, reflecting a rise in market price support and budgetary payments. This is due mainly to the introduction of policies similar to the European Common Agricultural Policy (e.g. set-aside payments, milk and sugar production quotas) in the perspective of EU

accession. Support to farmers is based largely on measures that tend to stimulate production, increase the use of inputs, reduce trade and increase pressure on the environment, while doing little to raise farmer income. No specific agri-environmental measures have been introduced, but payments to support extensive forms of farming may reduce environmental pressures in specific areas.

Total *support to agriculture represented 1.6% of GDP* in recent years, which is above the OECD average. In 2003, the producer support estimate (PSE) reached 27%, just under its level in the early 1990s, at the beginning of the economic reforms. The combined share of market price support (MPS) and output and input payments dropped from 98% (in 1991-93) to 77% (in 2001-03). Prices received by farmers evolved from 54% higher than those on the world market (1991-93) to 19% higher (2001-03). During the same periods, Czech consumers paid prices averaging 49% higher (1991-93) and 17% higher (2001-03) than world prices. Payments based on area planted or animal numbers increased from 1% (1991-93) to 22% (2001-03). Payments based on input constraints and farm incomes remained small. The share of total support provided for general services increased from 3% (1991-93) to 10% (2001-03), due mainly to increased payments to inspection services and infrastructure.

A study was carried out in 2001-02 to review *environmentally harmful subsidies*. The methodology used to identify and quantify such subsidies was developed on the basis of six case studies (two on transportation, two on agriculture, one on the construction industry, one on energy). It is suggested that subsidies should be reduced when they are found to have adverse impacts on the environment.

Environmentally related taxes

Energy taxes include VAT, excise tax and mining charges. All energy end-use is currently subject to *VAT* (at 19%), except for heat supply and biomass fuel (at 5% until July 2007). Electricity and natural gas have been subject to the 22% (currently 19%) rate since 1998. Bio diesel has been exempt since 1996. An *excise tax* on fossil fuels was introduced in 1993.

In 2003, a total of CZK 57 billion was collected from energy taxes. The State Fund for Transport receives some of the excise tax revenues to pay for public transport infrastructure. Road fuel prices, and the corresponding taxes, have been decreasing in real terms since 1990 and thus have not provided an incentive for energy efficiency. Taxes on unleaded gasoline are higher than those on diesel fuel. EU membership will require the Czech Republic to levy higher taxes on the most polluting fuels, such as high sulphur fuel oil and brown coal. Regarding biofuels, only fossil components are taxed, bio components are exempted form excise tax. In

agriculture, direct support to crop producers replaced the tax exemption for biofuels, which are more expensive than petroleum products. In *mining*, two *taxes* are levied on coal. The first is the annual tax for mining space (at CZK 10 000/km^2) paid to the municipality where the coal mine is located. The second is a royalty on "extracted reserve material" (at a maximum of 10% of the market price of extracted minerals), paid to the municipalities (75%) and the State (25%). Its revenues are used for the restoration of sites.

Concerning *transport taxes*, *highway fees* are levied annually and are differentiated according to vehicle weight. A *road tax on commercial vehicles*, levied on a per-vehicle basis, is differentiated according to vehicle age and emission control level (a surcharge of 15% being levied on cars from before end of 1989 and a discount being given to lorries that conform to the EURO2 and EURO3 standard). The differentiation of the vehicle tax helps to speed up the renewal of the fleet with more environmentally friendly vehicles. However, consideration should be given to extending the tax to more than commercial vehicles. In addition, specifying the tax in terms of kilometres driven, rather than on a per vehicle basis, would make it more targeted. The introduction of *road pricing* would also help to reduce diffuse emissions in cities efficiently. The annual mileage tax and road pricing could be implemented for lorries at low cost, since many of them are already fitted with the necessary technical devices in order to use Austrian and German motorways. As previously noted, recent changes in the *VAT* have reduced the automobile tax while significantly increasing rail transport taxes (Chapter 4, Section 3).

The 2001 SEP foresaw the proposal of a *green tax reform* to restructure existing fuel and energy taxes while reducing other taxes, such as on labour (as unemployment reaches 8%), so as to leave the *overall tax burden unchanged*. The 2004 SEP reiterates the need for such an environmental tax reform. Discussions are underway between the Ministry of the Environment and the Ministry of Finance, but the Ministry of Labour and Social Affairs does not appear to be included. A green tax commission should be established to speed up the reform.

2.3 *Environmental expenditure and its financing*

Environmental and PAC expenditure

PAC expenditure of the Czech Republic (including public and private investment as well as operating expenditure) is estimated at 1.3% of GDP. *Environmental investment expenditure decreased* significantly over the review period. From 1994 to 1997, environmental investment remained at around 2.4 or 2.5% of GDP, but after 1998 it dropped, reaching 0.9% in 2001 and 0.7% in 2002 (Table 4.6).

The very large decrease in investment expenditure aiming to combat air pollution was accompanied by significant decreases in investment expenditure for waste water and waste management. This evolution may partly follow from the considerable efforts and progress accomplished during 1990-98 (e.g. for combating air pollution). It may also reflect anticipations of future investment and financing associated with EU accession. Emphasis will need to be placed on *water protection* and particularly on implementing *the EU Directive on Urban Waste Water Treatment*, which requires the construction and reconstruction of waste water treatments plants and sewer systems by the end of 2010. In 2002, 45% of the environmental investments were for water protection, as compared to 36% for the protection of air and climate.

Table 4.6 **Environmental investment expenditure,**[a] 1997-2002 by sector

(million CZK)

	1997	1998	1999	2000	2001	2002
Total	40 503	35 160	28 956	21 399	19 892	14 918
Of which:						
Air and climate	22 323	20 141	15 762	8 407	7 057	4 149
Waste water management	11 275	8 291	8 839	8 567	8 815	7 034
Waste management	4 765	4 698	2 597	2 270	1 463	1 236
Protection of soil, surface waters and groundwater	604	555	426	329	488	1 027
Noise and vibrations[b]	455	313	241	277	632	365
Biodiversity and landscape	1 081	1 162	1 091	1 549	1 437	511
Total as % GDP	*2.5*	*2.0*	*1.5*	*1.1*	*0.9*	*0.7*

a) Does not include current expenditure. Environmental investment expenditure includes several "integrated environmental projects" (e.g. technology changes, new and more environmentally benign facilities), but excludes investment related to drinking water.
b) Excluding workplaces.
Source: Ministry of Finance, Ministry of the Environment.

Financing of public expenditure

The *State budget*, which was the largest source of public financing for environmental projects during the 1990s, provided only 17% of public expenditure for environmental protection in 2003 (Table 4.7). Financing by the State budget has been greatly reduced as a result of the government effort to reduce the budget deficit and to achieve the Maastricht criteria. In 2003, financing for water protection amounted to CZK 1.1 billion (EUR 34.4 million). In 2003, 67% of the State budget contribution to environmental protection was for *operating expenditure*, mainly for the protection of biodiversity and landscape (e.g. for the protection of species, habitat, important ecosystems and localities, public green areas).

The *territorial (i.e. regional and municipal) budgets* provided 69% of public environmental protection expenditure in 2003. These funds were used mainly for water protection (CZK 9.5 billion) and waste management (CZK 5.8 billion). In 2003, 55% of the environmental protection expenditure of the regional budgets was allocated to operational expenditure, mostly in the area of waste management (collection and accumulation of hazardous and municipal wastes, use and disposal of hazardous and municipal wastes, prevention of waste generation and monitoring of waste management).

Box 4.3 **State Environmental Fund**

Between 1992 and 2003, the cumulative income of the SEF reached *a total of CZK 46.13 billion*, while expenditure came to CZK 41.51 billion (e.g. CZK 4.76 billion in 2003). The expenditure covered construction of 1 236 waste water treatment plants and sewerage projects, implementation of 225 actions to repair the flood damages of August 2002, installation of 3 799 full-scale gas mains in municipalities and gas boilers, and 1 600 measures for reducing pollution of nature and landscape, including waste handling and disposal.

Since 2001, the SEF has become the implementation agency and payment unit for the EU pre-accession programme ISPA, and since 2004, it has served these functions for the EU *Cohesion Funds* in the environmental area. The SEF is also the mediating and payment unit for Priority 3 (improvement of the environment infrastructure) and part of Priority 4 (technical assistance) of the *Structural Funds*.

Table 4.7 **Financing of public expenditure for air, water and waste,** 1998 and 2003

(1 000 CZK current prices)

		Total public PAC expenditure	State budget		State funds		Local	
			Current	Investment	Current	Investment	Current	Investment
Air	1998	1 957 484	53 023	372 611	12 297	884 600	94 928	533 025
	2003	1 441 949	55 139	82 965	23 206	994 162	71 912	214 565
Water	1998	7 302 974	294 307	608 037	0	1 081 193	648 097	4 671 340
	2003	13 354 577	501 217	683 459	270 341	2 381 710	1 157 906	8 359 944
Waste	1998	3 007 960	137 594	38 255	–1 155	75 398	2 381 115	376 753
	2003	6 612 437	207 920	36 000	9 047	567 265	5 223 697	568 508
Total	1998	12 268 418 (*0.67%* of GDP)						
	2003	21 408 963 (*0.89%* of GDP)						

Source: Statistical Environmental Year Book of the Czech Republic, 2003.

The *SEF* accounted for 14% of public environmental protection expenditure in 2003. The SEF receives about 60% of its revenue from environmental charges and fines (CZK 3.2 billion); the other 40% comes from loan repayments, interest on the Fund's deposits and bank accounts, and interest on loans. The SEF's expenditure consists mainly of direct support and loans (which account for 75% and 19%, respectively, of its total expenditure). The primary recipients are municipalities and non-profit organisations (97% of the total); business receives just 3% (Box 4.3).

Financing of private expenditure

Industry has played and is still playing a large role in financing environmental improvements. In 2002, companies operating in the Czech Republic financed about 40% of the investments for environmental protection (CZK 6 billion) including 52% of those related to air pollution control and climate, 40% of those related to water management and 38% of those related to waste management.

The *National Property Fund*, which was established under the Privatisation Act to collect payments from the sale of State properties, is supporting environmental expenditure from owners of privatised facilities to remedy the pollution burden of the past. This fund provided 11% of the environmental protection expenditure in 2003.

EU financing

The Czech Republic has been actively using EU *pre-accession assistance instruments*, including PHARE and ISPA pre-accession funds, together with loans from international financial institutions (e.g. European Investment Bank). The *PHARE* programme supported the adoption of the environmental *acquis* before accession to the EU, through institutional twinning and technical assistance and investment projects in the field of water quality, waste management, air quality and IPPC: overall, EUR 28.74 million of PHARE funding were allocated to the environmental objective during 1996-2004. The *ISPA* fund (an instrument for promoting transport and environmental infrastructure) has been used for financing waste water treatment plants and sewerage networks: during 2000-03, the European Commission approved 15 ISPA environmental projects totalling EUR 340 million.

During 2004-06, the Czech Republic expects to use the Cohesion Fund (EUR 415 million) and Structural Funds (EUR 142 million) for environmental improvements. However, the total amount needed to implement the European environmental *acquis* during 2004-10 is estimated at CZK 285 billion (EUR 9 billion). Hence *priorities will have to be set* and additional national and international funding mobilised.

This effort is expected to be financed by the private sector (58%), the regional budget (40%) and the State budget (2%). Investments will initially be concentrated in the areas where the Czech Republic asked for transitional periods, but will also be needed to comply with other EU legislation. It is therefore essential for the Czech Republic to improve the efficiency of its environmental instruments and expenditure. *Cost-effectiveness and cost-benefit analysis* should be applied systematically to environmental expenditure. So far, such tools seem to have been systematically used only by the SEF and for projects funded by the EU. The authorities have not used cost-benefit analysis as a regular policy tool, because it is not required for programmes or projects.

2.4 Economic instruments

The Czech Republic has established a *comprehensive set of economic instruments* for environmental management. These broadly respect the *user polluter pays principle* (Table 4.8).

Charges

The Czech Republic has established a *wide-ranging system of charges* relating to the environment. They are mostly used in association with regulatory instruments. They include emission and user charges for water and air pollution, noise, waste, packaging, use of natural resources such as water and minerals, and change in use of agricultural land (Table 4.8).

Charges for emitting *air pollutants* vary depending on the toxicity of the pollutant: CZK 20 000 per tonne for Class I (e.g. asbestos, Cd, Hg) and CZK 10 000/tonne for Class II (e.g. As, Mn, Cu, Pb). Whereas the rates for organic substances were increased during the review period, the rates for the other substances were held constant. Since the passing of the 2002 Act on Air Protection, the regional authorities have set charges for large and very large air emission sources. For medium-sized sources, decision-making is in the hands of municipalities with extended competence. For small sources, municipalities are the designated authority. Municipalities must use revenue received from small sources for environmental protection, and transfer revenue from medium-sized and larger sources to the SEF.

Economic instruments for water management were further extended in the new Water Act No. 254/2001. For *groundwater*, the exemption from abstraction charges for drinking water was abolished, and supply utilities now face a charge of CZK 2 per m^3. In addition, the rate charged for other uses of groundwater was raised from CZK 2 to CZK 3/m^3. Half of the revenue is paid to the SEF, the other half to the regional budget. For *surface water abstractions*, State river board enterprises levy a

Table 4.8 **Economic instruments**

Instrument	Rate	Remarks
Water		
Waste water effluent charge		Total income: CZK 410 million in 2003.
BOD, COD, etc.	CZK 3-16/kg	Revenue goes to SEF for financing water protection projects.
Amount of waste water	CZK 0.1/ m^3	
Phosphorous	CZK 70/kg	
Absorbed organically bound halogens	CZK 300/kg	
Mercury	CZK 20 000/kg	
Cadmium	CZK 4 000/kg	
Dissolved inorganic salts	CZK 0.5/kg	
Un-dissolved substances	CZK 2/kg	
Emissions into underground water	CZK 3 500/year	
User charge for water supply and for sewerage and sewage treatment	Average price: CZK 40/m^3	Payment for the service of municipal plants. Prices are different according to regions.
Surface water withdrawal charge	Each river basin corporation has a different rate	Total income: CZK 1 929 million in 2001. Payment for the services of river basin corporations, which must cover their costs including environmental expenditures. No charge for agriculture and pisciculture.
Groundwater withdrawal charge	CZK 2-3/m^3	Total income: CZK 313 million in 2003. 50% goes to SEF and 50% to relevant region. No charge for drinking water. Payment for withdrawing groundwater in volumes exceeding the standard limits – more than 6 000 m^3/year or 500 m^3/month.
Air and noise		
Air pollution charge		Total income: CZK 368 million in 2003. (large pollution sources)
SO_x	CZK 1 000/t	Revenue goes to SEF for financing programmes related to air protection.
NO_x	CZK 800/t	
CO	CZK 600/t	
Particulates	CZK 3 000/t	
Hydrocarbons	CZK 20 000/t	
Volatile organic compounds	CZK 2 000/t	
Heavy metals	CZK 20 000/t	
Ammonia	CZK 1 000/t	
Methane	CZK 1 000/t	
Selected heavy metals and organic pollutants:		
class I (asbestos, Cd, Hg, etc.)	CZK 20 000/t	
class II (As, Mn, Cu, Pb, etc.)	CZK 10 000/t	
Charge on hard freons (ozone depleting substance: CFCs)	CZK 400/kg	Total income: CZK 43 million in 2002. Revenue goes to SEF. It is used to finance the creation of a system for recycling and eliminating ozone depleting substances and introducing harmless substitutes.

Noise pollution charge	Approx. CZK 12-127/tonne of starting weight of the plane	Total income: up to CZK 100 million per year. From 1996 the charge is levied on airplanes based on weight and corresponds to four noise categories.
Waste		
Waste disposal charge		Imposed on landfill operators.
Hazardous waste		Total income: CZK 1 755 million in 2001.
Basic charge	CZK 1 100/t	CZK 1 700/t in 2009
Risk charge	CZK 2 000/t	CZK 4 500/t in 2009
Solid municipal waste and other wastes	CZK 200/t	CZK 500/t in 2009
Municipal waste charge	. .	Revenue goes to waste collection and treatment plant operators.
Financial reserve for landfilling		Revenue goes to special purpose-tied bank account.
Hazardous waste	CZK 100/t	
Other waste	CZK 35/t	
Radioactive waste fee	CZK 50/MWh	Total income: CZK 1 331 million in 2004.
Deposit-refund system for glass	CZK 3/glass bottle	
Packaging	Registration and record fees (more than 300 kg/year)	Person who places packaging or packaged products on the market or into circulation.
Non-compliance charges and fines		
Exceeding standards	Up to 50% of standard charge	Revenue goes to SEF.
Fine for infringement of specific environmental laws		Revenue goes to SEF and municipalities.
Land and minerals		
Charge for removal of land from agricultural production	Lump-sum for permanent withdrawal Annual fee for temporary withdrawal	Total income: CZK 590 million in 2002. 60% goes to SEF, 40% to the municipality, to support actions for rural revitalisation and environmental protection.
Charge for removal of land from forestry use	Lump-sum for permanent withdrawal Annual fee for temporary withdrawal	Total income: CZK 60 million in 2002. 60% goes to SEF, 40% to the municipality.
Fee for use of mining area	CZK 10 000/km^2/year up to 2 hectares: CZK 2 000/year	Total income: CZK 21.7 million in 2003. Revenue goes to the municipality concerned.
Fee for exploitation of mineral resources	Up to 10% of market value of extracted raw material	Total income: CZK 495.3 million in 2003. 75% to the municipality, 25% to the State budget, to be used for remediating environmental damage caused by mining.

Source: Ministry of the Environment; OECD.

charge of about CZK 2 to 3/m^3 or, in the case of withdrawals for cooling purposes, CZK 0.4 to 0.9/m^3. These charges are levied under Law 526/1990 to pay water authorities for the cost of administering watercourses and river basins; they are regarded as a charge for service and do not reflect the value of the water. For *discharging waste water into natural waters*, charges are based on both the volume and the pollution content of the effluent, and rates for untreated effluent are double those for treated waste waters. The revenue is paid to the SEF. *Individual dwellings that discharge* untreated waste water into *groundwater must pay* an annual fee of CZK 3 500 to the municipality concerned. Discharges from single-home treatment units are exempt.

The rates of the country's most significant economic instrument related to *waste management*, landfill charges, were gradually raised over the review period, as recommended in the latest OECD EPR. The charges, which apply to anyone who deposits waste in a public or private landfill (including producers depositing on their own property), were raised every two years during the review period and, under the Waste Act, will continue to be raised every two years until 2009. The basic landfilling charges for municipal and other non-hazardous waste amounted to CZK 20/tonne in 1998 and CZK 200/tonne in 2002-04. This charge will be raised every two years until it reaches CZK 500/tonne in 2009. The landfill charge for hazardous waste has both a basic (volumetric) and a risk component. The basic component, CZK 200/tonne in 1998 and CZK 1 100/tonne in 2002-04, will rise to CZK 1 700/tonne in 2009. The risk component, CZK 300/tonne in 1998 and CZK 2 000/tonne in 2002-04, will be raised to CZK 4 500/tonne. Revenue from the basic component is transferred to the relevant municipality and that from the risk component goes to the SEF. Given that the real cost of landfilling municipal waste was estimated at CZK 840/tonne in 2003, it is clear that the current charge level is still too low to encourage the use of more environmentally sound waste management techniques. Landfilling remains by far the least expensive method of waste disposal and the most commonly used.

Most pollution charges are paid into the *SEF*. These consist mainly of waste water charges, air pollution charges, waste charges and charges for changing the use of agricultural land. The charge system has helped to raise money for investments in projects undertaken by municipalities and industry. Since 1999, the total revenue from air and water charges has decreased while that from waste charges has increased pursuant to the waste law. *Municipalities* receive revenue from a charge imposed for discharging waste water into groundwater as well as from a waste charge and an air pollution charge for small stationary sources. They also receive a share of mining fees and of the charges imposed for removing agricultural and forest land from its original use.

These charges have primarily a *financing function* because they are generally too low to affect polluters' behaviour. Some rates have not been updated since 1996.

Polluters have therefore not been motivated to invest in cleaner processes and have generated insufficient funding for investment. As already recommended in the previous OECD review, the *rates of charges* on polluting activities should be increased. Accession to the EU has brought a renewed emphasis on regulatory measures to reduce pollution, but further cuts in emissions should be achieved mainly by using more efficient economic instruments. Raising emission charges would be a cost-effective way to concentrate abatement where it can be achieved at the lowest cost. In addition, to compensate for the decrease in the revenue generated by some of the emission charges (e.g. due to reduced emissions of air pollutants), consideration should be given to introducing a system of *product charges*.

Other economic instruments

Czech law requires landfill operators to create a *financial reserve* for recovery and maintenance after the landfills are closed down; the reserve is equal to CZK 100/tonne for hazardous waste and CZK 35/tonne for other waste. The financial reserve is kept in a trust account and landfill operators must obtain the consent of the competent regional authority to withdraw funds. However, the reserve is insufficient to cover costs during the more than 30-year recovery period required by the EU Landfill Directive; it therefore amounts to a subsidy for landfilling and a disincentive for waste reduction or energy recovery. Producers and importers who bring more than 300 kg of *packaging material* per year on the market must pay (under the Packaging Act) a once-off registration fee of CZK 2 000 and annual record-keeping fees of the same amount (715 such packaging items were registered as of 2004). Defaulters are liable for penalty payments of up to 0.1% of the outstanding sum per day of default. Revenue is paid to the SEF.

Other waste-related economic instruments include: a *deposit system* introduced in 2002 for seven types of returnable glass bottles at a rate of CZK 3 per bottle; until 2004, a *reduced VAT* of 5% (as compared to the normal rate of 22%) on biogas and products made of a minimum of 70% recycled paper; until 2004, *exemption from real-estate taxes* on properties used exclusively for recycling activities; *stricter fines* of up to CZK 10 million for serious legal infringements, depending on the threat to health and the environment; and the requirement of *financial guarantees or insurance* for the back export into the country of origin, as a condition for approvals under the Waste Act for import, export and transit of waste.

Legislation on liability for pollution has been developed. An Act on prevention of major accidents caused by selected hazardous chemical substances and chemical preparations and amending Act on District Authorities came into effect in 1999. This act obliges operators to have *liability insurance* for damage that results in case of a major accident. The amount of the insurance must correspond to the extent of potential damage.

Environmental damage from past activities has been managed within the privatisation process, with support from the State budget and the National Property Fund.

5. Trade, Investment and the Environment

5.1 Protection of the ozone layer (Montreal Protocol)

The Czech Republic became a party to the *Montreal Protocol* on 1 January 1993, and the Beijing amendment on control of production of HCFCs and bromochloromethane came into force in the country in 2002. At that time, production and imports of CFCs amounted to 1 430 tonnes per year, compared with 5 510 tonnes per year in 1986. This figure fell to 7 tonnes in 1997 and has since remained stable. Both halon imports and methyl bromide consumption dropped to zero or nearly zero by 2003.

In 2002, the Czech Republic introduced *measures* to control substances that deplete the ozone layer in a new law on protection of the atmosphere, adopted in the context of the country's imminent admission into the EU. The measures included: introducing a system for recovering used ozone-depleting substances, especially from

discarded refrigerators (the State Environmental Fund) allocated USD 2 million to this scheme in 2001-03); increasing the amount of substances destroyed; reducing leaks of the substances from plants in use; and increasing the recovery of halons. Industry has invested in this programme and is now exporting its know-how, including in the framework of regional co-operation on public funds.

The Czech Republic also plays an active role in the institutions of the 1985 Vienna Convention and the Montreal Protocol. It hosted the Conference of the Parties to the Montreal Protocol in November 2004, and the Environmental Inspectorate has been asked to be on the alert for illegal traffic in the substances concerned. Implementation of the Montreal Protocol in the Czech Republic has been *a definite success*, with a positive alliance between action to protect a common good (the ozone layer) and the promotion of advanced technologies in industry.

5.2 *Trade in endangered species (CITES)*

The Czech Republic has transposed the criminal provisions of CITES into its Penal Code, but an *illegal trade in endangered species* seems nevertheless to have developed which the law enforcement agencies have not been able to suppress. The Environmental Inspectorate and the Customs Service have co-operated in stepping up border and market controls, but without any material results. It is clear that stopping the trade in endangered species will depend first and foremost on the *mobilisation of agencies responsible* for prosecuting offenders.

5.3 *Movements of hazardous waste (Basel Convention)*

According to its most recent report, the Czech Republic has fully complied with its obligations under the Basel Convention, including the *ban on exports to non-OECD countries*. It has transposed the provisions of the convention into national law and has introduced a Waste Management Plan for 2003-13 which covers the management of hazardous waste as well as the principles for decision making in relation to waste imports and exports.

The Basel Convention covers not only the movement of hazardous waste but also, in Article 4, the minimisation of waste production. The Czech Republic has made progress in this area, reducing the production of hazardous waste by one third between 1999 and 2003, from 3.0 to 1.9 million tonnes. However, the level remains high both in absolute terms and in comparison to the European averages per capita and per unit of GDP. *Statistical monitoring of hazardous waste* and *controls of movements* are due to be stepped up under the Waste Management Plan.

5.4 *Foreign direct investment*

Total annual foreign direct investment (FDI) to the Czech Republic has reached 9 to 12% of GDP in the last few years, the highest rates within the OECD (Box 6.1, Table 6.3).

6. Official Aid

6.1 *Czech Republic as donor*

Although the Czech Republic is not yet a DAC member, it rapidly restructured its *official aid policy* when it became an OECD member in 1995, bringing its principles into line with those of other OECD donor countries and increasing the amount of aid. In March 2004, the government adopted a set of principles for its development assistance and reduced the list of eligible countries to ten. Total official assistance (all ministries) amounted to CZK 2.75 billion in 2004, or 0.11% of GDP, of course still a long way from the UN rate of 0.7%.

Promoting sustainable development and its environmental pillar has become one component of *Czech aid policy*. From 1997 to 2004, the Ministry of the Environment

Table 6.3 **Direct investment flows**

(USD billion)

	Outflows				Inflows				Net inflows[a]
	2000	2001	2002[b]	2003[c]	2000	2001	2002[b]	2003[c]	
Czech Republic	0.0	0.2	0.2	0.2	5.0	5.6	8.5	2.6	36.7
United States	159.2	120.0	134.8	173.8	321.3	167.0	72.4	39.9	18.7
Korea	5.0	2.4	2.6	3.4	9.3	3.5	2.4	3.2	3.4
Austria	5.7	3.1	5.3	7.1	8.8	5.9	1.0	6.9	7.6
France	177.5	86.8	49.5	57.3	43.3	50.5	48.9	47.0	–301.0
Slovak Republic	0.0	0.1	0.0	0.0	2.4	1.6	4.1	0.6	10.9
Spain	54.7	33.1	31.5	23.4	37.5	28.0	35.9	25.6	–46.7

a) Cumulative FDI flows 1994-2003.
b) Preliminary.
c) Estimate.
Source: OECD, Environment Directorate.

Box 6.1 **Foreign direct investment, export credits, and the environment**

Total annual foreign direct investment (*FDI) inflows* have reached 9 to 12% of GDP in the Czech Republic in the last few years. In 2003, when privatisation receipts were low, they reached 3.03% of GDP, still *among the highest rates within the OECD*. The accumulated net inflows reached USD 36.7 billion during 1994-2003. One-third of the FDI comes from Germany, followed by the Netherlands and Austria. The manufacturing sectors that receive the largest share of total FDI include machinery and equipment, basic metals and metal products, and refined petroleum and chemicals. Foreign investors are currently moving toward higher value-added FDI projects in the service sector, which is less capital intensive.

The high level of FDI inflow is a result of the Czech authorities' positive investment promotion measures as well as the country's well-educated and relatively cheap workforce and its geographic location. The Czech supplier development programme (1999) has also helped to attract foreign investors. The *Act on Investment Incentives* No. 72/2000 offers investors who introduce or expand production a variety of incentives, including corporate tax relief, job creation grants, and training and re-training grants. Enacted in 2004, The Act on Public Procurement removed provisions that gave preferential treatment to domestic companies. The Framework Programme for support of technology centres and business support services, launched in 2004, aims to attract FDI in high value-added sectors. The privatisation of remaining government stakes in State-owned enterprises is expected to attract significant amounts of FDI and the major inflow of greenfield projects is expected to continue.

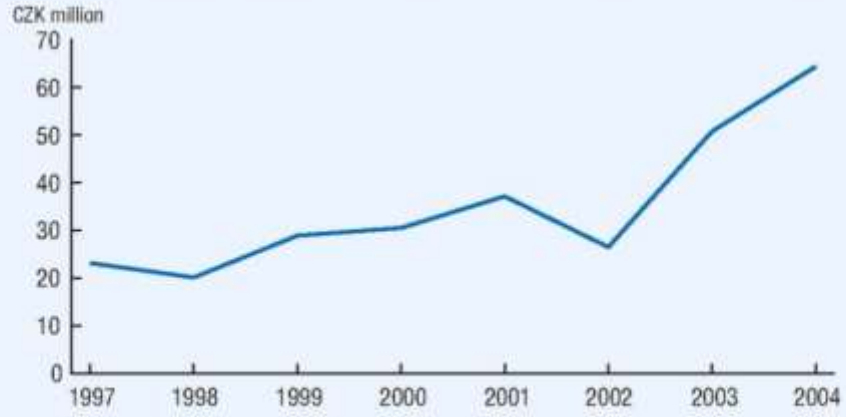
It is important that national environmental regulations be fully applied to foreign investors, without exemptions or subsidies. The Czech Republic indicated its intention to do so when it joined other OECD countries in endorsing the revised *OECD Guidelines for Multinational Enterprises*, which make non-binding recommendations on responsible business conduct, including environmental management.

On the OECD's recommendation, the Czech Republic has introduced legislation requiring public bodies that support exports (Foreign Trade Bank and insurance credit organisations) to apply procedures enabling them to assess the potential environmental impact of the exports they support. These procedures are now systematically applied and are in line with the OECD Council Recommendation on Common Approaches on Environment and Officially Supported *Export Credits*.

supported 53 projects in 32 countries at a total cost of CZK 276 million (Figure 6.2). The priorities were: implementation of multilateral environmental agreements, inclusion of environmental concerns into industrial activities, sustainable use of natural resources, environmental geology, and clean-up of contaminated sites.

Concerning multilateral environmental aid, in 1994 the Czech Republic became a donor country to the Global Environment Facility (of which it has also been a beneficiary), allocating SDR 1 million a year. Projects supported by the Czech Republic include those relating to protection of the ozone layer. Between 1991 and 2005, the government contributed USD 5.8 million to the Multilateral Fund for the Implementation of the Montreal Protocol.

Figure 6.2 **Official aid provided through the Ministry of the Environment**



Source: Ministry of the Environment.