

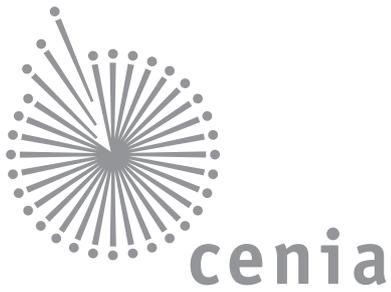
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The Environment

in the Czech Republic 1989–2004



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Fifteen years – is it a short or a long period of time? It always depends on the frame of reference. Sub specie aeternitatis a year is a drop in the ocean of time or a long time period, during which a lot can be achieved.

From the environmental point of view the last fifteen years have been long enough for us to become a standard European country, whose inhabitants can breathe relatively fresh air and drink quality water. On the other hand this time period has not been long enough for forests to become healthy and for soil to be cleared of an abundance of pesticides and pollutants.

The youngest generation of people, who still remember yellow fog in the surroundings of the North Bohemian power plants and who used to go to “curative stays” away from their homes, is not even in their thirties yet. Their children do not know such fog, which means that the positive environment changes that have occurred from their childhood up until now can undoubtedly be evaluated as having been quick, fundamental and visible.

In the past fifteen years we have had the chance to witness or take part in the process concerning environmental protection, the creation of the basic conceptual and legal framework for this environmental protection and its enforcing at home as well as in terms of international cooperation. We know that it was not easy to achieve this and to put through good ideas. Not all of the work performed with good intent had adequate effect. Nevertheless this publication proves that the huge amount of energy invested in the environmental protection has paid off. The Czech Republic is no longer the “grimy heart of Europe” or, in the parlance of the nineties the “country of the Black Triangle”. People can see and feel it. Besides, the impact of the improved environment on the quality and length of their lives is provable.

Everyone who has taken part in this achievement deserves our thanks.



Libor Ambrozek
Minister of Environment



Although protection of the environment has existed as an individual field of study only approximately since the mid-20th century, protection (and regulation) of some environmental elements has a very long tradition. This especially includes water and water law, forests and forest law, mineral resources and mining law which are clearly related to the development of human civilisation and the need to regulate the management of these vitally and economically important commodities. Pollution of some parts of the environment was not a problem back in history and original regulatory measures were aimed at preserving these commodities as to their quantity or quality for economic reasons.

Things changed as industrial production developed and it became obvious that the absorption capacity of the atmosphere and surface water was not unlimited and that pollution was harmful, especially to public health. An increasing number of produced and consumed goods resulted in an increasing problem with waste.

The advent of industrial civilisation also caused bigger territorial demands – agricultural and forest lands were required and the habitats of animal and plant species were getting smaller. In addition, the demand for mobility of people and goods grew, and it was necessary to build a transportation infrastructure which would hold an increasing number of vehicles.

The development of scientific research and new technologies brought new phenomena – artificial radioactivity, chemicals not found in nature, and later also non-existing-in-the-nature living organisms (genetically modified organisms – GMO).

The anthropogenic influence started to be visible at the end of the 19th and in the mid-20th centuries, and active and systematic protection of the environment as a whole became a necessity.

The most favourable conditions of environmental protection were in the developed countries of Western Europe and North America. Although these countries were the biggest

producers of pollution, they also expended the most resources on remedying the pollution and their citizens showed the greatest interest in living in a healthy environment. In the second half of the 20th century these countries started to adopt environmental protection laws, implemented them and initiated international activities, international conventions and related protocols.

Conditions in today's Czech Republic were influenced by the geo-political situation in Europe after 1945. Czechoslovakia, one of the most developed countries in the world with a strong manufacturing industry before WWII, was forced to shift its orientation within the Soviet bloc to heavy industry, especially metallurgy, steel industry, coal carbonisation, heavy chemical industry and mechanical engineering. The enormous energy demands of heavy industry were satisfied by electricity produced mainly in brown coal-fired power plants, emitting extremely large amounts of pollutants and affecting a big part of the country with strip mining.

The objective of this publication is to evaluate the development of the environment in the Czech Republic over the past 15 years. However, if we want to understand the situation of the late 1980s we have to look at a broader historical context.

The Soviet-type socialistic farming had a similarly adverse impact on agricultural landscape (land reallocation, melioration) followed by excessive use of fertilizers and chemical pest control.

Although some of the environmental elements were formally protected (water law, forest law, laws on the state protection of nature and agricultural land, measures against air pollution), the development of industrial and agricultural production was always a priority. Environmental problems were often addressed by issuing saving clause (this often applied to the discharge of industrial waste waters). On one hand there was a national park and nature reserves, on the other hand none of the brown coal-fired power plants had desulphurisation equipment and forests including those in protected areas were damaged by air pollution.

Adverse effects of the pollution became very visible during the 1970s and 1980s. Anybody passing through the Ore Mountains (Krušné hory) had to have noticed dead trees and vi-

sitors to Usti nad Labem in Northern Bohemia could not miss the unnatural colour of the river water; the areas of strip mining were called “moonscape”. The life expectancy of people living in polluted regions of North-Western Bohemia and Northern Moravia was significantly lower than the national average, which itself was much lower than the average in Western Europe. In response to this situation, a number of professional and civic environmentalist activities emerged, some of which were tolerated by the communist regime, some of which were banned and their members punished, sometimes imprisoned. In the late 1980s, the importance of the problem was evident and “solutions” were put into practice, e.g. environmental committees of the communist party representations were established, and the Ministry of the Interior was changed to the Ministry of the Interior and Environment. Some tangible measures were taken as well. For example fly-ash separators were installed in power plants.

In the second half of 1990s the vast majority of citizens became conscious of the fact that the environment was not in good order. Environmental protection became a recognized priority in society after November 1989. In quick succession ...

... but you can read more about what happened in this publication.



Founding Period (1989–1992)

The Founding Period started with the so-called Rainbow Program, a political document focused on preparation and approval of new environmental laws (especially new laws on waste, air, nature and landscape protection and environmental impact assessment) and amendment of some laws from the previous period. New regulations struggled to achieve the best possible improvement of the environment in the shortest time and contained a number of transformation features (e.g. very strict rules of trans-border waste shipments, temporary emission limit values or temporary unsecured landfills). The assessment of resulting economic impact was not a priority. It was a period of economic transformation which made the economic impact assessment almost impossible. Old public administration institutions were transformed and new institutions were established (especially the Ministry of the Environment and the Czech Environmental Inspectorate) as well as supportive organisations (such as the State Environmental Fund of the Czech Republic or the Czech Environmental Institute). The public interest in the environment was high. The condition of the environmental elements was getting better, which was caused mainly by the economic transformation (restrictions or shut-downs of many energy-intensive and polluting industries).

Implementation Period (1993–1998)

The first wave of new legislation was followed by the Implementation Period. The environmental laws had been drafted and their implementation started. Unsafe landfills were closed, purification devices were installed in power plants and other pollution-producing facilities, gas pipelines were installed in cities and in the country within a global programme, and waste water treatment plants and sewer systems were built in some places. The environmental impact assessment (EIA) became a common practice. Annual investment costs made up between 2 and 2.4% of the GDP. The condition of basic environmental elements, namely air and water, started to improve fast (values of some pollution indicators were decreasing by more than 10% a year). On the other hand, the public interest in the environment was receding. In 1995, after long political debates, a new national environmental policy was approved with the aim to achieve the same level of the environmental quality as the EU15 average by 2005. In 1994 the Czech Republic entered into negotiations with the OECD which resulted both in a certain liberalisation of existing laws (especially as far as waste management was concerned) and preparation of new laws (especially on chemical substances and preparations).

The development of environmental protection in the Czech Republic from 1989 to the present can be divided into four stages characterised by different events leading to changes in the environment. The period between 1989 and 1992 is called the Founding Period, followed by the Implementation Period from 1993 to 1998, the Pre-Accession Period until 2003 and the European Period from 1 May 2004.

Pre-Accession Period (1999–2003)

The main objective of the Pre-Accession Period was to prepare the Czech Republic for accession to the European Union. Upon the screening of European regulations a second generation of environmental legislation was prepared and passed. Virtually all existing legal regulations were replaced by new ones and issues which had not been dealt with (e.g. GMO, industrial accident prevention, integrated pollution prevention and control – IPPC, packaging and package waste, and access to environmental information) were newly regulated. The whole process of environmental acquis transposition finished in June 2003. The European Commission provided the Czech Republic with three transition periods (concerning directive on packaging and packaging waste, directive on urban waste water treatment and the deadline of emission limits for sulphur dioxide from two large combustion plants). The condition of environmental elements was stabilised at the level of “worse EU average”, the investment in environmental protection dropped to 0,7% of GDP and the public interest remained quite low.

The new 1999 national environmental policy, fully compatible with the environmental policy of the European Communities (the 6th Environment Action Programme) was updated in 2001. Further development was substantially influenced by the public administration reform where many powers were transferred to the new regions (13 regions and the capital).

European Period (from 2004)

The European Period meant basically a continuation of trends which had started in the previous period, i.e. stabilisation of the environment, investment of 1% of GDP, low public interest. The legislation was amended continuously with respect to the development of European regulations and on the basis of existing experience with the implementation. In 2004 a new national environmental policy of the Czech Republic was approved with effect until 2010.



Components of the Environment

Climate

The fragile climate system of the Earth which is generally understood as the biggest global environmental issue of these days was only a secondary issue in the Czech Republic during the 1990s as more attention was paid to urgent issues such as air and water pollution or waste management. At the beginning of the pre-accession period when most of the pressing problems had been solved, climate protection became more important and currently it is the issue number one in common with the rest of the European Union. The development of greenhouse gas emissions in the Czech Republic between 1990 and 2003 is shown in the following table:

Table 2.1

Total GHG emissions from 1990 to 2003 [mil. t CO₂eqv.]

	1990	1992	1994	1996	1997	1998	1999	2000	2001	2002	2003
CO ₂	161,9	133,3	125,9	128,3	132,7	124,5	117,7	123,9	123,6	118,6	123,3
of which CO ₂ emissions	164	139,8	130,6	132,8	137,3	128,3	121,1	127,9	128	123,1	127,1
of which CO ₂ sink LUCF	-2,1	-6,5	-4,7	-4,5	-4,6	-3,8	-3,4	-4	-4,4	-4,5	-3,8
of which CO ₂ from road transport	6,7	6,5	7,5	9,6	10,3	9,9	10,7	11,2	11,8	11,0	13,095
CH ₄	16,8	14,4	13	12,6	12,1	11,4	10,7	10,7	10,5	10,4	10,2
N ₂ O	11,3	9,2	8,3	9,2	8,8	8,4	8,1	8,2	8,3	8,2	8,2
F-gases	-	-	0,2	0,3	0,6	0,5	0,5	0,9	1,3	1,3	1,7
Total	190	156,9	147,2	150,4	154,2	144,8	137	143,7	143,7	138,5	143,4
in % of 1990	100	82,6	77,5	79,2	81,2	76,3	72,2	75,7	75,7	72,9	75,5

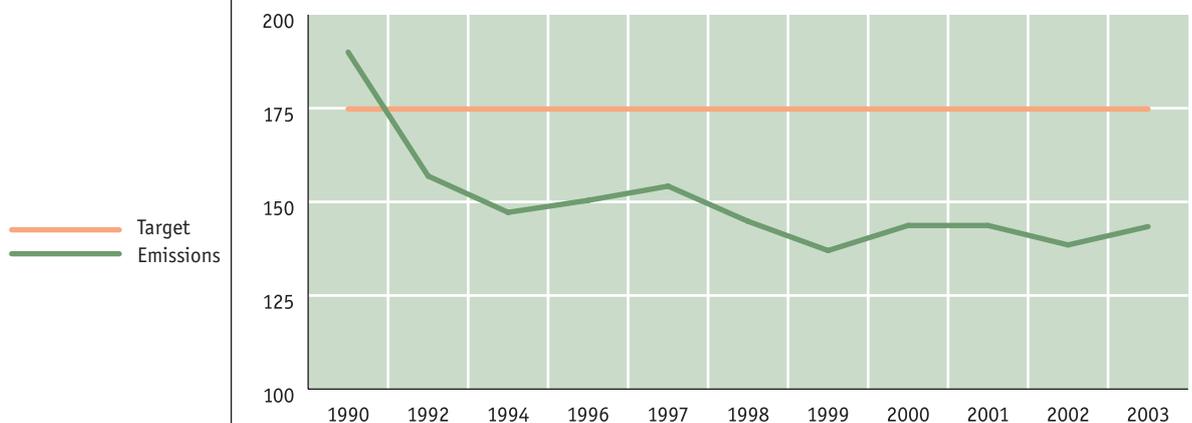
The aggregated CO₂eqv emissions were calculated using the radiation potential values of the greenhouse gases according to valid methods (e.g. for CO₂ = 1, CH₄ = 21, N₂O = 310). It means that e.g. methane is 21 times more harmful to the Earth's climate system than carbon dioxide. The enumeration includes also emission sink caused by changes in landscape use and forestry (LUCF – Land-Use Change and Forestry). Emissions from international air transport are provided separately.

Source: Czech Hydrometeorological Institute, CO₂ from road transport Transport Research Centre in Brno

An absolute majority of the main greenhouse gas, i.e. carbon dioxide, comes from fossil fuel combustion in power industry (fossil fuels make up almost 90% of primary domestic energy sources), and also from transportation where the amount of emissions is increasing. The decrease in emissions between 1990 and 1992 was without any doubt caused by a drop in industrial production and the economic transformation which resulted in a reduction or a complete shutdown of some energy-intensive productions.

Graph 2.1

GHG emissions in the Czech Republic compared to the Kyoto Protocol target



Source: <http://indikatory.env.cz>

During the 1990s more than 2000 MW of installed output in coal-fired power plants was closed, smaller sources changed fuel (to natural gas) and increasing industrial production has been caused by modern and energy efficient installations. Since 1998 the emissions have stabilised

at about 76% of the base year 1990, while there are some y-o-y deviations. The current problem results from comparison of specific carbon dioxide emissions per capita and year. The approximate value of 11.6 tons for the Czech Republic exceeds both the OECD average (10.9 t) and the EU15 average (approximately 8.2 t). A positive fact is that the Czech Republic by far complies with the Kyoto Protocol target to keep the GHG emissions 8% below the 1990 level.

Ozone Layer of the Earth

The risk of the depletion of the Earth ozone layer is also viewed as a serious global problem, however, unlike climate change it has been successfully handled at the international level. This problem was first addressed in the Czech Republic in the early 1990s. Appropriate legal regulations based on relevant international treaties (the Vienna Convention and the Montreal Protocol and its amendments) were passed and implemented.

In the early 1990s the annual use of ozone depleting substances in the Czech Republic was over 5,000 tons. Due to legislative measures this number has considerably dropped. Effective from 1 January 1996, the production and import of “CFCs” were outlawed and restrictions were gradually placed on other categories of regulated substances. The basic use of ozone depleting substances is currently covered by imports and does not exceed 200 tons per year.

The Czech Republic meets duly its obligations resulting from the Montreal Protocol and its amendments.

Since all the required measures have been taken, the Czech Republic can not do more for the ozone layer in terms of the Earth improvement.

Air

Air pollution was the most pressing issue at the beginning of the Founding Period both from the subjective and the objective point of view. National emissions of most major pollutants, especially suspended particular matter, sulphur dioxide and nitrogen oxides, were one of the highest in the world and the air pollution of some regions (especially in North-Western Bohemia and Northern Moravia) was causing serious health problems and large forest damage. The first generation of new comprehensive legal regulations of air protection, passed in 1991, was focused on the biggest air pollution decrease possible in the shortest time. It featured a whole number of transformation elements. The deadline for implementation of the emission decreasing measures was the end of 1998. Based on the approved regulations the Czech Republic implemented an extensive and, as far as speed is concerned, a unique program of emission reduction. In the late 1990s the emission and pollution levels were more or less stable and more attention was paid to the transposition of EC regulations which was finished in 2002 when a new law on air protection and implementing regulations was passed. The general public believes that the issue of air pollution has been largely solved, which is not fully true.

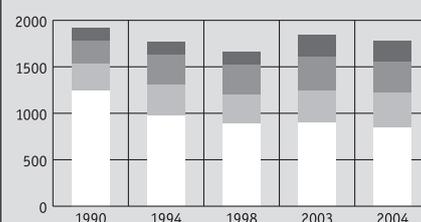
Air protection can be divided in two areas: emissions (emission of pollutants into the air) and air pollution levels (concentration of air pollutants in the air).

POLLUTANT EMISSIONS INTO THE AIR

The trend of emissions of main pollutants (dust, sulphur dioxide, carbon monoxide, volatile organic compounds – VOC, ammonia, cadmium, mercury, lead, polycyclic aromatic hydrocarbons – PAH, polychlorinated biphenyls – PCB and polychlorinated dibenzo-dioxines/dibenzofuranes – PCDD) in the air of the Czech Republic for 1990 – 2004 is described in Table 2.2.

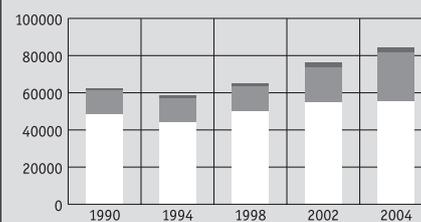
As results from the table, emissions of all monitored pollutants dropped between 1990 and 1998. Like with GHG emissions, the main reason during the Founding Period was economic transformation which resulted in cuts or shutdowns in some energy-intensive and polluting productions. Between 1993–1998 the decrease in air pollution was caused by the implementation of emission reduction measures like the introduction of dust filters, desulphurisation units or primary measures to reduce nitrogen oxides emission in the case of large and medium sized pollution sources. The emission reduction of dust and sulphur dioxide can be taken as unique.

Energy Balance of the Czech Republic (PJ)



Source: Czech Statistical Office, data for 2004 are only preliminary

Structure of Power Generation in the Czech Republic (GWh)

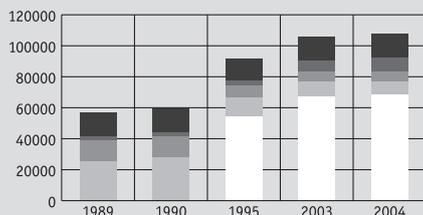


Source: Czech Statistical Office, figures for 2004 are only preliminary

Table 2.2

PCDD = polychlorinated dibenzodioxines/
dibenzofuranes
VOC = volatile organic compounds
PAH = polycyclic aromatic hydrocarbons
PCB = polychlorinated biphenyls

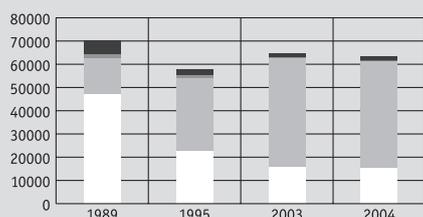
Conveying capacity of different types of passenger transport in the Czech Republic (mil. people.km)



Source: Statistical yearbooks, Transport yearbook

Public city transport
Air transport
Railway transport
Road – public transport (includes line buses)
Road – ICT (= individual car transportation has been monitored since 1995)

Conveying capacity of different types of freight traffic in the Czech Republic (mil. tonnes.km)



Source: Statistical yearbooks, Transportation yearbook, CENIA recalculation. Due to changes in methodology the data comparability is valid from 2000.

Pneumatic transport
Air transport
Water transport
Road transport
Railway transport

Table 2.3

All figures for 2004 are only preliminary

Emissions of main pollutants 1990–2004

Year	Dust (kt)	SO ₂ (kt)	NO _x (kt)	CO (kt)	VOC (kt)	NH ₃ (kt)	Cd (t)	Hg (t)	Pb (t)	PAH (t)	PCB (kg)	PCDD (kg)
1990	565	1850	551	1275	441	156	4.3	7.5	241			
1991	524	1749	527	1197	394	134	3.9	7.4	215			
1992	425	1495	499	1141	366	115	3.6	7.3	249			
1993	367	1366	459	1055	346	99	3.5	7.5	228			
1994	258	1205	378	1036	310	91	3.5	7.2	222			
1995	211	1103	370	1043	292	86	3.6	7.4	204			
1996	178	944	366	1012	293	81	2.9	5.9	181			
1997	127	697	349	944	277	81	3.0	5.5	171			
1998	84	438	321	765	242	80	2.7	5.2	151			
1999	66	268	313	716	234	75	2.7	3.7	146			
2000	57	264	326	648	227	74	2.9	3.8	106			
2001	54	251	332	649	220	77	2.6	3.3	47	36.7	96.1	0.19
2002	59	237	318	546	203	84	2.7	2.8	47	24.4	82.5	0.18
2003	79	231	333	576	204	82	2.3	1.8	39	26.7	84.6	0.19
2004	76	229	339	581	199	81	2.5	2.0	40	27.0	85.0	0.19

Source: Czech Hydrometeorological Institute (CHMI), Czech Environmental Inspectorate (CEI), Transport Research Centre, Research Institute of Agricultural Machinery, Czech Statistical Office (CSO)

As far as nitrogen oxides are concerned, the change is less distinct which might be explained by simultaneous action of antagonistic influences: the positive influence of measures striving for emission reduction in stationary sources was partially compensated with a transport increase. The number of vehicles and related conveying capacity is increasing, although it is partly moderated by fast car enhancement (there was an increase in the number of cars with catalysers from zero in 1990 to approximately 47.5 % in 2004).

After 1998 the emission reduction slowed down and at the moment we can talk rather about stabilisation. The only exception is the 50 % y-o-y drop in lead emissions caused by the prohibition of leaded petrol distribution effective from 1 January 2001. The growth in emission of solid particulate matter in 2002 and 2003 and the growth of ammonia emissions in 2003 were not real but were caused by changes in methodology (the emission inventory was extended by other air pollution sources).

In the international context the Czech Republic undertook to comply with national emission ceilings in 2010 and the following years.

The most pressing emission problem of the Czech Republic is a high emission of dust and nitrogen oxides. While the emission of dust is reflected in exceeding limit values for human health protection for suspended particulate matter PM₁₀, the values of nitrogen oxides are so high that the national emission ceiling might not be complied within 2010.

Comparison of emissions of sulphur oxide, nitrogen oxides, ammonia and VOC between 2001 and 2004 with the national emission ceilings to be achieved in 2010 (kt)

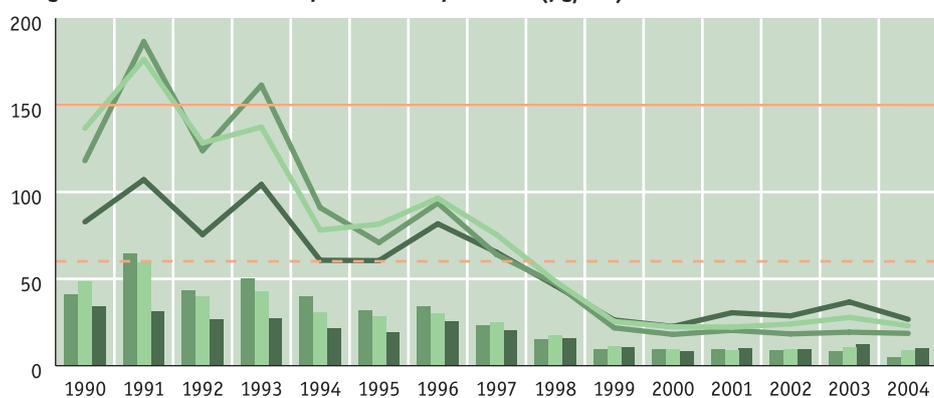
	Emissions 2001	Emissions 2002	Emissions 2003	Emissions 2004	Valid ceilings
Sulphur dioxide	251	237	232	229	265
Nitrogen oxides	332	318	329	339	286
Ammonia	77	72	84	81	80
VOC	220	203	200	199	220

Source: CHMI

AIR QUALITY – POLLUTION

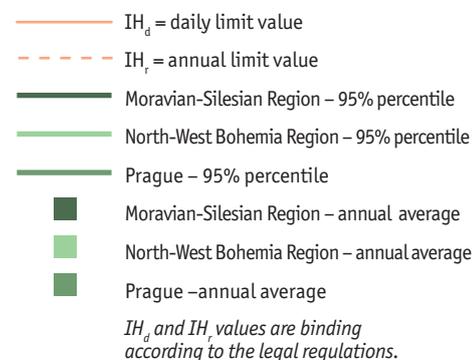
The following graphs show the pollution trends of sulphur dioxide, suspended particulate matter (SPM) and nitrogen oxides in three most exposed areas of the country – Prague, North-West Bohemia Region and Ostrava (Moravian-Silesian Region).

Long-term trend of annual sulphur dioxide pollution ($\mu\text{g}/\text{m}^3$)

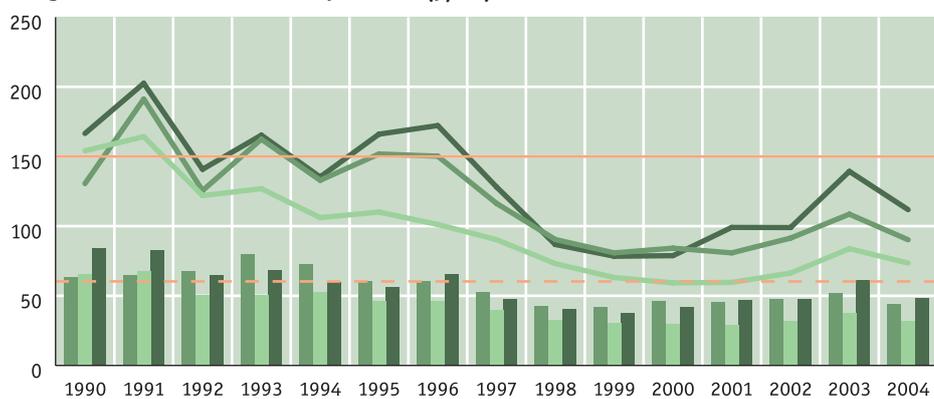


Source: CHMI

Graph 2.2

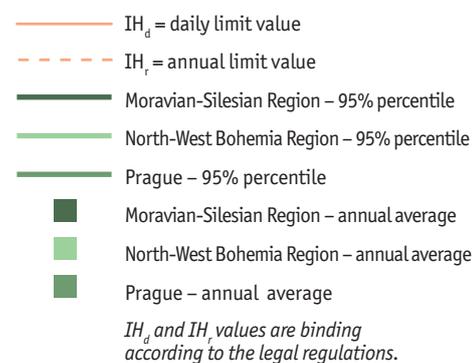


Long-term trend of annual SPM pollution (μ/m^3)

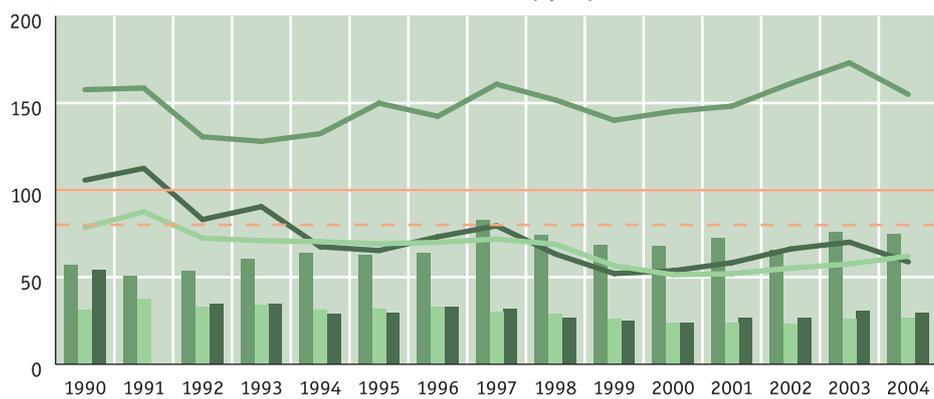


Source: CHMI

Graph 2.3

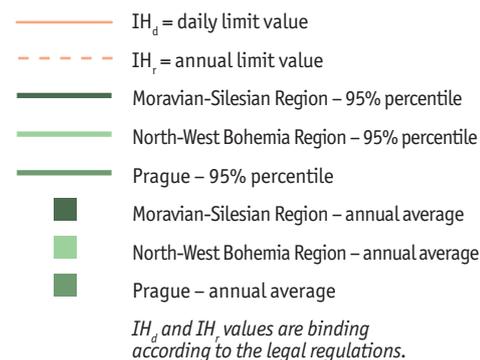


Long-term trend of annual nitrogen oxide pollution (μ/m^3)



Source: CHMI

Graph 2.4

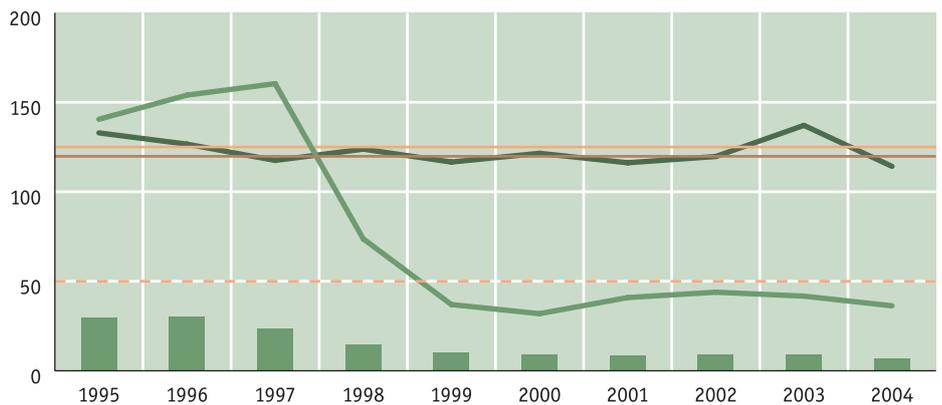


Graph 2.5

SO₂
 — 4th highest 24-hour concentration
 — Limit value
 ■ Annual average
 — Limit value

O₃
 — 26th highest concentration of 8-hour average
 — Limit value

Trends of air pollution characteristics of sulphur dioxide and ozone (µg/m³)



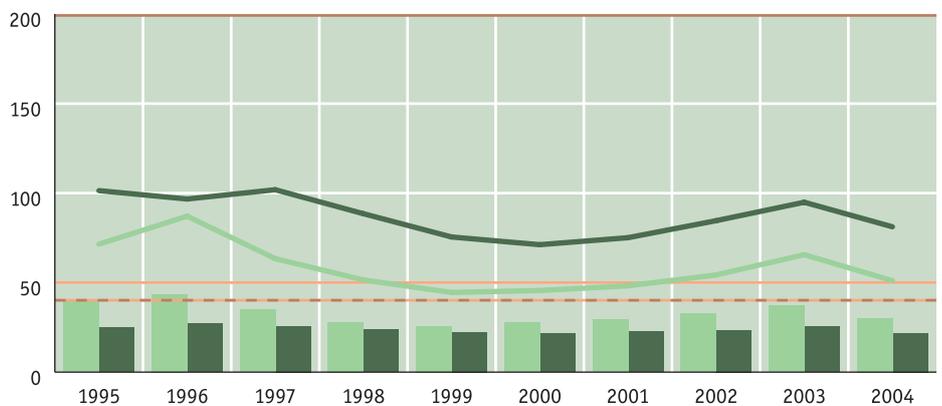
Source: CHMI

Graph 2.6

PM₁₀
 — 36th highest 24-hour concentration
 — Limit value
 ■ Annual average
 — Limit value

NO₂
 — 19th highest 1-hour concentration
 — Limit value
 ■ Annual average
 — Limit value

Trends of air pollution characteristics of PM10 and nitrogen dioxide (µg/m³)



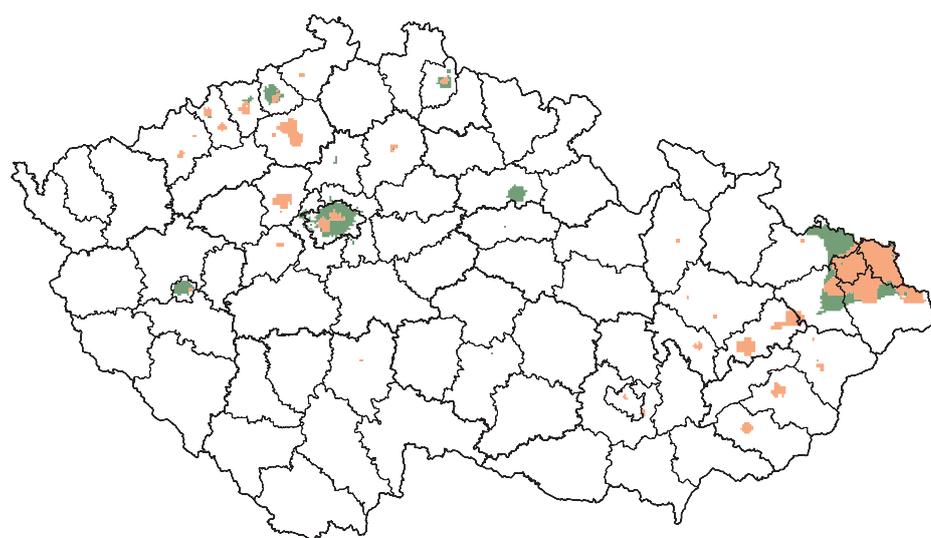
Source: CHMI

While in the North/Western Bohemia and Moravian-Silesian Regions where air pollution is mainly caused by stationary sources, the air quality was improved, the situation in Prague is still bad due to heavy transport intensity.

As results from the above graphs only the level of sulphur dioxide has decreased substantially since 1995; since 2000 the trend has got worse.

An announcement of zones with worse air quality has been given since 2003 (i.e. areas where the new pollution limit values were exceeded). The areas of higher pollution levels (exc. ozone) are shown in the following figure:

Areas of exceeded limit values of regulated pollutants excluding ozone in 2004

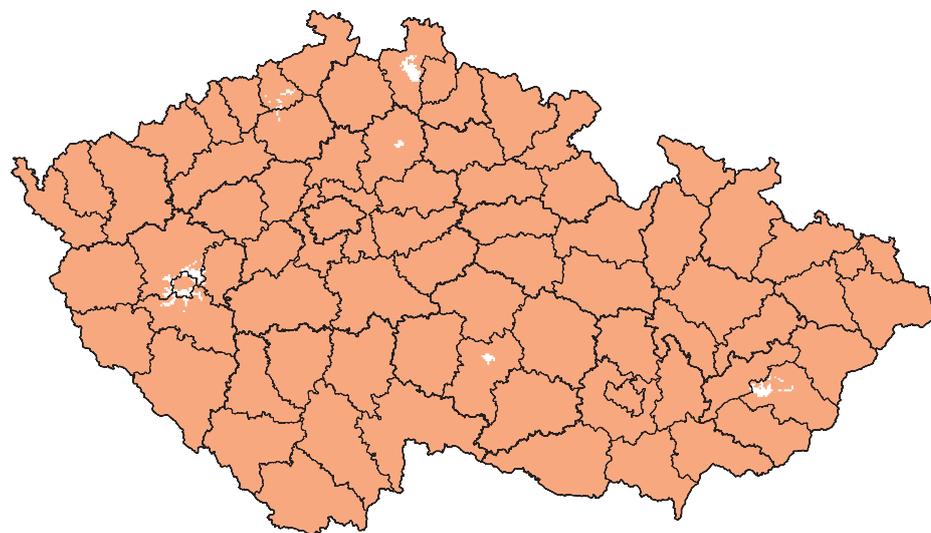


Source: CHMI

Most exceeded areas concern PM_{10} . Other limit values are exceeded only in very limited but densely populated areas, especially in Prague and Ostrava. Regardless the fact that the zones with worse air quality represent only 3.5% of the CR area more than 34% of population live there.

A major problem of air quality is the pollution with tropospheric ozone. The areas with exceeded limit values including ozone target limit values are shown in the following figure:

Areas of exceeded limit values of regulated pollutants including ozone in 2004



Source: CHMI

Fig. 2.1

- Area with the exceedance of LV
- Area with the exceedance of LV+MT

LV = limit value

MT = margin of tolerance

Compliance with the limit values following the legal regulations means a duty to prepare plans for improvement of the air quality.

Fig. 2.2

- Area with the exceedance of limit values

As results from the figure, at least one pollution limit value (usually the target limit value for ozone) is exceeded in most places of the Czech Republic.

A topical problem of the Czech Republic (and of a number of other states) concerning air pollution is the non-compliance with ambient air quality standards for suspended particulate matter PM_{10} . These standards do not comply with mainly in the Moravian-Silesian region, in Prague and in parts of the Central Bohemia and Usti nad Labem regions.

The biggest proportion of air pollution comes from local furnaces burning solid fuels and from traffic (not only exhaust fumes, but also abrasion of tyres and brakes and road surface). Another group of major air pollutants are “secondary particles” from gas precursors (sulphur dioxide, nitrogen oxides, VOC and ammonia). This means that even if hypothetically there was zero emission of dust, the pollution due to suspended particles would not be zero as emissions of some precursors are an inevitable accompanying phenomenon of present energy and transport technologies. Taking into account the health impact, fine $PM_{2.5}$ suspended particulate matter (or smaller ones) present the biggest hazard. The EU has been considering regulations concerning these particles.

A long-term problem of the whole Europe is pollution caused by tropospheric (“ground”) ozone which comes from photochemical reactions between gas precursors (nitrogen oxides and VOC). Since the main sources of the precursors are combustion engines, it is very difficult to reduce the emissions.

One positive fact is that the limit values for sulphur dioxide in the whole country are complied with and the limit values for nitrogen dioxide are exceeded only in Prague. The Czech Republic complies with its international commitments for air protection (the UN ECE Convention on Long-Range Trans-Boundary Air Pollution and 8 related protocols).

Water

At the beginning of the 1990s water pollution was considered the second most pressing issue of the Czech environment. Most important watercourses belonged to the category of polluted or heavily polluted and the contamination of groundwater was also high. Unlike with air pollution no new legal regulations were prepared and the situation was addressed by amendments to the law passed in the 1970s. Attention was focused mainly on pollution discharged into surface water, i.e. construction, rebuilding and intensification of waste water treatment plants (mainly large plants) and construction of sewer systems. Cuts or shutdowns of some big industrial production entities brought also an important decrease in pollution from point sources. E.g. an extremely fast decrease in pollution by oil substances can be attributed to industrial production entities which were granted an exemption from the water law. Some of the productions were phased out and all the exemptions from the water law were cancelled in 1990. Old environmental damages which were remedied, such as groundwater purification, resulted in a better quality of underground water. At the beginning of the Pre-Accession Period the quality of surface water was significantly improved and the quality of groundwater stabilised. More attention was paid to the transposition of EC legal regulations which culminated when new comprehensive regulations concerning water were approved.

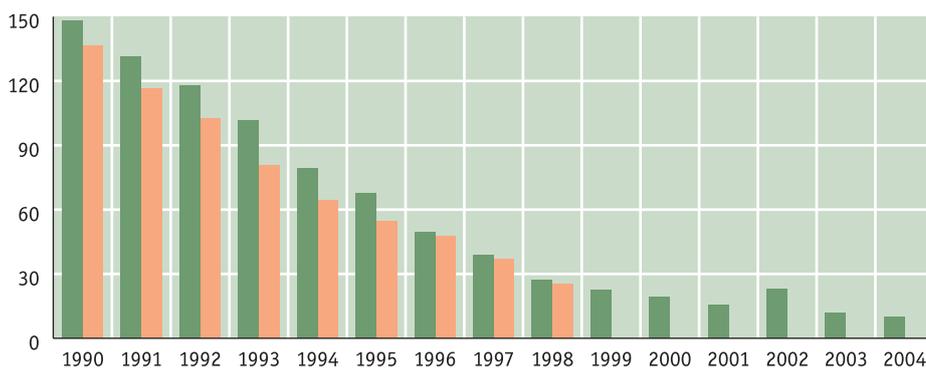
Water protection focuses on two areas: emissions (water contamination, especially surface water) and water quality (both surface and underground water sources).

SURFACE WATER POLLUTION

Surface water pollution comes from point sources (municipal waste water and industrial waste water) and diffused sources (washing of mineral fertilizers and plant protection agents from soil).

The development of pollution discharged into surface water according to BOD_5 (biochemical oxygen demand), COD_{Cr} (chemical oxygen demand) and insoluble substances between 1990 and 2004 is provided in the following graphs:

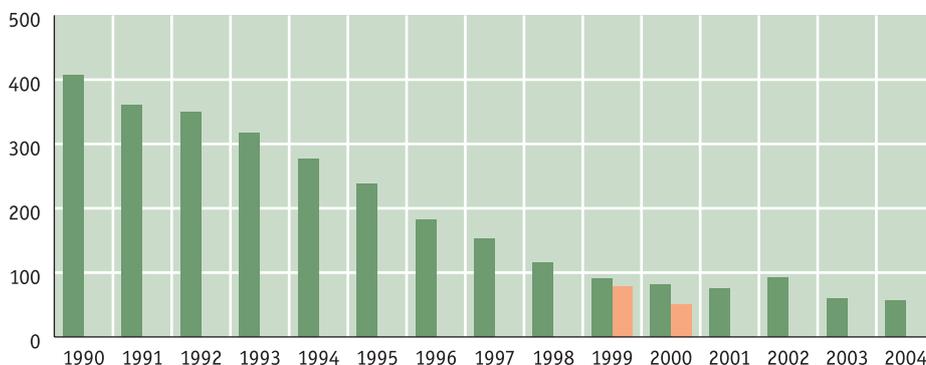
Development of pollution discharged from point sources – BOD₅ indicator (thous.t/year)



Source: CSO, CEI, Water Research Institute (WRI T.G.M.), CENIA

As result from the development of the above indicator organic pollutants especially from urban waste water have decreased seven times since 1990.

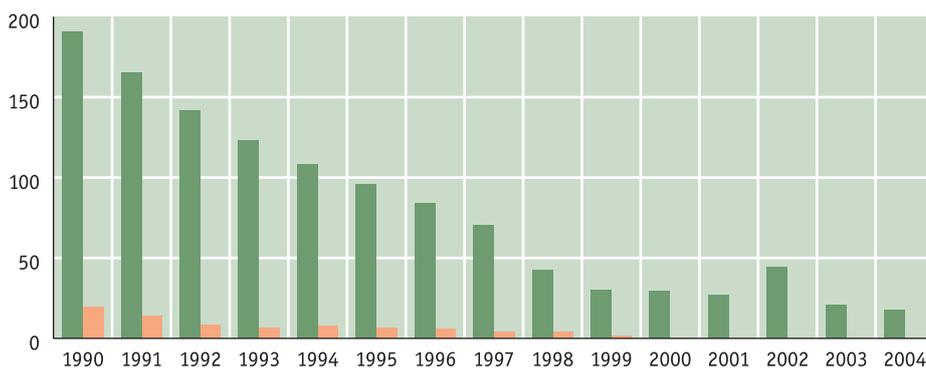
Development of pollution discharged from point sources – COD_{cr} indicator (thous.t/year)



Source: CSO, CEI, WRI T.G.M., CENIA

The indicator shows that since 1990 industrial water strain has decreased more than four times during ten years. This fact is also confirmed by a lower number of insoluble water pollutants which has decreased more than six times.

Development of pollution discharged from point resources – insoluble substances (thous.t/year)



Source: CSO, CEI, WRI T.G.M., CENIA

Graph 2.7

■ Discharged
■ Charged

The source of biodegradable organic pollution are the municipal sources as well as installations of paper, textile and food industries.

Water pollution according to the BOD₅ indicator was charged until 1998.

Graph 2.8

■ Discharged
■ Charged

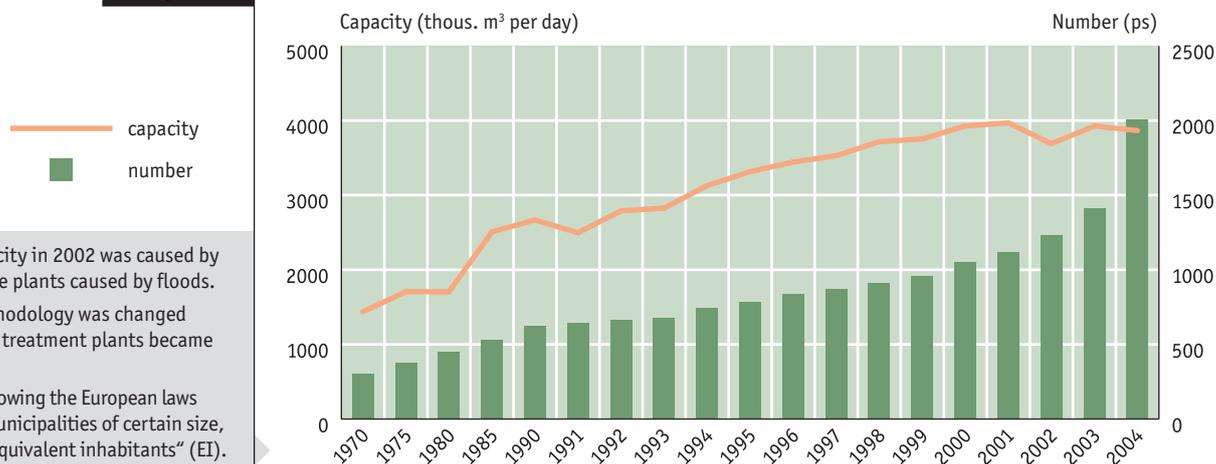
Water pollution according to COD_{cr} indicator has been charged since 1999, since 2001 it is not centrally monitored.

Graph 2.9

■ Discharged
■ Charged

Graph 2.10

Waste water treatment plants 1990–2004



Source: CSO, WRI T.G.M., CENIA

The decrease in capacity in 2002 was caused by the shutdown of some plants caused by floods.

In 2004 the CSO methodology was changed (smaller waste water treatment plants became a part of statistics).

The commitments following the European laws are determined for municipalities of certain size, which is defined in „equivalent inhabitants“ (EI).

An equivalent inhabitant is an average value of organic pollution produced by one inhabitant per day, expressed in the pollution index BOD₅ (60 g BOD₅/day).

The capacity of waste water treatment plants given in equivalent inhabitants is not monitored by CSO.

The above data show that the pollution discharged into surface water between 1990 and 2004 was substantially decreased. At first the main reason was the transformation of the national economy which resulted in cuts or shutdowns of some production entities, or a decrease in water consumption and waste water production.

In the mid 1990s new and rebuilt/enlarged waste water plants started to influence the quality of water. The number of waste water treatment plants increased by more than 800 (to the total number of 1,400) from 1990 to 2003. The total capacity increased by 50% – see the graph below. The water strain was at its peak during the 1990s when waste water in all major cities started to be treated. In 2000 waste water treatment plants were built in all places with more than 10,000 people.

The number of households connected to sewer systems was increasing too, from 72.6% (of which 71.2% was treated) in 1990 to 78.8% (of which 93.8% was treated) in 2004.

A current issue of surface water pollution is the non-existence of sewer system and waste water treatment plants for places with 2,000 to 5,000 inhabitants (some parts of the sewerage system are not connected to any waste water treatment plant at all). Pursuant to the relevant Directive 91/271/EEC waste water is supposed to be treated in all places with more than 2,000 inhabitants effective from 2005. The Czech Republic is not able to keep the deadline for economic reasons and therefore a transition period was agreed on with the European Commission to meet this obligation by 2010.

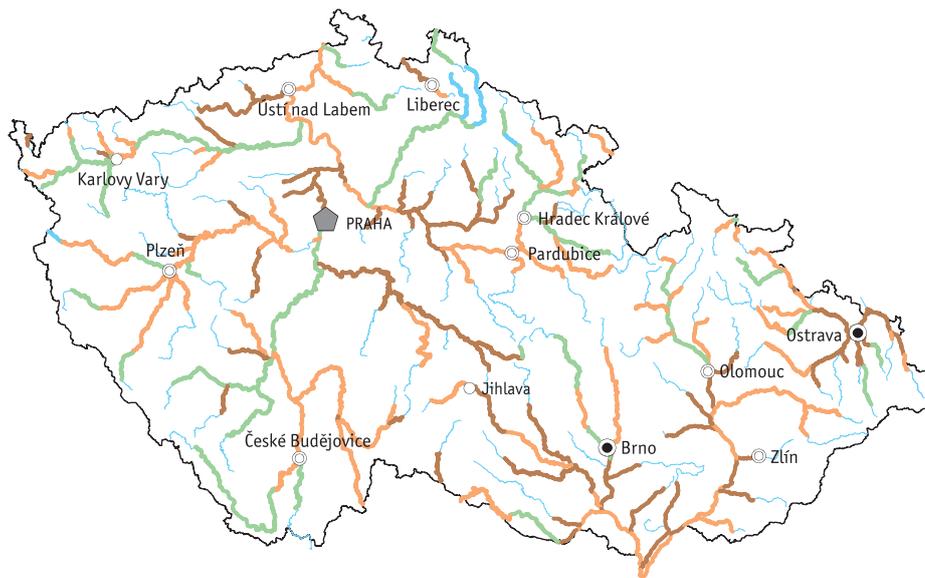
While treatment of waste water from point sources is technically feasible, although the costs would be high, surface sources are a pressing problem. This is caused by the impossibility to reduce soil fertilization and plant treatment under a certain level and the fact that the fertilizers are washed out from the soil very slowly.

SURFACE WATER QUALITY

The decrease in pollutants discharged into water resulted in a better quality of surface water. While in the early 1990s most large watercourses belonged to categories IV and V (extremely or very polluted water), in 2003 and 2004 the worse watercourses belonged to category III (polluted water), most of them to categories I or II.

A current problem is the contamination of some parts of watercourses with specific pollutants (hazardous chemicals, radioactive substances) and the risk of eutrophication of water reservoirs, caused mainly by nitrates and phosphates from sewage water (from point sources without a third step of water treatment for phosphorus and nitrate elimination) and by denudation of cultivated land (from diffusive sources). As all watercourses flow out of the Czech Republic and there is no water fed into the country, the whole Czech Republic was defined as a “sensitive area” in the EU terminology. Such a sensitive area is subject to stricter parameters for treated sewage water.

Quality of surface water in the Czech Republic 1991–1992

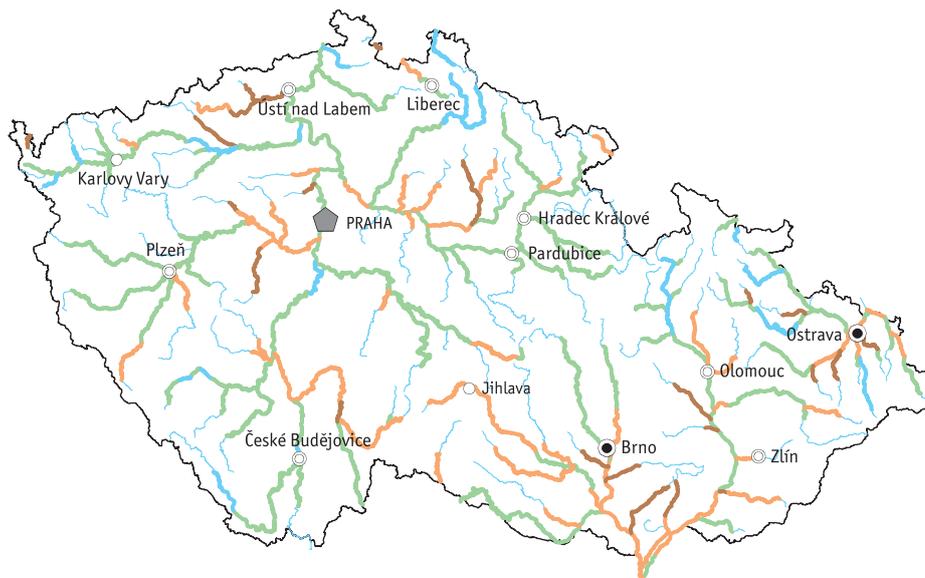


Source: WRI T.G.M. on the base of CHMI data

Fig. 2.3

Class	Classification
I and II	Non-polluted and slightly polluted water
III	Polluted water
IV	Strongly polluted water
V.	Heavily polluted water

Quality of surface water in the Czech Republic 2003–2004



Source: WRI T.G.M. on the base of CHMI data

Fig. 2.4

Class	Classification
I and II	Non-polluted and slightly polluted water
III	Polluted water
IV	Strongly polluted water
V.	Heavily polluted water

The problem with the quality of surface water is that the great part of water reservoirs have a high nutrient level, which leads to eutrophication, in other words the water can not be used for most purposes (drinking water production, bathing).

One of the sustainability indicators is the average life expectancy of inhabitants. In the Czech Republic it had the lowest value in 1970 - for men it was 66 years and for women 73 years. Until 1990 these figures were fluctuating, since 1990 they have been growing steadily. In 2003 the average life expectancy for women was 78.5 years and for men 72 years. See <http://indikatory.env.cz>

GROUNDWATER

The present quality of groundwater can be considered stabilised and more or less satisfactory. There is a certain risk of “old environmental load” (old waste landfills, contaminated industrial zones, e.g. former areas of underground uranium leaching in Northern Bohemia, heavy impact on the third aquifer of cretaceous areas in Northern Bohemia caused by radioactivity from Ralsko). Groundwater pollution, e.g. ammoniated ions from agriculture, which existed in the early 1990s, has been removed.

DRINKING WATER

The number of inhabitants connected to the public water supply lines increased from 83.2% in 1990 to 89.8% in 2004. The quality of supplied drinking water is mostly sufficient. The lowest percentage of households connected to the public system is in Central Bohemia. Drinking water comes mainly from surface sources.

The problem is that more than 10% people, connected to the public water piping, are not connected to a sewerage system.

Soil

The following table shows the changes in agricultural and forest land resources between 1990 and 2004:

Table 2.4

Changes in agricultural and forest land resources as of 31 December of a respective year (thousands ha)

Year	Agricultural land	Arable land	Arable land idle ¹⁾	Permanent grass	Forest land	Arability (%)
1990	4 288	3 219	3	833	2 630	75.07
1995	4 280	3 143	56	902	2 630	73.43
2000	4 280	3 082	71	961	2 637	72.01
2001	4 277	3 075	116	966	2 639	71.90
2002	4 273	3 068	128	968	2 643	71.80
2003	4 269	3 062	177	971	2 644	71.89
2004	4 265	3 055	–	972	2 646	–

Source: CSO

The above data indicate that the decreasing of the farm land cultivation area is very slow. The cultivation of almost 72 % remains relatively high compared to the EU15 average (60.1 %). A new issue is uncultivated land which is idle and grows weeds. The Czech Statistical Office estimates the total volume of 300,000 ha of this land.

The quality of soil in the Czech Republic at the beginning of the Founding Period was affected by “socialist” agriculture (plant and animal large-scale production with a high use of fertilizers and pesticides) and by the atmospheric deposition due to high pollutant emissions into the air. The Implementation Period brought environmentally positive changes in agriculture, cuts in some agriculture productions and a decrease in the atmospheric contamination fall-out. Fast reduction of the negative impact on soil has a very slow response, although the Pre-Accession and European periods have brought mostly positive changes.

After 1990 there was a radical decrease in the use of mineral fertilizers and pesticides. The use of fertilizers decreased (use of NPK nutrients) from 196 kg/ha in 1990 to 99 kg/ha in 2004. The use of pesticides (insecticides, herbicides, fungicides and growth regulators) dropped from 8,812 tons in 1990 by half and in 2004 was approximately 1 kg/ha. The question is whether the decrease in calcium fertilizers is appropriate taking into account the ground acidity in the Czech Republic.

¹⁾ as of 31 May of each year

Note: the area of the arable land is calculated by methods of the Czech Statistical Office

The content of risk elements in farm land (As, Be, Cd, Co, Cr, Cu, Mo, Ni, Pb, V, Zn) has been changing. In the early 1990s the content of cadmium and lead in the Central Bohemian region, the content of cadmium and mercury in Northern Moravia were above the threshold levels, and the content of chromium in Southern Moravia was occasionally high. At the moment the levels of monitored risk elements are mostly below the threshold levels. This can be explained by drop in use of mineral fertilizers and their quality and by lower atmospheric deposition.

Organic pollutants (polychlorinated biphenyls, polycyclic aromatic hydrocarbons and organic chlorinated pesticides) exceed the threshold levels occasionally. These substances were used in large uncontrolled amounts in past and due to their persistence they are only slowly eliminated.

A very pressing problem is erosion, especially water erosion. That is the result of long time intensive exploitation of soil.

Potential risk to farm land from water and wind erosions (%)

Risk category	Water erosion	Wind erosion
Not endangered	4.2	77.5
Prone	27.9	9.3
Slightly endangered	25.9	5.7
Endangered	18.1	5.4
Strongly endangered	10.0	1.8
Most endangered	13.9	0.3

Source: *Environmental Report of the Czech Republic 2004*

The above data show that water erosion is an important pressing problem, visible especially during floods.

Other soil-related issues include compacting caused by heavy machinery and subsequent water retention and worse plant growth.

Geological Environment

The geological environment of the Czech Republic was affected by strip and underground mining of coal and other mineral materials. Large-scale uranium leaching was used in Northern Bohemia. This resulted in vast landscape devastation, especially in Northern Bohemia, and some parts of the areas are undermined and have an imminent risk of land slip and large surface water contamination. Approximately 68,000 ha of soil are used for mining and extraction (0.9% of the whole area of the country). Black and brown coal mining was substantially decreased in the 1990s when ore extraction was discontinued completely. The decrease in black coal mining was related mainly to the transformation of the national economy and a slump in metallurgy. The decrease in brown coal mining was also caused by the transformation of industry, but especially by lower power generation in coal-fired power plants (about a 25% decrease). Also a number of heating plants started to use different fuels (mostly natural gas) and more than 2,000 municipalities were connected to the gas distribution system. Ore extraction was unsustainable both for environmental and for economic reasons. Uranium extraction will be finished for similar reasons, too. Changes in extraction of main commodities between 1977 and 2004 are shown in the graphs 2.11 and 2.12.

Land reclamation has been faster since the early 1990s. Pursuant to Act No. 44/1988 Coll. a mining company has to restore the land using resources from the extracted mineral. Faster land reclamation was also supported by the state budget and from resources of the National Property Fund.

Table 2.5

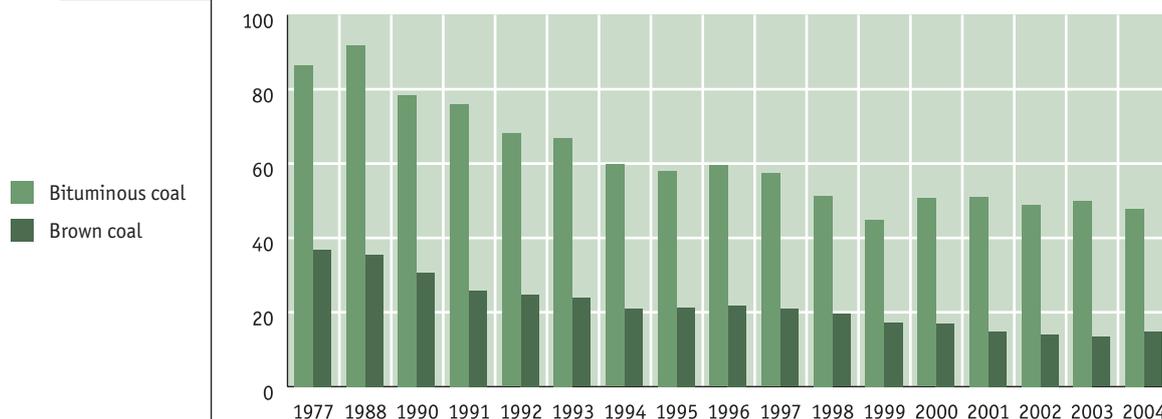
In the second half of the 20th century the landscape in basin districts in the North of Bohemia and in the surroundings of the town of Sokolov was so devastated that you could hardly speak about nature. To experience it, you can get on the train in Usti nad Labem ... and watch the smoking stacks in the middle of a moonscape, with falling fly ash and feel the smell of burning coal...

In the name of increased coal mining 116 villages in four basin districts (Most, Teplice, Chomutov, Usti nad Labem) fell victim to large-area mining. Also the town of Most with imposing medieval architecture had to make way for mining. Accompanied by spectacular media propaganda controlled by the communist party, a new town of Most was built: a cluster of panel buildings and communication crossings. Its inhabitants lost the feeling of home...

Miroslav Vanek: It was impossible to breathe here

Graph 2.11

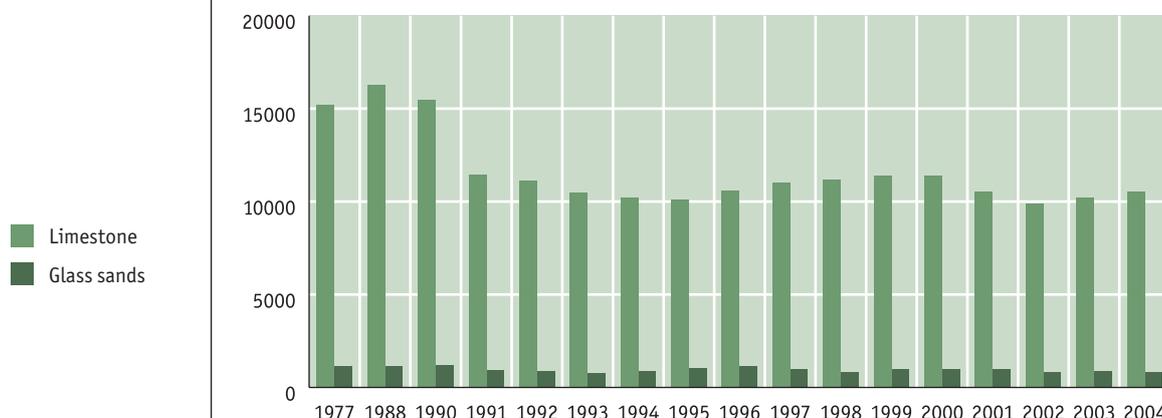
Bituminous and brown coal mining in 1977, 1988, 1990–2004 (mil. t)



Source: Ministry of Industry and Trade (MIT), MoE, CENIA

Graph 2.12

Limestone and glass sands mining in 1977, 1988, 1990–2004 (thous. t)



Source: MIT, Ministry of the Environment (MoE), CENIA

The current issues of geological environment protection in the Czech Republic are the high proportion of limestone mining in nature reserves (Cesky kras and Moravsky kras), the groundwater contamination after uranium extraction in the region of Ceska Lipa and the risk of landfall and methane bleeding in the Moravian-Silesian Region.

Forests

The catastrophic condition of forests in 1989 was the best-known symptom of the bad environment of the Czech Republic. The main reason was air pollution affecting particularly spruce mono-cultures. Weakened vegetation was easily affected by pestilence. In spite of the fact that impact of pollutant emissions on forests were decreasing ("passive measures"), like liming, fertilization and artificial forest reproduction, including gradual changes in forest composition, the condition of the forests was not improved. In the mid 1990s new comprehensive regulations concerning forests were approved. Since then the regulations have been amended several times.

The Czech Republic is a country with an average forest area (the forest percentage is 34.1%, the OECD average was 34.4% in 2000), although it is the 8th most wooded OECD country in Europe.

Changes in the forest percentage of the Czech Republic between 1920 and 2004 are provided in the following table:

Changes in the forest area (thousands ha)

	1920	1930	1945	1950	1960	1970	1980	1990	2000	2001	2002	2003	2004
Area	2 369	2 354	2 420	2 479	2 574	2 607	2 624	2 630	2 637	2 639	2 643	2 644	2 646

Source: CSO

More than 28 % of the area in south-west and northern Bohemia and north-east Moravia is covered with forests. The smallest forest area (less than 14 %) is in Prague, and a slightly bigger forest percentage is in eastern Bohemia and southern Moravia (about 14–28 %).

The main problem is the health of forests areas which has been assessed in the Czech Republic since 1986 in monitored areas within the UN EEC and EU ICP programme – Forest. The basic parameter of this assessment is the defoliation rate expressed in a percentage with precision of 5 %. Over the last fifteen years before the forest load was decreased, the defoliation rate went up and the health of coniferous and deciduous trees assessed according to this parameter is getting slightly worse.

Forest health is a chronic problem of the Czech Republic and logically solving this problem will take a long time. Concerning the environmental protection and forest functions outside production, the age, species and spatial structure is not good. More than 75 % of the forest areas are agricultural forests, the percentage of forests not used primarily for agriculture is growing very slowly. An urgent, periodically repeated problem is bark beetle damage resulting in random logging. Random logging accounted for 73.7 % of total logging in 1990 and 34.5 % in 2004. A significant improvement in forest health can be expected on the long-term horizon.

Nature and Landscape

The area of nature and landscape involves landscape and species protections. At the beginning of the Founding period the condition of nature and landscape was equivalent to the condition of fundamental environmental elements – air and water. The landscape infrastructure was disturbed (in particular the retention capacity) and the biological diversity was decreasing. The only national park established before 1989 was in the Giant Mountains (1963). There were 20 protected nature areas. This type of protection covered 12 % of the country's territory. Act No. 114/1992 Coll., on Nature Protection, was passed in 1992 to serve as a comprehensive regulation for nature and landscape protection, which has been amended a couple of times and supported by partial laws (e.g. Act No. 16/1997 Coll., on the Conditions for Exports and Imports of Endangered Species, or Act No. 115/2000 Coll., on Compensation for Damages Caused by Protected Species).

GENERAL LANDSCAPE PROTECTION

The Czech Republic is a relatively densely populated country with extensive linear infrastructure which divides the landscape into fragments and limits the natural species migration. Because of disturbed landscape infrastructure large parts of the territory are endangered by water erosion and are easily affected by floods (a limited retention capacity). A hot issue is the conflict of interests between the land required for the building of transport infrastructure and utility buildings and the effort to improve the landscape condition.

Table 2.6

Table 2.7

LANDSCAPE PROTECTION – PROTECTED AREAS

The summary of specially protected areas is provided in the following table:

Specially protected areas as of 31 December 2004

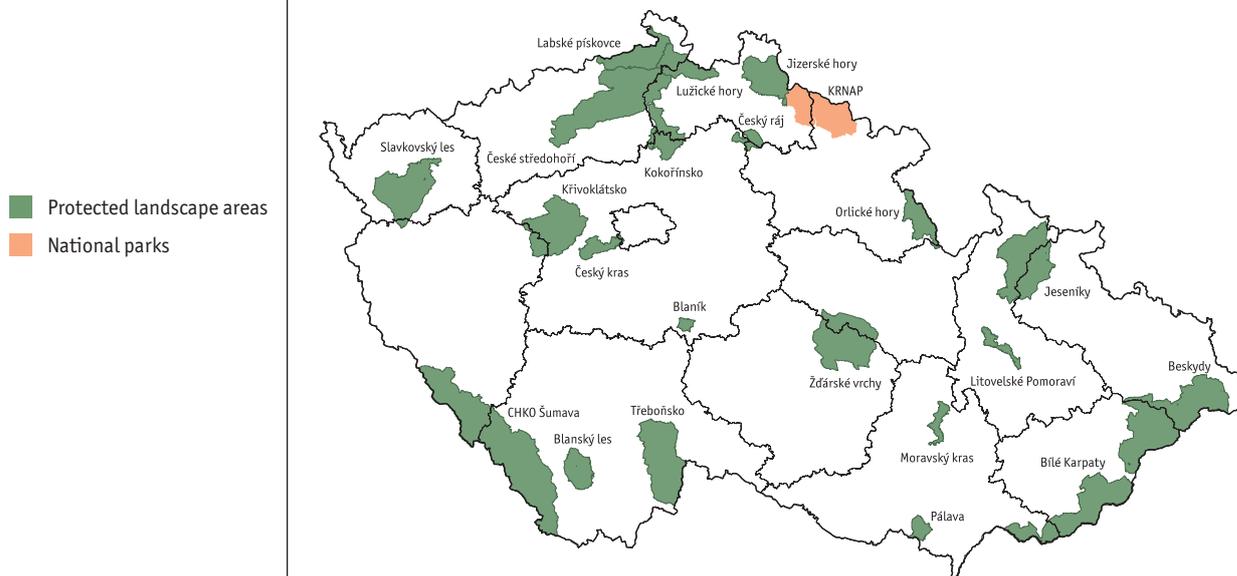
Category	National Parks	Protected Landscape Areas	National Natural Reserves	Natural Reserves	National Natural Monuments	Natural Monuments
Number	4	24	110	713	101	1 123
Area (thous. ha)	119,02	1 040,12	27,87	34,26	2,69	27,02
% of territory of the Czech Republic	1,51	13,19	0,35	0,43	0,03	0,34
Forest cover (%)	87	54	82	44	59	70

Source: Agency for Nature Conservation and Landscape Protection of the Czech Republic (ANCLP CR)

Obr. 2.5

The actual locations and territory of protected areas are shown in the next pictures. The area of specially protected areas has increased by 30 % during the last 15 years.

Large specially protected areas in 1990



Source: ANCLP CR, CENIA

As of 1 August 2005 Cesky les was proclaimed the twenty fifth protected landscape area.

The percentage of specially protected areas in the Czech Republic (15.9%) is slightly above the EU 15 average (12.1%) and the OECD average (12.4%). Three quarters of the existing national parks (Sumava, Podyji and Ceske Svycarsko) and 5 out of the 25 existing protected landscape areas (Broumovsko, Litovelske Pomoravi, Poodri, Zelezne hory and Cesky les) were proclaimed after 1989.

At the moment the Czech Republic is building a part of the European network of protected areas known as NATURA 2000. The parameters of protection were implemented into the Czech legal system by amended Act No. 114/1992 Coll. in 2004.

As far as the landscape protection is concerned, the Czech Republic is dealing with frequent conflicts of interests concerning economic and especially infrastructure development.

Large specially protected areas in 2005

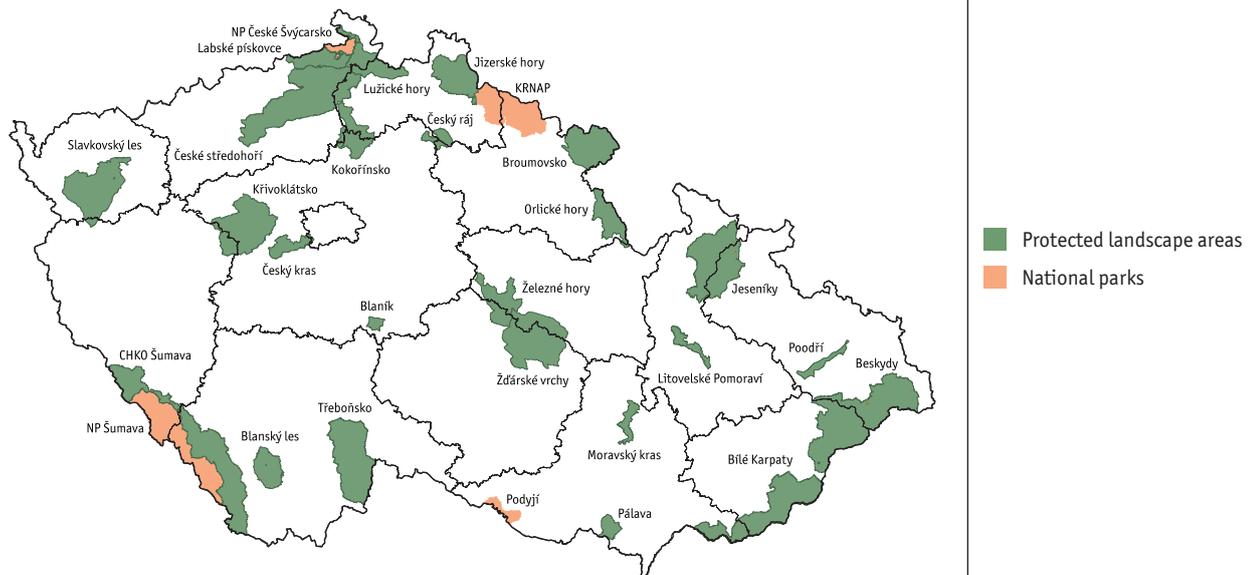


Fig. 2.6

Source: ANCLP CR, CENIA

NATURA 2000 in the Czech Republic

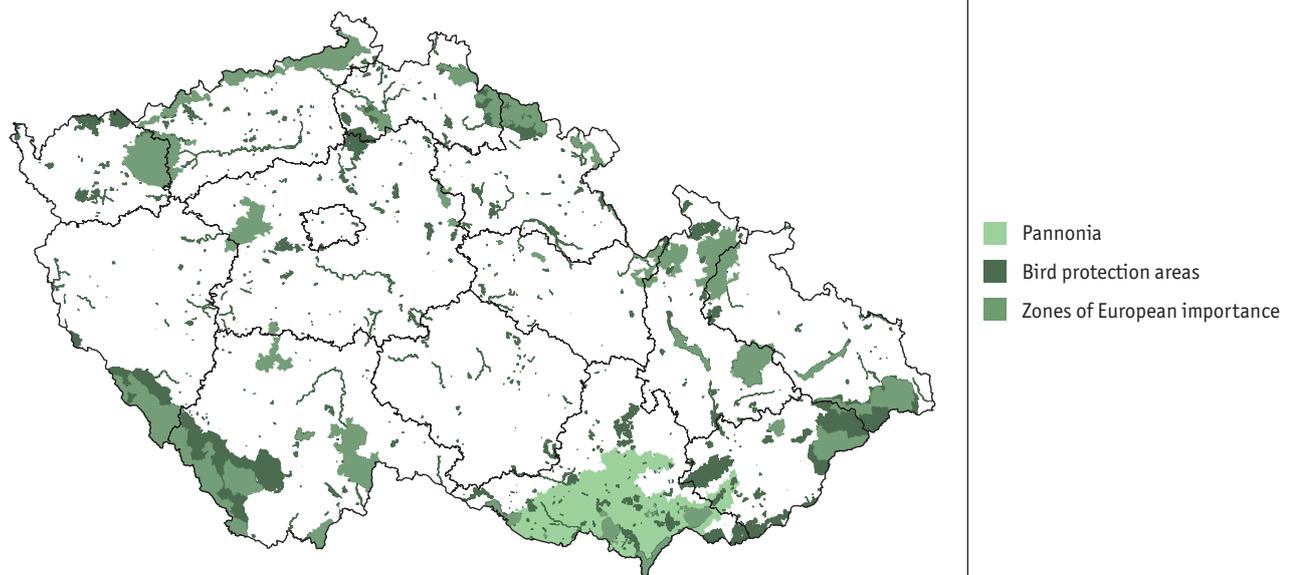


Fig. 2.7

Source: ANCLP CR, CENIA

NATURA 2000 system includes Pannonia areas (4.3% of the CR territory), birds protection areas (8.8%) and zones of European importance (9.2%). The total of the specially protected areas including NATURA 2000 is about 18.6% of the whole territory of the Czech Republic.

SPECIES PROTECTION

The list of endangered animal and plant species is provided in the following tables:

Table 2.8

Specially protected animal species as of 31 December 2004

Fauna	Mammals	Birds	Reptiles	Amphibians	Fish	Cyclostomata
Total number of species in CR	81	222 ¹⁾	11	21	59	2
Critically endangered species	8	35	3	9	4	2
Highly endangered species	12	58	5	7	3	0
Endangered species	10	30	1	4	10	0

Source: MoE

The above table shows that the level of danger for specially protected animal species ranges from 29% (fish) to 95% (amphibians), with the exception of Cyclostomata, and has changed very little over the past 15 years.

Tab. 2.9

Specially protected plant species as of 31 December 2004

Plants and fungi	Higher vascular	Bryophyte	Lichens	Fungi
Total number of species in CR	3 600	860	1 500	5–6 000
Critically endangered species	246	0	0	27
Highly endangered species	143	0	0	13
Endangered species	92	0	0	6

Source: MoE

The situation of specially protected plant species is evidently better and the percentage of endangered species in the worst group (higher vascular plants) is lower than 2%.

The Czech Republic is dealing with quite frequent conflicts of interests between plant species protection and economic and infrastructure development.

A recent issue of species protection is the genetically modified organisms (GMO) which might threaten the natural biological safety if they spread without control, in other words they might disturb the balance among natural species. Regulations concerning GMO were passed in the late 1990s.

Waste

As far as waste management is concerned, there were illegal landfills, a lack of legislative interest in waste management issues and very little information about waste, its disposal and landfills in the Czech Republic before 1989. Waste disposal has changed significantly over the last 15 years. The first generation of legal regulations from 1991 contained a number of time-limited transformation elements (e.g. stricter rules of trans-border waste shipment, temporary unsecured landfills). In the early 1990s un-secure landfills were closed down (approximately 8,000 landfills) and new landfills were built, complying with the relevant environmental safety parameters and European regulations. At present the capacity of secured landfills is sufficient for decades. In 1997 a second generation of legal regulations was approved influenced especially by the OECD requirements and in compliance with the Basel Convention on trans-boundary shipment of hazardous waste, which brought a certain liberalisation of the waste movements (coloured lists of wastes according to their risk level) and termination of waste management programmes. During the Pre-Accession period a third generation of legal regulations was approved.

¹⁾ nesting

These regulations are in compliance with the EC requirements. The disposal of selected waste commodities was changed in a comprehensive manner (electrical scrap, wrecked cars, batteries and accumulators, sludge, etc.), packaging disposal and return of some products.

On one hand, waste disposal is closely related to environmental protection; on the other hand it is an industry with important turnover. Three generations of regulations show that to set parameters in this industry is very difficult, and this area has to be further developed including a detailed enumeration of the types and volume of produced waste. Decisions are based on information regarding the volume and movement of waste, however this information has not reached a sufficient level in the Czech Republic.

Waste production in the Czech Republic between 1998 and 2004 (t)

Category	1998	1999	2000	2001	2002	2003	2004
Hazardous	3 399 468	2 380 171	2 603 337	2 785 128	1 289 912	1 194 619	1 424 022
Total	44 121 739	38 088 463	40 162 871	42 655 501	24 959 160	25 172 816	26 583 877

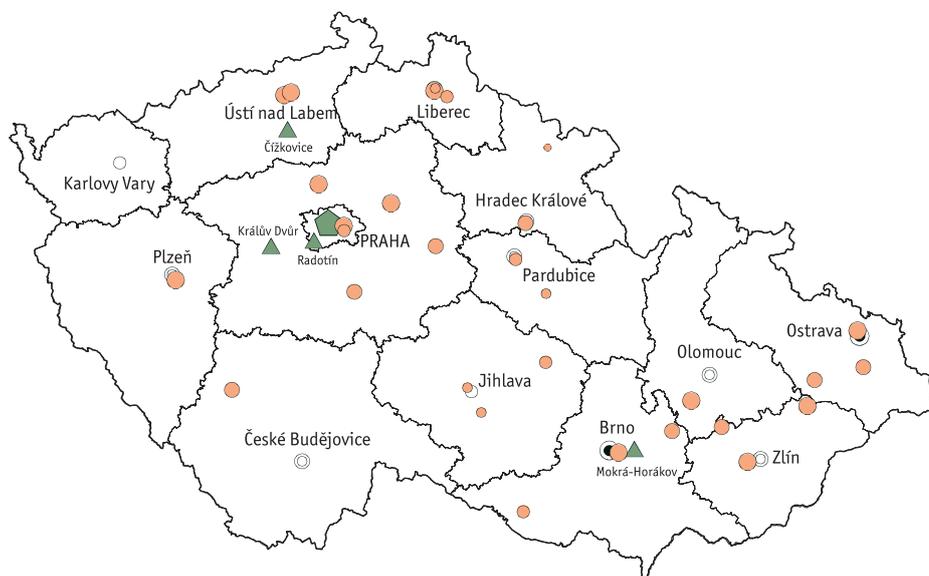
Source: CSO

During the 1990s the production of hazardous waste decreased. The present volume of municipal waste is at 400–500 kg per capita/year, which is more or less the same as in other developed European countries. Waste monitoring was in the 1990s rather difficult.

Taking into account the waste disposal, the increased waste recycling and the use of waste as secondary raw material are very positive. At the moment there are 298 landfills, 33 of them with the possibility of depositing hazardous waste. The municipal waste is incinerated in three incineration plants (Prague, Brno and Liberec). The number of incineration plants for hazardous waste has been decreasing (67 in 2001, 24 in 2004). The nominal capacity is about 160 thousand tons. The total amount of waste incinerated and used in the energy sector in 2004 was ca 9.1% of municipal waste and 10.2% of hazardous waste.

While the location of landfills is basically homogenous, there are many differences in incineration plants (see the picture below).

Location of incineration plants including cement works using waste in technology in 2004



Source: CHMI, CENIA

Table 2.10

Fig. 2.8

Capacity of incineration plants (t/year)

- 0–200
- 201–500
- 501–1000
- 1001–3000
- 3001–310000
- ▲ Cement works

Compared to most European countries, the percentage of waste deposited in landfills is still quite high in the Czech Republic. This is the main issue as a major part of the landfill waste is decomposable and produces methane emission (a green-house gas).

Old Environmental Burdens

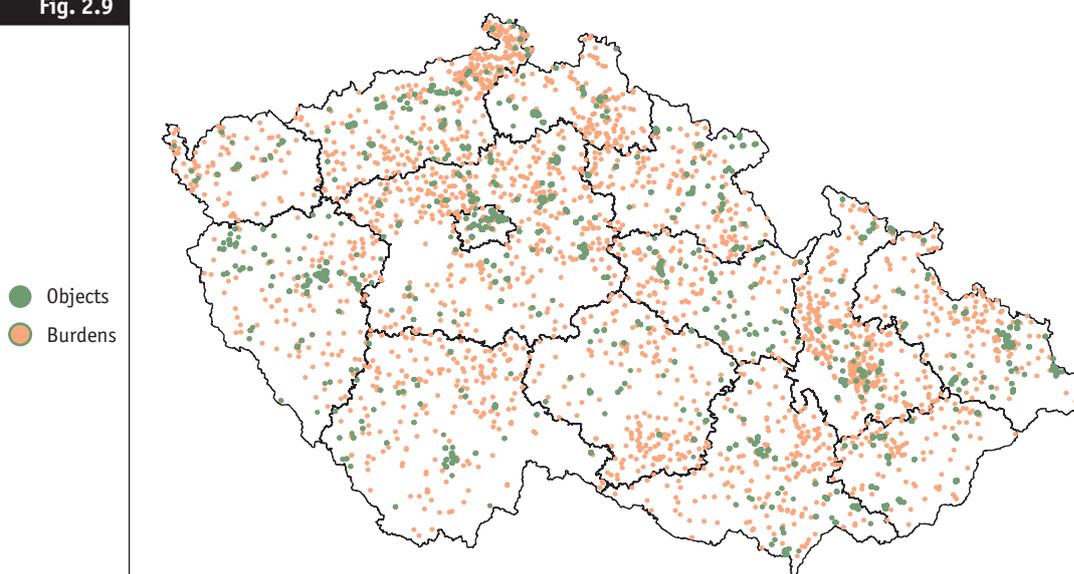
Polluted areas (soil and water) which are part of privatised industries are the greatest group affected by old environmental burdens. Their remediation is paid for especially by the National Property Fund. From 1994 to 2004, 269 environmental contracts were made between the Fund and new owners of privatized companies, with a total guarantee amounting to CZK 138 billion. Actual resources used for remediation were increased from about CZK 800 million in 1995 to CZK 2.6 billion in 2004 and amounted to almost CZK 24 billion as of 1 May 2005.

A specific issue are former Soviet military bases in the Czech Republic. Their remediation was supposed to be paid from the state budget and finished by 2012, and the total costs were estimated to amount CZK 1.5 billion. The remediation involves mainly disposal of oil products and unfired ammunition.

More attention has been paid to the reuse of brown fields, abandoned industrial zones, often inside cities.

Fig. 2.9

Old environmental burdens in the Czech Republic



Source: MoE, CENIA

Physical Fields

The problems of physical fields involve the impacts of radiation (including radon), noise, non-ionizing radiation and electric and magnetic fields on human health and nature.

RADIOACTIVE RADIATION

Radioactive radiation of anthropogenic origin has not caused any major problems over the last 15 years as there has been no radioactive leak in the Czech Republic or in any neighbouring country.

NON-IONIZING RADIATION

Non-ionizing radiation or magnetic fields have not been viewed as a major issue in the Czech Republic. The exposure to radiation from cell phones (mobiles) is subject to scientific research. Specific issues are high voltage and very high voltage lines above residential areas which might negatively influence people's health.

RADON RISK

Radon risk was viewed as a major environmental problem in the 1990s, so the so-called Radon Programme was implemented. It was aimed at searching objects with a higher volume of radon and their products (buildings and drinking water sources). Anti-radon measures were adopted in these objects and water sources. From 1991 to 2004 more than 4,220 of anti-radon measures were taken amounting to state aid of CZK 1.26 billion.

NOISE POLLUTION

Noise pollution is a significant problem from the long-term point of view, especially in cities. Although this issue has been discussed in the EU for a long time, in the Czech Republic it was not a priority between 1990 and 1998 as the country had to deal with air and water pollution and waste disposal. Legal regulations for the noise pollution levels were passed in the Pre-Accession period, and regulations concerning noise pollution have been prepared since 2004.

Noise Map – Hradec Kralove district 2000 – example

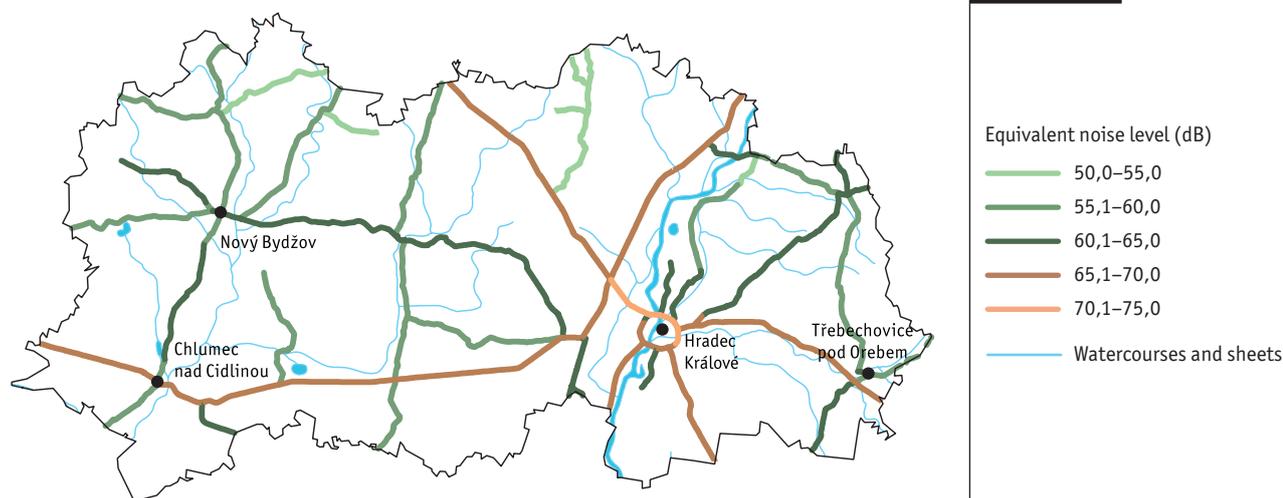


Fig. 2.10

Source: CENIA

The above figure shows that the noise pollution concerns a significant part of the population in Hradec Kralove district. According to the measuring and calculations done so far it can be expected that people in many other cities and locations close to busy communications and traffic junctions (roads, airports) are affected in the same way. Therefore the noise pollution must be considered as topical issue.

Environmental Protection – Safety of Production Operations – Integrated Permitting

About 1500 installations fall within the IPPC process in the Czech Republic. Category 6 (other installations) is represented the most, category 3 (mineral processing) the least.

At present (30th June 2005) the most integrated permits are issued for category 6 (other installations), especially for slaughterhouses, milk treatment and processing, poultry and pig breeding, and surfacing. On the contrary industrial companies for cellulose production, pre-treatment and dyeing of fabrics or textiles and for leather and pelt tanning have not joined the IPPC process.

The biggest share of permitted installations in the total number of installations in a given category is in category 5 (waste management) and in category 3 (mineral processing).

The Act No. 76/2002 Coll., Annex 1, states 6 categories of installations, which can operate only with an integrated permit from the end of 2007 onwards.

Environmental protection is closely related to economic activities and the disposal of hazardous substances of all kinds. The main objective is health protection.

Once the most pressing problems were solved during the 1990s, more attention was focused on important issues which were not among priorities during the first period – this concerned mainly the management of chemicals, GMO and accident prevention. Historically, the Czech Republic has had certain rules of operational safety, emergency plans, etc. (with the exception of GMO) and these issues were handled in a certain way, also from the environmental point of view.

Legal regulations regarding the management of chemical substances and the prevention of industrial accidents were prepared with respect to accession to the OECD and the EU. The disposal of chemicals was covered by legislation in 1998. At the turn of the Pre-Accession and European periods new regulations were passed. The law of industrial accidents prevention was adopted in 1999. The requirements of new regulations are gradually implemented. A law from 2000 stipulated rules for GMO, and a new law was prepared in 2004.

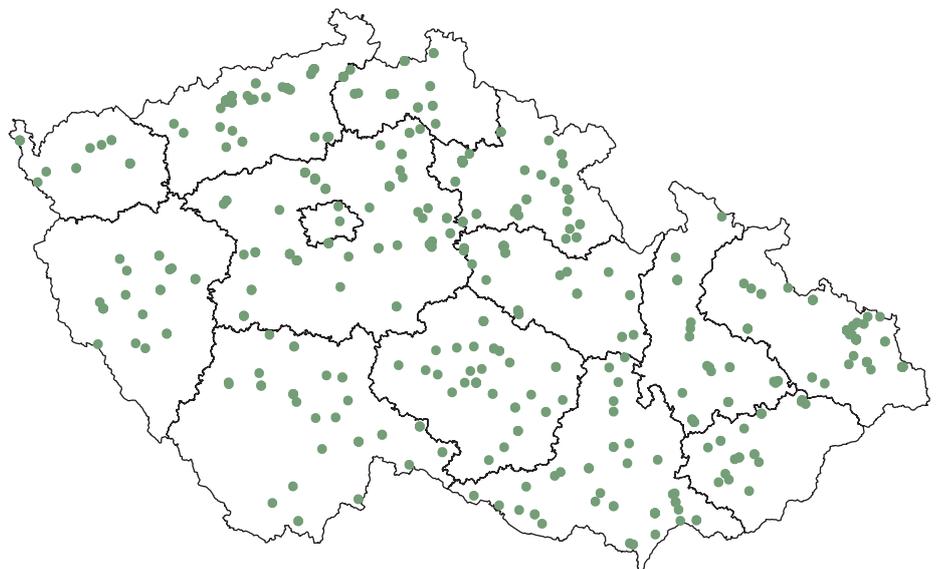
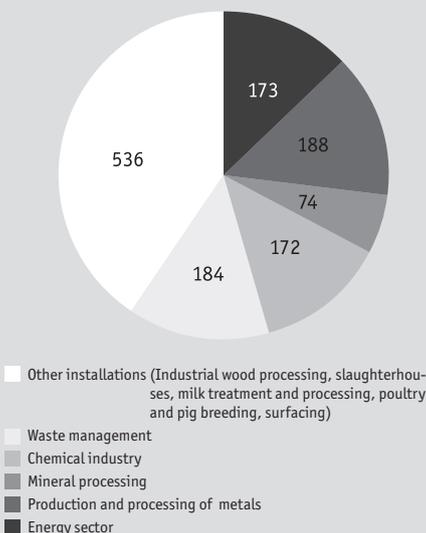
The process of integrated permitting implemented a new (integrated) approach to handling environmental impacts of economic activities. This process is significant for the regulation of the largest pollution sources.

Directive 96/61/EC on integrated pollution prevention and control (IPPC) is one of the most important but also most difficult EC regulations on the environment to interpret. Some interpretations put emphasis on an integrated (comprehensive) approach to pollution control, other interpretations prefer the implementation of the best available techniques (BAT). A very important part of the integrated control is flexibility, in other words the possibility to define individual requirements of facilities with respect to the local environment. The directive provides for individual emission limit values, e.g. air or water pollution. IPPC is also important in waste prevention, or the economical use of raw materials and energies as binding operating conditions given in the integrated permitting can also specify requirements of this kind.

Fig. 2.11

Facilities authorized in accordance with IPPC (as of 30 June 2005):

Total number of IPPC installations (according to categories)



Source: CENIA

15 Years Later ...

An evaluation and assessment of the environment in Czech Republic between 1990 and 2004 shows the following:

At the end of 1980s the environment of today's Czech Republic belonged to the worst in Europe and in some indicators the worst in the world. The north-west of the country together with nearby Saxony and Poland was called the Black Triangle. The communist regime did not publish any environmental information and the situation was considered more disastrous than it actually was. After the changes in 1989 a major priority was to achieve a better environment.

During the Founding Period (1989–1992) new regulations were passed quickly and new institutions to support environmental protection were established. The country also experienced economic transformation which resulted in lower emissions released into the air and water, reflecting more or less the lower economic performance expressed as the GDP.

During the Implementation Period (1993–1998) the effects of new legislation became visible and the country experienced so-called decoupling (separation of GDP which was growing again and pollution, which was decreasing). The Implementation Period finished with the improvement of all environmental elements which might have been improved over such a short period of time. Basic environmental indicators did not show any big differences from the EU 15 or OECD averages and became comparable.

The dynamics of positive changes compared to neighbouring countries are unique, some indicators improved by more than one order (e.g. emissions of dust into the air). The amount of funds invested into the environment is unique, too. Over the whole Implementation Period this sum was at 2% of GDP and the total environmental costs reached more than EUR 10 billion between 1990 and 1998.

The dynamics of the changes were substantially slower in the Pre-Accession and European periods (1999–2004) and the environment was mostly stabilised. The changes were slower as everything that was technically and economically plausible in the short ten-year period had been done and further positive changes were either extremely expensive (cost curves of most measures show that the specific effect towards a unit of invested funds is decreasing) or impracticable in a short period of time (e.g. much better condition of the forests).

The current state of the Environment of the Czech Republic is still not satisfactory.

Recent analyses show exceeded target limit values for the protection of human health and vegetation regarding tropospheric ozone and limit values for human health protection for PM₁₀. This is not a specific Czech problem, many European countries are affected in this way, too. Other major problems are the high percentage of soil endangered by erosion, forest degradation, unsatisfactory forest condition and a high number of endangered species.

In the years to come we can expect lower pollution decreased by active measures aimed at air protection and natural evolution (car pool enhancement and technology updates). We can also expect increased qualities of surface and ground water due to implemented active measures and natural evolution (building and rebuilding of sewage water treatment plants, technology updates, implementation of good agricultural practices, eco-agriculture) and positive changes in waste management (leading to waste minimisation). Provided there are no unexpected natural disasters at global, European or national levels and the relevant legal regulations are amended and implemented, the quality of the environment in the Czech Republic will be gradually improved – with possible ups and downs caused by sudden or inappropriate interventions.

The integrated pollution prevention and control can be, and often really is, an effective regulatory tool for the protection of the environmental elements, especially air and water.

Concerning air protection, the key provision of the directive seems to be flexibility as to the definition of emission limit values and other conditions of operating a specific large pollution source (in the meaning of Directive 96/61/EC and Act No.76/2002 Coll., on integrated prevention these sources are called installations) with respect to the local situation. It is not an accident that Directive 96/61/EC on IPPC was approved along with Directive 96/62/EC –Framework Directive on Air, implementing the concept of binding and time specified ambient air limit values. If it were not for a certain flexibility within IPPC, all regulated stationary pollution sources might observe specific emission limit values and other legal requirements, but the air quality limit values would be exceeded in their surroundings. This can be solved by more stringent generally binding emission limit values for a given category of pollution sources; on the other hand, this solution might require big investment not justified by a relevant emission reduction (actually only one or very few pollution sources may be concerned but the global reduction of emission limit values would cover all sources of a given category). The IPPC permit allows for the setting of conditions of a specific source within the specific emission limit values, customized to the local air quality, and therefore it requires an investment only if it is reasonable. The same method can be applied for the emission reduction where the objective is to decrease certain emission threshold levels. The emissions of some sources can be decreased relatively cheaply (e.g. by more efficient desulphurisation plants) and reflected in the conditions of integrated permits. The BAT concept controls aspects so that the requirements of a given source are not too benevolent or strict (i.e. technically or financially unrealistic).

A similar method can be applied in water protection where the requirements of waste water treatment can be customized with respect to the recipient watercourse.

03



The conceptual framework of Czech environmental protection over the last fifteen years was formulated by five environmental policies. The Czech Government adopted these documents in 1990, 1995, 1999, 2001 and 2004. As the environmental situation was improving, the emphasis was shifted from the protection of human health to nature conservation and biological diversity. The latest and currently used policy basically reflects the 6th EU Action Programme of the Environment.

Most legal regulations of the environment were passed during three years after the Velvet Revolution. The first generation of environmental law contained a number of short term objectives to be reached because of bad environmental conditions in our country. The second generation of the regulations was adopted after 1998 within the EC approximation.

Environmental protection requires rather extensive work of the public administration. The Ministry of the Environment supported by several regional offices has existed since 1990. At the moment some of the obligations of the state administration are delegated to regional authorities and municipalities, the Nature Conservation Authority, four national parks and the Czech Environmental Inspectorate (CEI). The last mentioned is also the control body. CEI has its own regional offices. The professional basis is made by four research institutes, two agencies and the Geofond, a database of geological information.

Ministers of the Environment of the Czech Republic:**Founding Period**

Prof. RNDr. Bedrich Moldan
Civic Forum
1 Jan 1990–24 Jan 1991

Ing. Ivan Dejmál
Christian Democratic Party
20 Feb 1991–2 July 1992

Implementation Period

Ing. Frantisek Benda
Christian Democratic Party
(later Civic Democratic Party)
2 July 1992–4 July 1996

Ing. Jiri Skalicky
ODA – Civic Democratic Alliance
4 July 1996–20 Feb 1998

RNDr. Martin Bursik
Christian Democratic Union
– Czech People's Party
27 Feb 1998–22 July 1998

Pre-Accession Period

RNDr. Milos Kuzvart
Czech Social Democratic Party
22 July 1998–17 July 2002

European Period

RNDr. Libor Ambrozek
Christian Democratic Union
– Czech People's Party
since 17 July 2002

Environmental strategies:

- Environmental Recovery Programme for the Czech Republic (Rainbow Programme) adopted by the Government Decision No. 338 of 12th December 1990.
- State Environmental Policy adopted by the Government Decision No. 472 of 23rd August 1995
- State Environmental Policy, which the Government took cognizance of by the Decision No. 323 of 14th April 1999
- Updated State Environmental Policy adopted by the Government Decision No. 38 of 10th January 2001
- State Environmental Policy adopted by the Government Decision No. 235 of 17th March 2004

State Environmental Policies of the Czech Republic – Basic Conceptual Documents

Founding Period (1989–1992)

The first national environmental policy of the new era of environmental protection was the Recovery Environmental Programme of the Czech Republic, called the Rainbow Programme. It was adopted by Government Decision No. 338 of 12 December 1990. This Programme marked the beginning of the Founding Period and defined the framework of legal, economic, institutional, information and voluntary instruments. It set out seven basic objectives for 1992, the first of which was to stop the unfavourable development of environmental pollution in two years; other objectives concerned air, water, waste, forest and landscape protection and nature conservation. The priority of the Programme was to focus on human health protection and a better life style. It was preceded by the so-called Blue Book assessing the condition of the environment from 1989 onwards.

Implementation Period (1993–1998)

The government established after the elections in 1992 started to prepare a strategy with long-term objectives. The strategy was passed after a long discussion by the Government Decision No. 472 of 23 August 1995. It implemented the requirements of the first generation of environmental law and set a limited number of short as well as middle-term priorities: improvement of air quality by reducing the emissions, improvement of water quality by decrease in discharged pollutants, lower waste production (especially of hazardous waste), elimination of impacts of physical and chemical factors and priority recovery of old hazardous environmental burdens. The aim was to take measures which would approximate the values of basic environmental indicators to the EU average by 2005 latest. The long-term priorities were the protection of climate and ozone layer and the conservation of biological diversity.

Pre-Accession Period (1999–2003)

The government formed after the elections of 1998 formulated their new environmental priorities. The policy adopted by Decision No. 323 of 14 April 1999 reflected a different approach to the environment which was formed during the 1990s. The focus shifted from human health to nature. This concept dealt with the fastest transposition, implementation and enforcement of environmental acquis – a set of EC legal regulations. A number of very ambitious goals related to this policy were based on clear identification of existing environmental problems of the Czech Republic and these goals were achieved. However, some of them were very expensive and were not achieved (e.g. mechanical and biological waste water treatment in all places with more than 2,000 of equivalent inhabitants by 2005, recycling of at least 25% of the total volume of packaging material, implementation of the EMAS by 2000 in 150 companies). On 10 January 2001 the Government passed Decision No. 38 updating the State Environmental Policy with a detailed list of partial goals and required measures. Apart from common principles, the policy was based on the principle of sustainable development, public participation in developing and implementing the policy, inter-departmental cooperation and coordination of sector policies.

Present and Future Prospects until 2010

The present environmental policy complies with the 6th European Action Programme of the Environment (Environment 2010: Our Future, Our Choice). It was formulated as a strategy of the Government formed after the elections of 2002. It was approved by Government Decision No. 235 of 17 March 2004. The middle-term goals of this policy are focused on nature conservation, landscape and biodiversity protection, sustainable use of natural resources, water protection and anti-flood measures, material flow optimisation and waste management, decrease in environmental load caused by human behaviour, improvement of environmental standards of the quality of human life, climate protection and reduction of long-distance air pollution. The strategy indicated 12 major tasks, most of which are to be finished by 2010.

Environmental Law

Historic “Environmental” Law

The most important regulations of historic “environmental” law

Regulation	Philosophy
Austrian Forestry Act No. 250/1852 of Imperial Code	applied the principle of direct proportion between logging and newly grown wood.
Austrian Water Law Act No. 93/1869 of Imperial Code	First water law in today’s Czech Republic.
Austrian Building Act for Czech Lands from 1874	First building law in today’s Czech Republic.
Act No. 11/1955 Coll. on Water Management	
Act No. 40/1956 Coll. on State Nature Protection	Only special nature conservation, state protection authorities without relevant competencies.
Act No. 166/1960 Coll., on Forests and Forest Management (Forest Act)	First attempt to support non-production forest functions.
Act No. 20/1966 Coll., on Public Health Care	First modern act on human health protection.
Act No. 53/1966 Coll. on the Agricultural Land Protection	Emphasis on quantitative protection of farm land, no qualitative protection.
Act No. 35/1967 Coll., on Measures Against Air Pollution	State air protection bodies without the decision-making power, no emission limits used.
Act No. 138/1973 Coll., on Water (the Water Act). and Act No. 130/1974 Coll., of the Czech National Council on State Administration in Water Management	A progressive act in its time, however, degraded in practice due to many exemptions from the water treatment obligation.
Act No. 50/1976 Coll. on Territorial Planning and Building Code (Building Act)	A modern act of the socialist era, only general obligation of environmental protection.
New Act No. 61/1977 Coll. on Forest and Act No. 96/1977 Coll. of the Czech National Council on Forest Management and State Administration	distinguishes forests for the purpose of agricultural production, protection and special purposes.
Act No. 28/1984 Coll., on State Supervision over Nuclear Safety of Nuclear Equipment	controls the operations of nuclear power plants in Czechoslovakia, no solution for irradiated fuel.
Acts No. 44/1988 Coll., on the Protection and Exploitation of Mineral Resources (Mining Act), Act No. 61/1988 Coll., of the Czech National Council on Mining Operations, Explosives and the State Mines and Act No. 62/1988 Coll., of the Czech National Council on Geological Work and the Czech Geological Office	Acts regulating mining and related activities, environmental protection very general.

Table 3.1

Although a real environmental protection system did not exist until 1989 some environmental issues were regulated earlier, as shown in the summary and brief description of the most important (historical) regulations applied in today’s Czech Republic.

In the times of communist regime the enforcement of legal provisions had been poor and the compliance had failed.

Table 3.2

The most important legal regulations of the Founding Period

The 1990 Rainbow Programme defined priority areas to be regulated by new law. A first unified system of environmental protection was formed in the territory of Czech Republic. All previous regulations were related to some economic activities and their impacts (the very first one was the forest law followed by the water and air laws). By 1992 the Czech body of laws had covered completely the protection of environmental components, state administration, inspections and environmental funding. Some areas, especially waste management, were regulated separately for the first time ever.

Laws were influenced to a certain degree by legal regulations of the former European Communities, however, they often included temporary transformation elements (e.g. temporary emission limit values, restrictions on unsecured waste deposits, strict rules of transboundary waste movement). In the context of the catastrophic condition of the environment in the late 1980s, in particular air and water, very short terms were set for the implementation of corrective measures.

Regulation	Philosophy
Act No. 173/1989 Coll., of the Czech National Council (hereinafter referred to as the CNC) on Measures in the System of Central State Administration Bodies of the Czechoslovak Socialist Republic, Represented by a Member of the Government of the Czechoslovak Socialist Republic	established the Ministry of the Environment (MoE).
Constitutional Acts of the Federal Assembly (hereinafter referred to as the FA) No. 159/1990 Coll. and No. 556/1990 Coll., amending constitutional Act No. 143/1968 Coll., on the Czechoslovak Federation	Environmental protection becomes part of the Constitution.
Constitutional Act No. 23/1991 Coll., of the FA, which introduces the Charter of Fundamental Rights and Basic Freedoms	recognised the right of citizens to favourable environment.
Decrees of the Government of the Czech Republic No. 163/1991 Coll., on establishing; the Šumava National Park and Setting Forth Conditions for Its Protection, No. 164/1991 Coll., on Establishing; the Podyjí National Park and Setting Forth Conditions for Its Protection and No. 165/1991 Coll., on Establishing the Krkonoše National Park and Setting Forth Conditions for Its Protection	established the National Parks of Šumava, Podyjí and Krkonoše.
Act No. 238/1991 Coll., of the FA on Waste, Act No. 311/1991 Coll., of the CNC on State Administration in Waste Management, Act No. 62/1992 Coll. of the Czech National Council on Charges for Deposit of Waste	Basic regulation of waste management.
Act No. 282/1991 Coll. of the CNC on the Czech Environmental Inspectorate and its Jurisdiction in Forest Protection	established the Czech Environmental Inspectorate as a state administration body with significant decision-making powers.
Act No. 309/1991 Coll., of the FA on Air Protection against Polluting (Air Act); Act No. 389/1991 Coll. of the CNC on State Administration of Air Protection and Charges for Air Pollution + their partial amendments - Act No. 218/1992 Coll., amending Act No. 309/1991 Coll.	Enacted substantial powers of air protection authorities, rather strict emission limits for large and medium sized polluters, increased substantially the air pollution charges, etc. The original 5-year period to achieve the emission limits was extended in 1992 until the end of 1998.
Act No. 388/1991 Coll. of the CNC on the State Environmental Fund of the CR.	established the State Environmental Fund CR.
Act No. 541/1991 Coll., of the CNC amending Act No. 44/1988 Coll., on the Protection and Exploitation of Mineral Resources (Mining Act)	introduced charges for the extraction of mineral resources.
Act No. 17/1992 Coll. of the FS on the Environment	A partly declarative act, it enacted the EIA for the first time.
Act No. 114/1992 Coll. of the CNC on Protection of Nature and the Landscape	enacted the general environmental protection including the protection of landscape, territorial system of environmental landscape stability, granting high powers to the bodies of state environmental protection, etc.
Act No. 244/1992 Coll. of the CNC on the Environmental Impact Assessment (EIA)	enacted the EIA including processes.
Act No. 262/1992 Coll., of the FA amending Act No. 50/1976 Coll., On Zone Planning and the Building Code (Building Act), as amended by Act No. 103/1990 Coll. – great amendment to the Building Act	reflected the shift from central to market economy and enhanced the environmental criteria of zone planning.
Act No. 270/1992 Coll., of the CNC amending Act No. 23/1962 Coll., on Hunting, as amended by Act No. 146/1971 Coll., of the CNC, Act No. 96/1977 Coll. of the CNC and Act No. 143/1991 Coll. of the CNC	cancelled the division of animals into useful and varmint, introduces the control of hunting for the purpose of environmental protection.
Act No. 334/1992 Coll. of the CNC on the Protection of the Agricultural Land Fund	cancelled the legal basis of expanding farm by cutting scattered greenery, ploughing anti-erosion balks, and water course unbending and established the protection of agricultural land against contamination.

Environmental Law of the Implementation Period

The most important legal regulations of the Implementation Period

Regulation	Philosophy
Act No. 211/1993 Coll., on Prohibition of the Production, Import and Use of Substances that Deplete the Ozone Layer of the Earth and of Products Containing Such Substances (Anti-Freon Act)	Prohibition of “hard” freons and restrictions on “soft” freons.
Act No. 158/1994 Coll., amending Act No. 309/1991 Coll., on Air Protection Against Polluting Substances (Air Act), as amended by Act No. 218/1992 Coll., and Act No. 389/1991 Coll., of the CNC on the State Administration of Air Protection and Charges for Air Pollution, as amended by Act No. 211/1993 Coll.- partial amendments of air protection acts	increased and differentiated charges for air pollution for small polluters (business entities).
Act No. 86/1995 Coll., on Protection of the Ozone Layer of the Earth	replaced and made stricter the first anti-freon act.
Act No. 289/1995 Coll., on Forests and on the Amendment of Certain Acts (Forestry Act)	cancelled existing regulations of forest management, the state forest authority with the exception of national parks transferred under the Ministry of Agriculture, developed the elements of forest management in the market economy, introduced fees for land required, established penalties, e.g. for excessive wood cutting.
Act No. 16/1997 Coll. on the Conditions of Exports and Imports of Endangered Species and Other Measures of Protection of these Species and on amendment to Act No. 114/1992 Coll., of the on Nature and Landscape Protection, as amended	The CITES guarantee.
Act No. 18/1997 Coll., on Peaceful Utilisation of Nuclear Energy and Ionising Radiation (Atomic Act) and on changes in and amendments to some other acts	newly regulated the disposal of irradiated nuclear fuel (Act on Waste does not deal with this issue).
Act No. 125/1997 Coll. on Waste (supersedes existing waste management regulations)	introduced a number of partial improvements and cancelled waste management programme, charges for waste deposit imposed by the Czech Environmental Inspectorate.
Act No. 83/1998 Coll., amending Act No. 50/1976 Coll., on Zone Planning and the Building Code (Building Act), as amended, and on amendment of some other acts – amended Building Act	simplified the zone planning and building rules, took away the right of municipalities to veto constructions of public interest.
Act No. 123/1998 Coll., on the Right to Access to Environmental Information	regulated the access to information for general public and individual applicants.
Act No. 157/1998 Coll., on Chemical Substances and Chemical Preparations and amendment of some other acts	introduced regulations of the disposal of chemical substances, amended repeatedly.

Table 3.3

The process of adopting of new regulations slowed down during the implementation period. Attention was focused on enforcement of post-revolution acts. An exception was the waste management which had to reflect requirements related to the forthcoming accession to the OECD. New legal regulations were also connected with accession to the Montreal Protocol – a ban to produce “hard freons”, fast reduction of their export quotas and the control of other substances harmful to the ozone layer resulted in new regulations. After the Czech Republic applied for the EU membership (23 January 1996 in Rome) the adoption of EC regulations started. Temporary transformation elements were gradually removed from the legislation.

Table 3.4

The most important legal regulations of the Pre-Accession Period

The second generation of environmental laws was prepared during the Pre-Accession Period in compliance with the subsidiarity principle (pursuant to Article 5 of the EC Treaty “the Community shall take action, in accordance with the principle of subsidiarity, only if and in so far as the objectives of the proposed action can not be sufficiently achieved by the Member States and can therefore, by reason of the scale or effects of the proposed action, be better achieved by the Community”). Although the environment is not exclusively within the power of the Community, common rules applied in the whole EU are very complex. The Czech legal regulations transposed almost one hundred of environmental directives. Apart from exceptions (such as provisions on incinerators in the air law and some provisions on waste) newly adopted regulations were entirely in compliance with relevant EC regulations.

Simultaneously several regulations were left in our legal order, which are not contrary to the EC law, but are uncommon in other European countries. This concerns e.g. regulation of small pollution sources in the law on air.

Regulation	Philosophy
Act No. 161/1999 Coll., Establishing the National Park České Švýcarsko and amending Act No. 114/1992 Coll., on Protection of Nature and the Landscape, as amended	established the National Park České Švýcarsko.
Act No. 353/1999 Coll., on the Prevention of Major Accidents Caused by Selected Dangerous Chemical Substances and Chemical Preparations and on amendment to Act No. 425/1990 Coll., on District Offices and Their Powers and Authorities and some Other Related Measures, as amended, (Act on Serious Accident Prevention)	implemented the EC directive Seveso II.
Act No. 153/2000 Coll., on the Management of Genetically Modified Organisms and Products and amending some related acts	implemented regulated disposal of GMO in the Czech Republic.
Act No. 115/2000 Coll., Compensation for Damages Caused by Protected animal Species	payments provided for damage caused by bears, wolves, lynxes, elks, beavers, cormorants, otters.
Act No. 242/2000 Coll., on Environmental Agriculture and amendment to Act No. 368/1992 Coll., on Administrative Charges, as amended	Support environmental education, harmonisation with the EC.
Act No. 406/2000 Coll. on Energy Management	Support fuel and energy saving measures.
Act No. 100/2001 Coll. on Environmental Impact Assessment and on amendment to some related acts (EIA Act)	Regulation of the EIA processes.
Act No. 185/2001 Coll. on Waste and amendments to some other acts	superseded the existing waste management regulations.
Act No. 254/2001 Coll. on Water and amendments to some acts (the Water Act) – superseding the existing legal regulation + Act No. 274/2001 Coll., on Water Mains and Sewerage Systems for Public Use and on amendment to other acts (Water and Sewage System Act) and Act No. 164/2001 Coll., on the Natural Healing Sources, Sources of Natural Mineral Waters, Natural Spas and Spa Sites and on the amendments to related acts (Spa Act)	Approximation to the European water law.
Act No. 449/2001 Coll. on Hunting	Rules for hunting with regard to the environmental protection.
Act No. 477/2001 Coll. on Packaging and Packaging Waste (Act on Packaging)	regulates packaging and packaging waste management.
Act No. 76/2002 Coll. on Integrated Pollution Prevention and Control, the Integrated Pollution Register and amending some acts (Act on Integrated Prevention)	Transposition of EC directive on IPPC.
Act No. 86/2002 Coll. on Air Protection and on amendment to some other Acts (Act on Air)	Approximation of EC legislation in air protection.
Act No. 162/2003 Coll. on Conditions of Operating Zoological Gardens and on amendments to some related acts (Act on Zoological Gardens)	regulates the conditions of ZOOs according to EC directives.
Act No. 356/2003 Coll. on Chemical Substances and Chemical Preparations and on an amendment to certain other acts	Approximation of EC “chemical” legislation.

Environmental Law of the European Period

The most important legal regulations of the European Period

Regulation	Philosophy
Act No. 218/2004 Coll., amending Act No. 114/1992 Coll., on Nature and Landscape Protection, as amended, Act No. 50/1976 Coll., on Zone Planning and the Building Code (Building Act), as amended, and Act No. 219/2000 Coll., on the Property of the Czech Republic and Its Appearance in Legal Relations in the Area of Property Registration, as amended (Amended Nature and Landscape Protection Act)	implemented the European network of protected landscape areas NATURA 2000 and the EC directives on habitats and protection of birds, etc.
Act No. 78/2004 Coll. on Handling of the Genetically Modified Organisms and Genetic Products	Harmonisation with the EU.
Act No. 93/2004 Coll., amending Act No. 100/2001 Coll., on Environmental Impact Assessment, and on amendments to some related acts (EIA Act)	implements the EC directive on SEA
Act No. 100/2004 Coll., on Trade in Endangered Species of Wild Fauna and Flora	New regulation for trade in endangered species of wild fauna and flora.
Act No. 695/2004 Coll. on Trading Allowances for the Emission of Greenhouse Gases and amendments of some related acts	introduced the trade in allowances for CO ₂ emissions in large polluters in compliance with EC directive.
Act No. 180/2005 Coll. on the Promotion of Electricity produced from Renewable Energy Sources and on amendments of some acts (Act on Promotion of Renewable Sources Utilisation)	introduced a high support to the renewable sources.

Organisation and Institutional Arrangement to Environmental Protection

Beginnings of Integrated State Administration of the Environment

The foundation of the Ministry of the Environment on 1 January 1990 was a fundamental change in the institutional and organisation arrangement of the environmental protection in the Czech Republic.

The so-called gestion system of environmental protection had existed since 1970. Different departments, usually under different ministries were responsible for the protection of the environmental components. This system was insufficient, incomplete, fragmented and dependant on interests of the production sectors. The establishment of the Ministry of the Environment (hereinafter also referred to as MoE) as the central inter-departmental state administration body was indispensable to enforce changes in environmental protection.

In compliance with the competencies provided by Act No. 388/1991 Coll., the State Environmental Fund was established. This body unified the existing Air Protection Fund and the State Fund of Water Management. Act No. 282/1991 Coll. established the Czech Environmental Inspectorate which replaced two organisations, the Czech Technical Inspectorate of Air Protection and the Czech Water Management Inspectorate.

The Federal Committee for the Environment, headed by Ing. Josef Vavrousek, played an important role of environmental protection at the federal level, although the institution existed for two years only (July 1990–July 1992).

On 1 August 1990 the Ministry of the Environment became responsible also for the protection of Agricultural and Forest land Fund, geological survey, protection of mineral resources and environmental supervision over mining. At the same time the Ministry ceased to be responsible for water and sewage piping systems.

Table 3.5

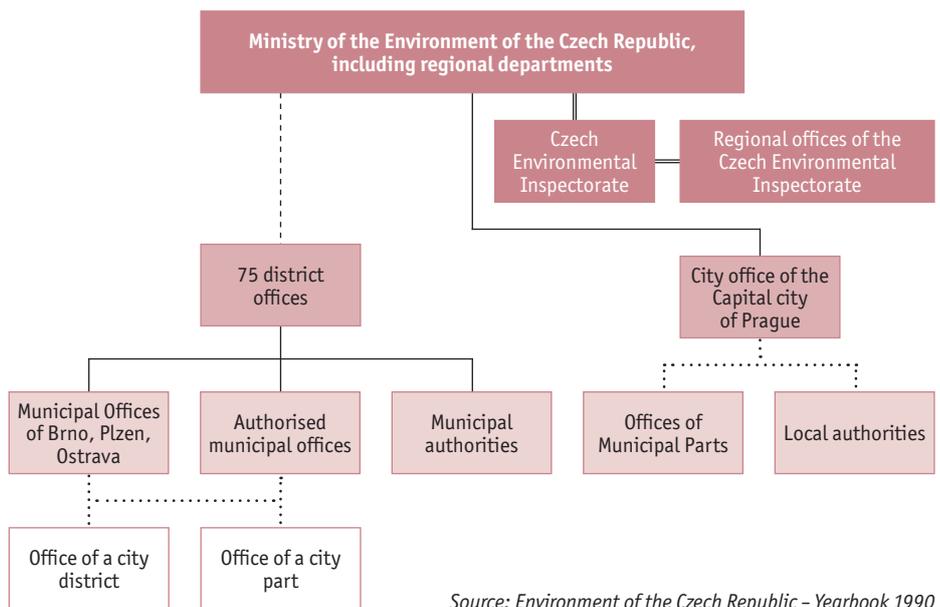
All European regulations apart from those concerning noise pollution have been transposed into the Czech legal system. The most complicated preparatory work (at the European level with the participation of Czech experts) has been doing in the area of formulating REACH, a system of disposal of chemical substances.

Pursuant to Act No. 2/1969 Coll. of December 1989 the Ministry of the Environment became “a body of the state supervision over the environment, a central state administration body for water management, air protection, nature conservation and zone planning and building rules, as well as for technical and economic issues of waste disposal. To support the management and control role of the Government of the Czech Socialist Republic the Ministry of the Environment coordinates activities of all ministries and other state administration bodies concerning the environment. The Ministry of the Environment provides a uniform information environmental system, including monitoring of the whole territory of the Czech Socialist Republic. The Ministry of the Environment administers the Fund of the Creation and Protection of the Environment of the Czech Socialist Republic. The Czech Technical Inspectorate of Air Protection, the Czech Water Management Inspectorate and the Czech Hydrometeorological Institute are subordinated to the Ministry of the Environment.”

Fig. 3.1

Organisation table of the state administration under the competence of the Ministry of the Environment of the Czech Republic in 1990

- Central level of the state administration
 - The 2nd level of regional state administration
 - The 1st level of the state administration is made up by almost 6,000 municipalities of which 365 (both cities and municipalities) are authorised, and Brno, Plzen and Ostrava
 - Stupeň vyplývající z nedořešeného postavení stávajících statutárních měst Brna, Plzně a Ostravy
- překlad**
- relations of superiority/subordination
 - relation of superiority/subordination of the state administration in a given area
 - relations resulting from Article 7 of Act on District Offices and Article 21 of Act on Municipalities
 - relations resulting from the status of the cities



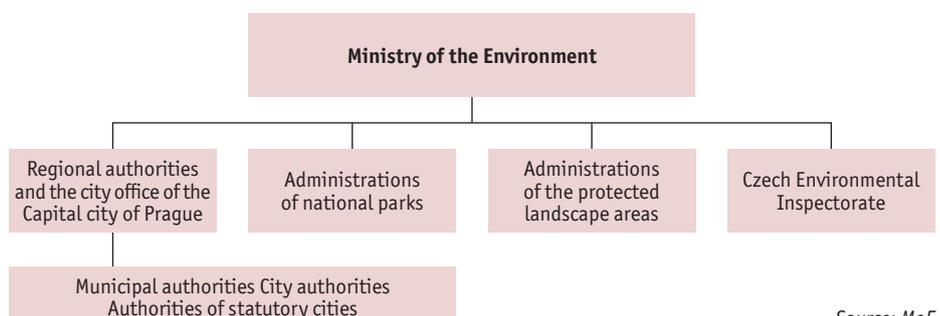
Source: Environment of the Czech Republic – Yearbook 1990

The Federal Committee for the Environment as central body of state administration was established on the basis of the constitutional Act No. 296/1990 Coll. Its activities were controlled by the Committee Meeting consisting of representatives of the Federation and the republic authorities.

The Federal Committee for the Environment elaborated the state environmental policy, determined the way of its implementation, coordinated the land use planning and building code, as well as international cooperation.

Fig. 3.2

Structure of the state administration in environmental areas as of 1 January 2005



Source: MoE

As of 1 January 1991 national committees of all levels were cancelled. Municipal and local committees were replaced by municipal and city councils, district offices replaced district national committees and their heads are appointed and recalled by the Minister of the Interior. Regional national committees were cancelled without being replaced by substitute bodies which resulted in certain problems. Municipalities, cities and district authorities had to deal with a great number of issues of environmental protection. The Ministry of the Environment established regional departments in some cities. These departments are to review decisions of local authorities. In addition to Prague, which was the seat of the environmental department for Prague and Central Bohemia, departments were established in the region of Ceske Budejovice, Chomutov, Plzen, Liberec, Hradec Kralove, Brno, Olomouc and Ostrava.

The Czech Environmental Inspectorate has been responsible for forest and air protection, waste management, nature conservation and landscape protection since 1 June 1992.

In July 1992 the Federal Committee for the Environment was cancelled in relation to the forthcoming split of the Czech and Slovak Federative Republic. Powers of the Committee were transferred to the MoE effective 1 January 1993. Competencies of the MoE regarding land use planning and building rules were transferred to the Ministry of Economy on 1 November 1992. On 1 January 1993 the MoE became responsible for the state administration of forest management (instead of the hitherto responsibilities for forest land resources), hunting and fishing in national parks.

Environmental State Administration during the 1990s

The increase in binding legal regulations resulted in expanding of competencies and responsibilities of environmental bodies of the state administration. On the other hand, the Ministry of the Environment lost some of its powers during the 1990s. On 1 January 1996 forest management with the exception of the national park administration was transferred under the Ministry of Agriculture, and effective 1 January 1997 also the management of Povodí, a. s. (river basin companies managing the basins of the Labe, Vltava, Odra, Ohře and Morava rivers were later changed to state organisations).

The Czech Environmental Inspectorate is also structured according to regions. The central office is located in Prague, regional offices were established in Prague, Ceske Budejovice, Plzen, Usti nad Labem, Liberec, Hradec Kralove, Havlickuv Brod, Brno, Olomouc and Ostrava. The seats of the regional inspectorates were not identical with the seats of regional departments of the Ministry of the Environment, which caused several problems at the performance of state administration. Since 1999 the Czech Environmental Inspectorate has been responsible for supervision of management of chemical substances and genetically modified organisms. Also the protection of ozone layer, accident prevention and issues related to packaging fall within the scope of its activity.

Within the reform of the public administration in the Czech Republic on 1st January 1999 13 new regions were established; the Czech capital, Prague was proclaimed region. As of 31st December 2000 all the district authorities were cancelled and their competence in environmental protection was delegated to the regions and authorized municipal authorities. Apart from regions there have been also departments for execution of the state administration of the Ministry of the Environment serving as referring bodies for regional authorities and the Czech Environmental Inspectorate.

Amended Act No. 114/1992 Coll., on Nature Conservation and Landscape Protection from 2004 implemented the European system of nature conservation NATURA 2000 into the Czech legal system. The Administration of Protected Landscape Areas has been changed to the Nature Conservation Authority, an organisational state unit and an administration body. The national parks have been also granted the status of administrative bodies – the Giant Mountains, the Šumava Mountains, Podyjí and České Švýcarsko.

Present

Current institutional system of environmental protection of the Czech Republic is shown in fig. 3.2.

Professional support to public administration of the environment protection

The following supporting institutions operate (or have operated over the past 15 years) within the environmental section:

- 1) **CENIA, Czech Environmental Information Agency** (<http://www.cenia.cz>), former **Czech Environmental Institute (CEI)** – until 1990 the Rationally Experimental Laboratory (REL), transformed to the Centre of Environmental Information. The CEI was established on 1 April 1992 and became the main environmental information centre in the Czech Republic. The Centre also published the Statistical Yearbook of the Environment of the Czech Republic, a joint publication of the environmental sector and the Czech Statistical Office. The Czech Environmental Institute was also active in areas not supported by other research institutions of the environment (environmental economy and environmental education). CENIA was established on 1 April 2005 on the basis of the CEI. The objective of CENIA is to form and administer the departmental system to develop environmental information, continuously monitor and identify information needs and evaluate information within the Unified Information System on Environmental Issues). A part of CENIA is also the Agency for Integrated Prevention, active in the area of industrial ecology pursuant to the Act on Integrated Prevention. A specific information source provided by CENIA is the Integrated Pollution Register.
 - 2) **Czech Hydrometeorological Institute** (<http://www.chmi.cz>), established in 1954, was based on the State Meteorological Institute established in 1919. This institute is active in three main areas – meteorology, climatology, hydrology and air protection. A central forecasting body is part of the institute providing hydrological and meteorological forecast and warning against risks (intensive rainfall, storms, floods, etc.) The institute also administers a network of stations for metering the amount and quality of surface and ground water, it administers the network of Automatic Pollution Monitoring, Emission and Air Pollution Sources and climatological and hydrological databases. The institute interprets the results of metering and monitoring and coordinates scientific and research activities. It has good international relations (UN ECE, EC, EEA) which are further developed. The Institute has its headquarters in Prague and branch offices in 5 regional cities (Usti nad Labem, Plzen, Hradec Kralove, Brno, Ostrava).
 - 3) **Water Research Institute of T. G. Masaryk** (<http://www.vuv.cz>) was established as the State Hydrological Institute in 1919. The Water Research Institute is a state allowance organisation established by the MoE. Its objective is to provide methodology, consulting and coordination services to the public administration of water protection and management based on target research into water management. In 2002 the institute started to deal with research, development and evaluation of analytical or technological methods of waste management and efficiency of waste treatment with respect to the environment. This agenda became part of a separate organisation – Waste Management Centre (CeHO).
 - 4) **The Silva Tarouca Research Institute for Landscape and Ornamental Gardening** (<http://www.vukoz.cz>) is an allowance organisation of MoE with more than 70-year old history. It deals with research, development and application of methods for landscape protection and formation, especially the role ornamental gardening in landscape management. The institute also solves projects of complex revitalisation of important parts of the landscape in order to preserve its cultural and natural heritage, evaluation and use of the plant gene pool and is interested in research into renewable energy resources including its production and use.
 - 5) **Agency for Nature Conservation and Landscape Protection of the Czech Republic** (<http://www.nature.cz>), was established in 1995 on the basis of State Institute of Nature Conservation which was divided into the Administration of the Protected Areas of the Czech Republic (since 2004 the Nature Conservation Authority, an important control body of national nature conservation) and the Agency for Nature Conservation and Landscape Protection of the Czech Republic. Agency is an expert institution of the national nature conservation established by the MoE, providing methodology, documentation, information, education, scientific research and consulting of nature conservation and landscape protection of the Czech Republic. The Agency creates and maps NATURA 2000, administers the Central Register of Nature Conservation, complies with the obligations of the Czech Republic under the Convention on International Trade in Endangered Species and provides protection and care of caves in the Czech Republic.
 - 6) **Czech Geological Survey** (<http://www.cgu.cz>), originally the State Geological Institute of the Czechoslovak Republic, was established in 1919. It is a state allowance organisation and a research institute of the MoE. The organisation collects and processes data on geological structure of the territory, submits the data to administrative bodies for political, economic and environmental decisions. CGS administers the geological information portal (<http://www.geology.cz>) which serves as the main gateway to geological information of the Czech Republic. CGS is a member of international geological organisations such as EuroGeoSurveys, FOREGS and ICOGS.
 - 7) **The Czech Geological Survey – Geofond** (<http://www.geofond.cz>) came into existence gradually from the archives of the research reports, assessments, documentation and maps of the Central Geological Institute in Prague. As a subject, the so-called “Geological Fund” was established in 1952. On 1st January 1975 it was constituted as an independent organisation. The Geofond performs a function of archive, documentation, information and study centre of the State Geological Service in the Czech Republic. It has the head office in Prague and two branch offices in Brno and Kutna Hora.
- All these institutions participate in the development of the Unified Information System on Environmental Issues.

04



In comparison with the countries of the EU15 as well as EU25 the state of the environment has been developing positively in the Czech Republic. This is especially evident in the case of air pollution and greenhouse gas emissions reduction. Nevertheless in comparison with the average values in the EU 15 the Czech Republic has quite a high volume of greenhouse gas emissions per capita; on the other hand it has low water withdrawal and below-average use of pesticides. The share of protected areas in the total area of the country is average. Concerning the forested area, the Czech Republic ranks eighth among the European countries.

At the end of the 20th century environmental protection became an inseparable component of international relations in the political and economical sphere influencing social and cultural issues. The development of the state of the environment in the monitored time period has been positively influenced by the EU-approximation process of the Czech Republic and by the development of multilateral cooperation within international organisations, especially the UN Economic Commission for Europe (UN ECE), the UN Environmental Programme (UNEP), the UN Educational, Scientific and Cultural Organisation (UNESCO), and the Organisation for Economic Cooperation and Development (OECD).

The Czech Republic became a contracting party of most of important global and regional multilateral agreements and established an effective system of bilateral cooperation with European as well as developing countries. It transformed from a country receiving international aid into a reliable provider, including aid in the environmental area.

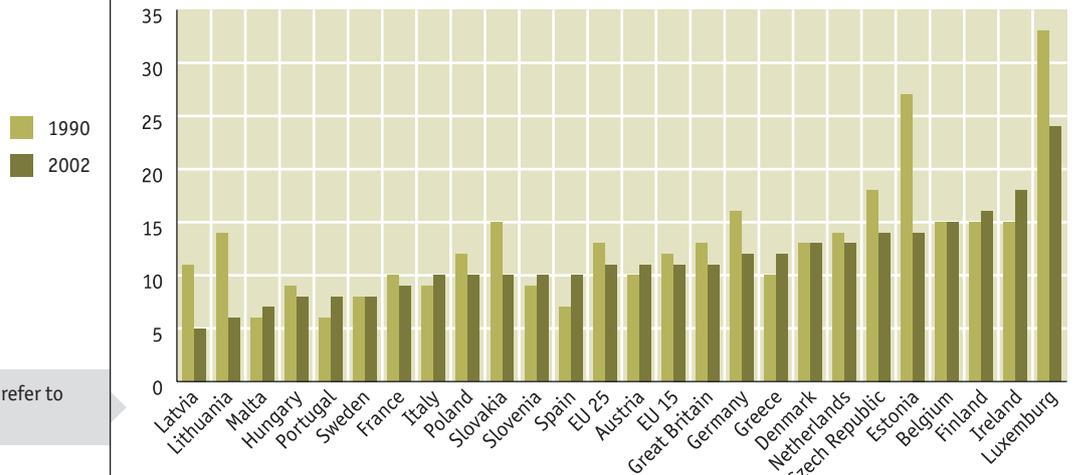
Climate System of the Earth

In the early 1990s, greenhouse gas emissions in the Czech Republic were among the highest in Europe (see graph 4.1.) In the period monitored, there was a substantial fall in emissions by 4 tons of CO_{2ekv} per capita (comparisons were based on the latest data, so most comparisons are made between 1990 and 2002), which is double the EU25 average and four times greater than the reductions found in the EU15 countries. The reduction in greenhouse gas emissions in that period was by 17.7% higher than what the Czech Republic agreed to under the Kyoto Protocol.

According to the outlook for greenhouse gas emissions included in a book by the European Environment Agency called "Analysis of Greenhouse Gas Emission Trends and Projections in Europe 2004" published in 2004, which takes into account the reduction so far implemented to encourage reductions, there will be a further drop in the total emissions between 2005 and 2010 by 4.3% to 134.6 m tons of CO_{2ekv} in 2010.

Graph 4.1

Greenhouse gas emissions in equivalents of CO₂ per capita of the EU15 Member States for 1990 and 2002 (t/capita)

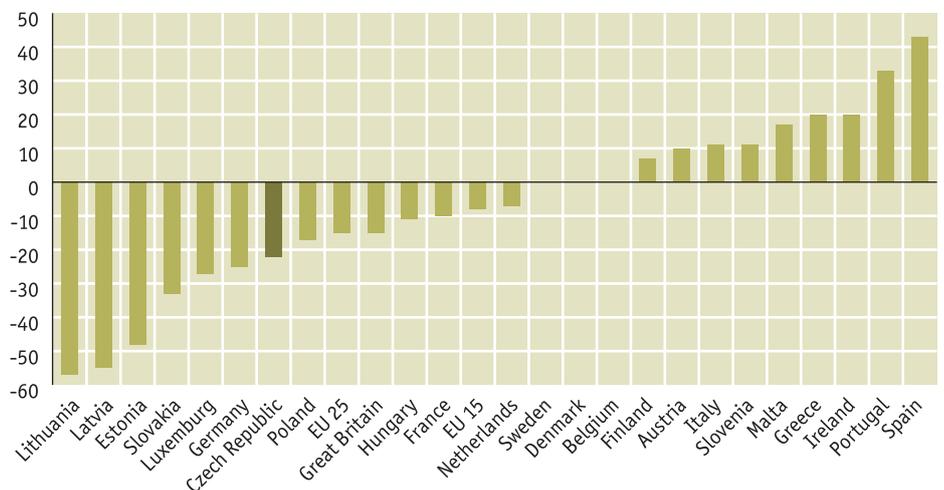


For Malta and Poland, the data shown refer to 2000 and 2001 respectively

Source: GHG inventory for the UNFCCC, EEA

Graph 4.2

Relative change in CO_{2ekv} emissions across the EU states in 2001, the basic year 1990 (%)



Source: GHG inventory for the UNFCCC, EEA

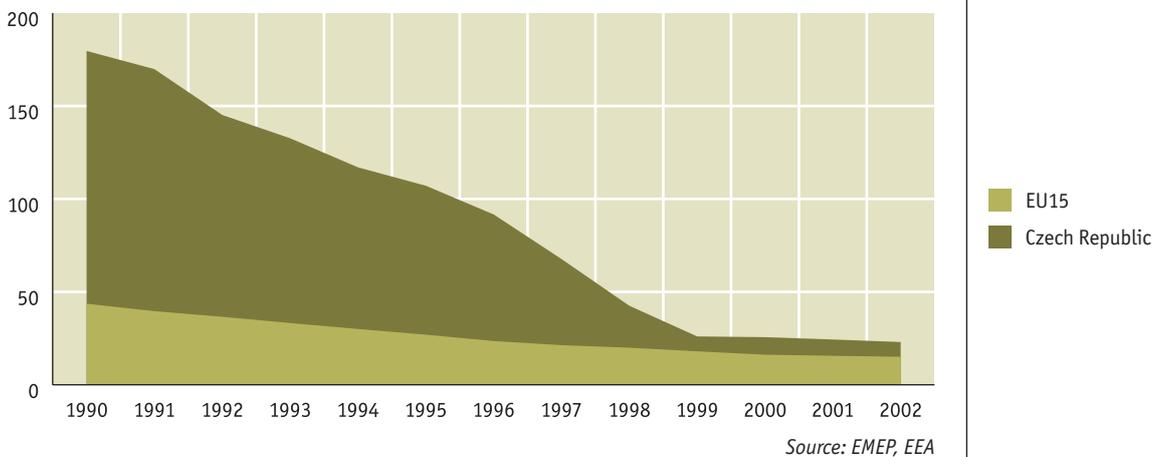
Air

SULPHUR DIOXIDE EMISSIONS (SO₂)

There was a substantial fall in air pollution in the Czech Republic over the period monitored. SO₂ emissions, which amounted to about 1.8 m tons in 1990 (178.5 kg SO₂ per capita), had dropped by 86 % by 1999, with the decreasing trend continuing, although more slowly, in the years that followed. The reduction in SO₂ emissions was bigger than in the EU 15 countries over the same period (graphs 4.3 and 4.4.).

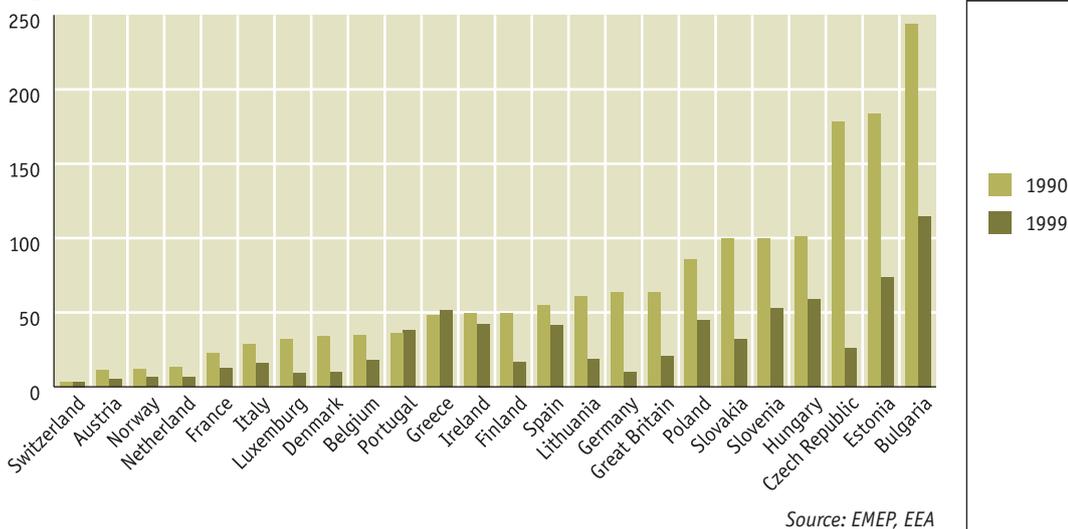
There was a gradual reduction in the EU 15 countries whereas the SO₂ reduction between 1996 and 1999 in the Czech Republic was a steep one. What contributed most to the reduction was the fact that limit values were imposed on emissions released by major power plants and heating plants as part of measures under the Act No. 309/1991 Coll.; huge investments were made to modernise coal-fired power plants and to introduce desulphurisation systems. Money received from emission charges was used to fund the reduction in emissions released by minor sources. Although the 1990s saw a drop in SO₂ emissions in most European countries, it was only Germany that could boast of a similar rate as the Czech Republic.

The EU15 and the Czech Republic's emission trends for SO₂ between 1990 and 2002 (kg/capita.year)



Graph 4.3

SO₂ emissions per capita in several European countries for 1990 and 1999 (kg/capita.year)



Graph 4.4

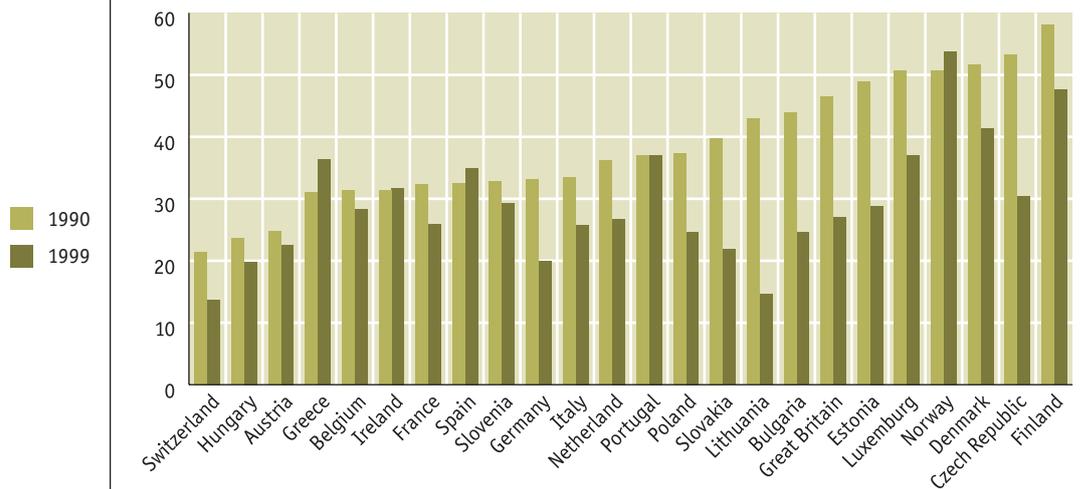
NITROGEN OXIDES EMISSIONS (NO_x)

There was a reduction in NO_x emissions of 58 % between 1990 and 2002, though since 1998 the trend has stagnated, especially due to the thriving car traffic that has made up for the reductions in emissions released by stationary sources. In 1990, the Czech Republic was one of the major sources of NO_x emissions among European as well as OECD countries (53.2 kg NO_x per capita), whereas the above-mentioned reduction made the 1999 nitrogen oxide emission figures (30.4 kg NO_x per capita) fall to only slightly above the EU 15 average (27 kg NO_x per capita, see graph 4.5.).

Between 1990 and 2002, the emissions of other pollutants (NMVOC – non-methane volatile organic compounds, NH₃, CO) dropped to less than half the 1990 number, which is a more significant drop than that in the EU 15 countries (see table 4.1).

Graph 4.5

NO_x emissions per capita in selected European countries for 1990 and 1999 (kg/capita.year)



Source: EMEP, EEA

Table 4.1

The EU 15 and the Czech Republic's emission trends in percentages, data for SO₂, NO_x, NMVOC and CO between 1990 and 2002 (% , base year 1990 = 100 %)

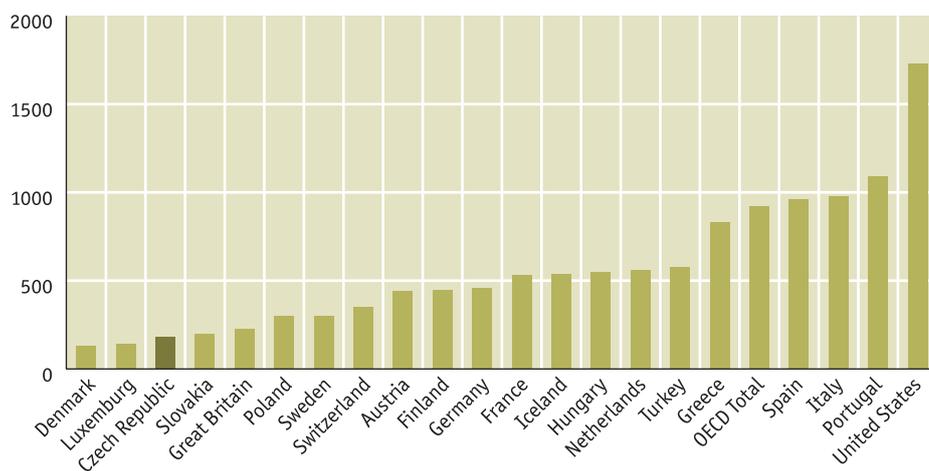
Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Czech Republic													
SO ₂	100	95	82	76	68	58	50	37	23	14	14	13	13
NO _x	100	96	91	83	69	68	67	64	59	58	59	61	58
NMVOC	100	89	83	78	70	66	66	63	55	53	51	50	46
CO	100	94	93	88	89	79	81	75	61	57	52	52	43
EU 15													
SO ₂	100	91	84	76	69	62	54	49	46	41	37	36	35
NO _x	100	99	97	92	89	86	85	81	79	77	73	71	70
NMVOC	100	97	94	89	86	83	80	77	75	71	64	61	58
CO	100	96	93	88	83	79	77	74	70	66	62	59	55

Source: EMEP, EEA

Water

There is slight pressure on accessible water sources in the Czech Republic. The consumption of drinking water dropped from 3.6 mil m³ in 1990 to 1.9 mil. m³ in 2002; about 80% of which is surface water. The yearly per capita consumption (180 m³ in 2002) of the Czech Republic is less than half the OECD average (see graph 4.6.) The biggest fall was in water used for cooling in power plants (it accounted for 44.8% of the surface water used in 1995) and in industry (27,9%). Water for the public use was 23.3% of surface sources and 70.8% of underground sources in the mid-1990s.

Total water consumption per capita in selected OECD countries in 2002 or in the latest year available (m³ per capita)



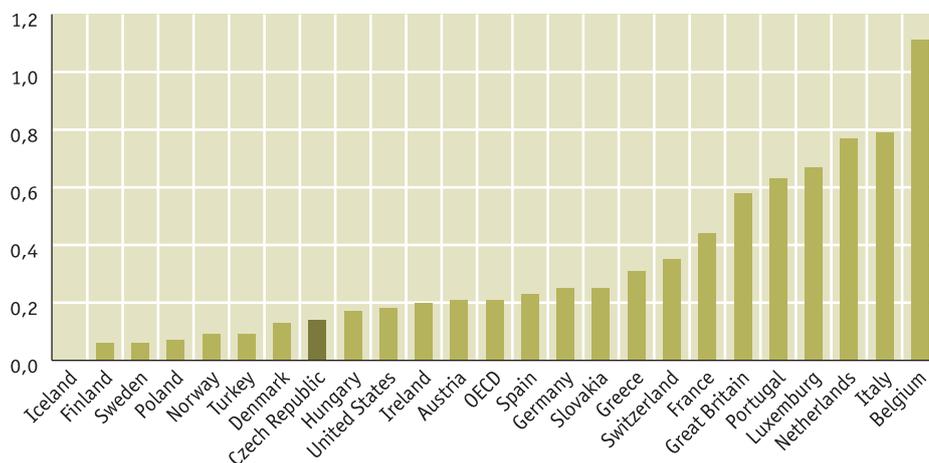
Source: OECD

Graph 4.6

Soil

The consumption of pesticides was well below the OECD average in 2003 and amounted to 0.14 tons per km² of arable land (graph 4.7.) Since 1990, the consumption has dropped by more than 100 kg per km² of arable land.

Pesticide use (t/km² of arable land) in 2003 or in the latest year available



Source: OECD Environmental Data Compendium

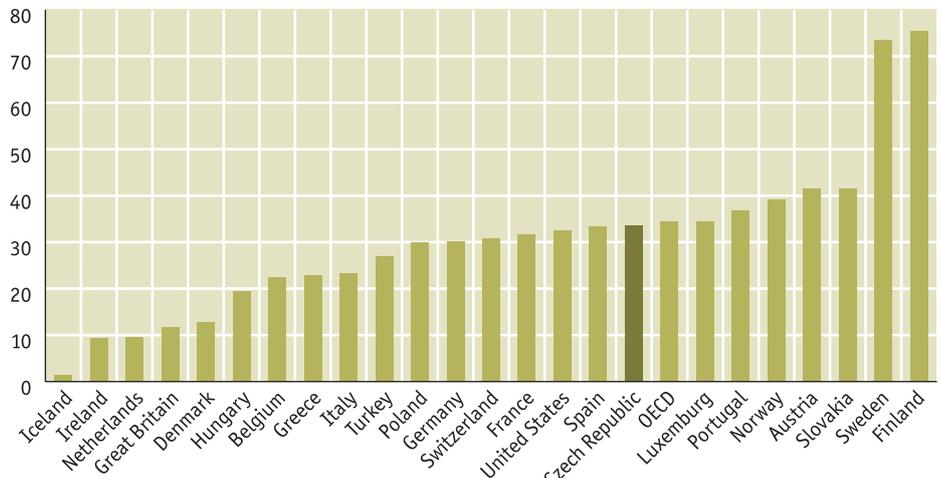
Graph 4.7

Forests

The Czech Republic is eighth in Europe in the size of forest area with more than one-third of the country covered by forests (graph 4.8.) This equals the OECD average, which is higher due to some non-European member states (Canada, Japan). The size of the forest area hardly changed between 1990 and 2003, as there was only a slight increase of 140 km² (0.18% of the total area).

Graph 4.8

Forest areas (% of total area) in 2003 or in the latest year available



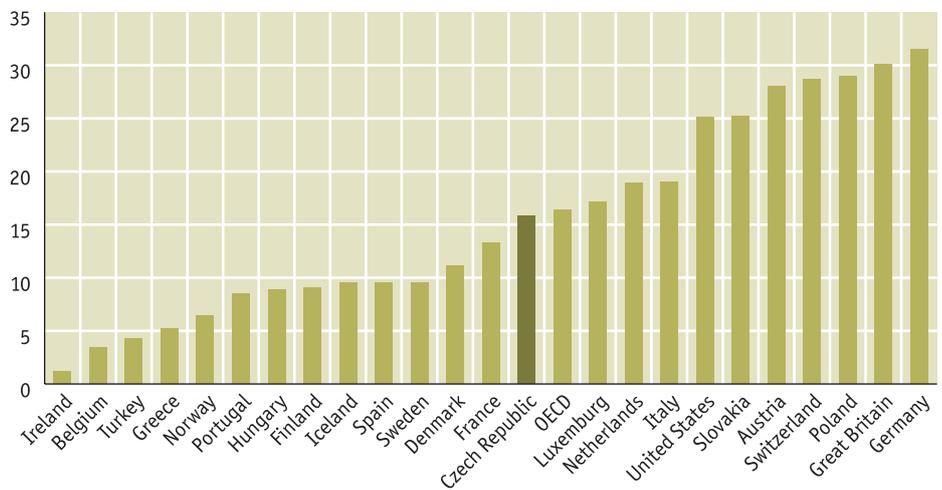
Source: OECD Environmental Data Compendium

Protected Areas

The size of protected areas (both large and small specially protected areas) in the Czech Republic is equal to the average of European states (graph 4.9).

Graph 4.9

Protected areas (% of total area) in 2003 or in the latest year available

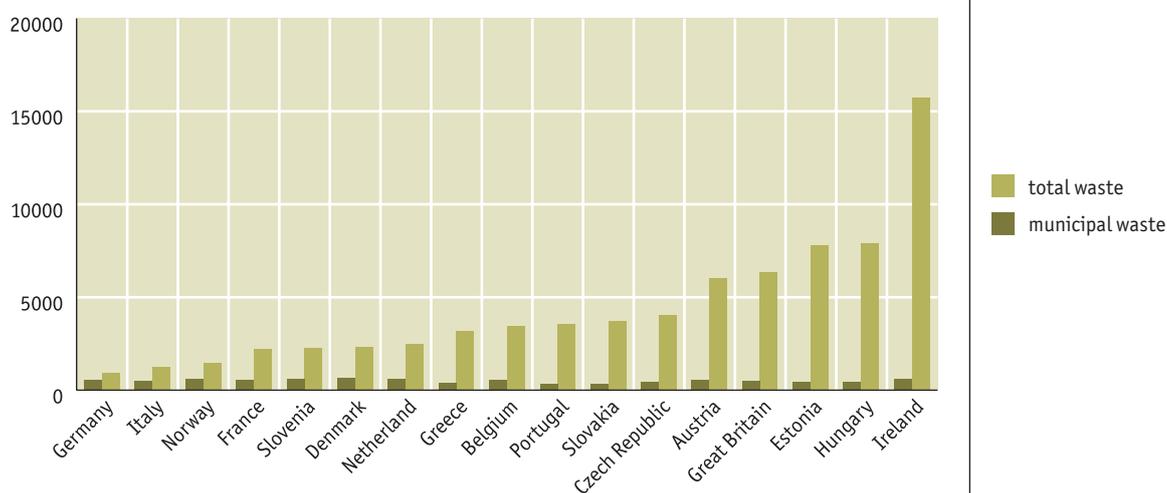


Source: OECD Environmental Data Compendium

Waste

The volume of municipal waste (415 kg per capita in 2000) is at the level of the EU 15 average; the total production of waste, including municipal, industrial, energy, mining and agricultural waste, amounted to 4 tons per capita in 1999 and places the Czech Republic among the top ten biggest producers of waste in Europe (see graph 4.10.).

Total waste generation and municipal waste generation in EU member states (kg per capita, 2002 or latest year available)



Source: EEA, Eurostat

Graph 4.10

International Cooperation

International Cooperation in the 1990s

In the first half of the 1990s, the Czech Republic's foreign cooperation on environmental issues mainly included bilateral intergovernmental agreements. A number of these agreements (with Belgium, Denmark, France, The Netherlands, Norway) on the cooperation on environmental protection were signed as European environment ministers met at a conference called Environment for Europe held in Dobris between July 21 and 23, 1991. What was extremely important for the country's involvement in international organisations was the entry into the OECD in 1994, followed by preparations for EU accession.

The Czech Republic on Its Way to the European Union

On October 4, 1993 the European Agreement on the Association of the Czech Republic with the European Communities was signed in Luxemburg. The agreement was ratified by the European Parliament on October 27, 1993 and came into force once ratified by the Czech Parliament on December 8, 1993. A similar agreement made on the federal level on December 16, 1991, never came into force as the federal parliament had failed to ratify it by the time Czechoslovakia ceased to exist.

Under this agreement, the Czech Republic was obliged to harmonise Czech legislation with that of the EC (in 1994, the rate of harmonisation of the environmental legislation between the Czech Republic and the EC was about 64 %).

In 1998, the Ministry of the Environment established the Office of Ministry Representative in charge of the EU accession; in March 1999, the Department of European Integration was set up, and its agenda was divided into screening (reviews of the harmony between Czech and European law), negotiation (Department for Negotiation with the EU) and other activities of information, project and bilateral cooperation (Department for European Cooperation).

The programme of preparation for EU accession was outlined in the Environmental Approximation Strategy (approved by the Czech government in Resolution No. 677 of June 28, 1999) that was substituted with a much more detailed document in 2000 – the Environment Implementation Plan (approved by the government in Resolution No. 772 of July 26, 2000) that brings together the specific tasks involved in environmental *acquis communautaire*.

Before joining the European Union, the Czech Republic had joined the European Environment Agency (EEA) and the European Information and Observation Network (EIONET). Negotiations between the Czech Republic and the EC began in March 1999, together with other candidate countries. The result was that on January 1, 2002 the Contract for joining the EEA came into effect. The EEA was the first EU agency that the Czech Republic officially joined.

The Czech Republic's involvement in the European system of collecting, evaluating and providing environmental information prior to EU accession was designed to enhance the conditions for harmonising national environmental information systems with the European ones and to facilitate the approximation process between the Czech Republic and the EU.

Chapter 22 – Environment, both professionally and financially one of the major challenges on the Czech Republic's way to the EU, was preliminarily closed on June 1, 2001; the final end came in November 2002 with an amended common position approved by Directive No. 2001/80/EC on limits imposed on emissions of pollutants released by large combustion plants. The negotiations over EU accession were officially closed at the Copenhagen EU summit (held on December 12 and 13, 2002).

The Accession Treaties between the EU Member States and 10 Candidate Countries were signed on April 16, 2003 in Athens and came into effect on May 1, 2004.

With regards to the environment, the EU agreed to three transition periods for the Czech Republic (i.e. objectives required are given later deadlines) for three directives only, which is below the average of all accession countries:

- According to the Directive of the European Parliament and Council No 94/62/EC, the Czech Republic will fulfil the objectives concerning the use and recycling of packaging materials by December 31, 2005.
- According to the Directive of the Council of the EC 91/271/EEC on municipal water treatment, the Czech Republic shall not be obliged to observe the requirements concerning sewage systems and municipal waste water treatment until December 31, 2010.
- With regards to the compliance with the Directive of the European Parliament and Council No 2001/80/EEC on limitation of emissions into the air from large combustion plants, the EU agreed to a transition period up to December 31, 2007 for two specified plants.

Economic instruments of pre-accession aid by the European Community in the field of the environment

PHARE FUND

The Phare fund is an economic instrument of the European Community aimed at supporting reforms in Central and Eastern European countries. Launched in 1990, the environment-oriented programme was composed of two parts: national (projects coming from the Czech Republic only) and regional (common projects designed by several countries).

The budget of the National Programme Phare in the Czech Republic was 19.826 mil. ECU. The programme helped conduct 13 projects designed to protect air, improve the conditions of waterways, hazardous waste treatment and drinking water quality, and to increase the safety of nuclear power plants and to enhance health care and education.

In the regional programme Phare, the Czech Republic participated in nine projects, e.g. "the Black Triangle", aimed at improving the environment in the northern part of the country and the neighbouring Polish and German districts. Another important regional project under the Phare programme that included the CR was a project called CORINE (Coordination of Information on the Environment), supporting the integration of information systems across Europe. There were three subprojects – Land Cover (remote land survey), Corinair (emission database) and Corine Biotopes (review of plant communities). The total budget covering all countries involved was 5.5 mil. ECU.

ISPA

The instrument of financial aid ISPA (Instrument for Structural Policies for Pre-Accession) is designed to support investment projects contributing to better infrastructure of the environment as well as transport networks of trans-European corridors (TEN). Candidate countries were given investment help as they implement the EC legislation, particularly in air and water pollution and waste treatment. Between 2000 and 2006, the Czech Republic has been given a yearly sum of about 70 mil. ECU, and about ¼ of that has been used for environmental projects.

Multilateral Cooperation in International Organisations

UN ECONOMIC COMMITTEE FOR EUROPE (UN ECE)

The first conference of ministers called “The Environment for Europe” held in Dobris on June 21 to 23, 1991, was the idea of Czechoslovak Minister of the Environment Josef Vavrousek. The conference called for a complex review of the European environment and approved a plan called “Programme of the Environment for Europe”. An initial comprehensive report was made and called “The Environment in Europe: A Dobris Assessment”. “Europe’s Environment – The Dobris Assessment” programme was further developed and coordinated by a working group created in the UN ECE in late 1993.

The Czech Republic participated in all five conferences for the environment ministers of the UN ECE region (Dobris, Luzern, Sofia, Aarhus, Kiev).

These are the multilateral conventions that the CR joined (under the UN ECE):

- The Convention on Long-Range Trans-Boundary Air Pollution (CLRTAP)
- The Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (the Aarhus Convention)
- The Convention on the Protection and Use of Trans-Boundary Watercourses and International Lakes
- The Convention on the Transboundary Effects of Industrial Accidents
- The Convention on Environmental Impact Assessment in a Trans-Boundary Context (The Espoo Convention)

UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

The cooperation with UNEP, which controls and coordinates international environmental matters under the UN on a high level. The CR is a member of the Executive Secretary, the highest body of the UNEP, for many voting periods.

The most important environmental conventions under the UNEP in which the CR is contracting party:

- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- The Vienna Convention for the Protection of the Ozone Layer
- The Montreal Protocol on Substances that Deplete the Ozone Layer (as either adjusted and/or

amended in London 1990, Copenhagen 1992, Vienna 1995, Montreal 1997, and Beijing 1999)

- The Basel Convention on the Control of the Transboundary Movement of Hazardous Wastes and Their Disposal
 - The Convention on Biological Diversity
 - The Bonn Convention on Migratory Species
 - The Stockholm Conventions on Persistent Organic Pollutants
 - The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
 - The Convention for the Regulation of Whaling
- The CR is a contracting party of two important global conventions:

- United Nations Framework Convention on Climate Change (UNFCCC)
- United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa

United Nations Educational, Scientific and Cultural Organisation (UNESCO)

Under UNESCO two conventions relevant to the CR have been contracted:

- World Heritage Convention Concerning the Protection of World Cultural and Natural Heritage
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)

ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD)

In the early 1990s, cooperation between the Czech Republic and the OECD developed in a programme called “Partners in Transition” designed for Central and Eastern European countries, and the main emphasis was laid on the country’s accession to the OECD. In October 1993, The Memorandum on the Co-operation Between the OECD and the Czech Republic, was signed. The first evaluation of the environment in the Czech Republic was carried out in December 1994, with the country joining the OECD in December 1995.

Between 1997–1999, a thorough evaluation of the politics, state and development of the environment was carried out according to OECD principles and recommendations under a scheme called “Environmental Performance Review”. As a result, 55 recommendations were made, and these aim to enhance the state and politics of the environment.

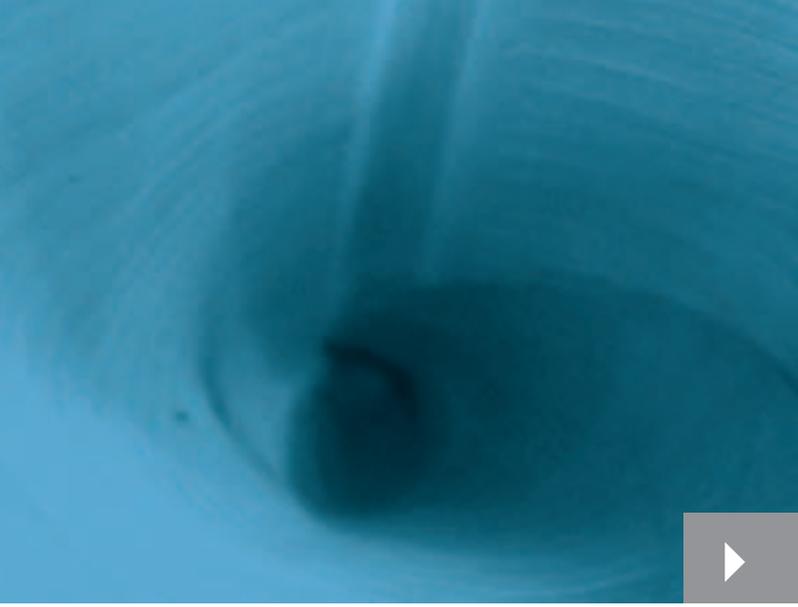
In April 2003, the sustainable development of the CR was reviewed by the OECD. The evaluation included two areas focusing on the environmental pillar (reduction in greenhouse gas emissions and reduction in air pollution) as well as one area linked to the social pillar (the sustainability of pension incomes). In 2005 the second evaluation of the state of the environment under the Environmental Performance Review was done.

A recognition of the CR international activities contribution is expressed upon the representatives of the CR being elected into the leading positions of fundamental international organizations and other important international movements:

- 1993–1999 – Regional Environmental Centre: Chairman of the Board of Directors – prof. Bedřich Moldan, member of General Assembly
- 1993–1994 – The United Nations Commission on Sustainable Development (CSD): Vice-chairman – prof. Bedřich Moldan
- 1996–1998 – International Commission for the Protection of the Elbe River: president – Ing. Vladimír Novotný
- 2001–2002 – The United Nations Commission on Sustainable Development (CSD): Chairman – prof. Bedřich Moldan
- 2000–2003 – The Environment Policy Committee (EPOC): Chairman – Ing. Helena Cizkova
- 2002 – International Commission for the Protection of the Danube River: president – Ing. Martina Motlova
- 2002–present – EEA Scientific Committee: Chairman – prof. Bedřich Moldan
- November 2003 – Fifteenth Meeting of the Parties to the Montreal Protocol on the Substances that Deplete the Ozone Layer: President – Minister of the Environment RNDr. Libor Ambrozek
- March 2004 – First Extraordinary Meeting of the Parties to the Montreal Protocol on the Substances that deplete the Ozone Layer: President – JUDr. Jiri Hlavacek

Important was also accession of the CR into the OECD and EU. The leading negotiator in the accession of the CR into the OECD in the field of the environment was Ing. Vladislav Bizek (1994–1995). The leading negotiator in the accession of the CR into EU was prof. Bedřich Moldan (1998–2002).

05



After 1989, the dismal state of the environment in the Czech Republic could not have been improved without a significant increase in the funds spent on its protection. The basis for the significant growth of investment in the environment was laid down by new legislation created after 1989. Not only demanding goals (e.g. the amount of emissions), but also deadlines for the achievement of these goals were determined.

In the 1990s, the amount of investment in air protection was important; after 1998, it was focused on investment in water protection ensuring a pollution decrease. The largest amount of investment in environmental protection was reached between 1995 and 1997 (over CZK 40 billion in 1997) due to events aimed at air pollution reduction (esp. desulphurisation). After 1998, the amount of funds spent on environmental protection was reduced, as the most important environmental problems of the 1990s had been solved.

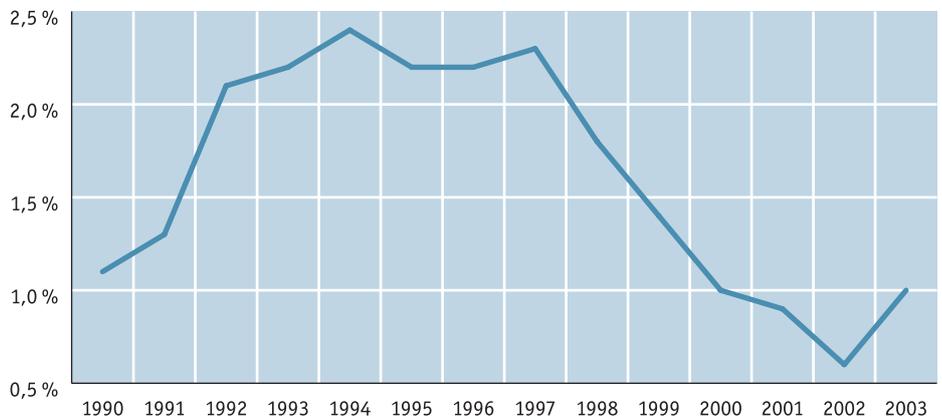
All data in this chapter in current prices (as it is not given differently)

Environmental Investments

In the last fifteen years, over CZK 350 billion have been invested in environmental protection in the Czech Republic, and of that CZK 150 billion has come from central resources. Between 1992 and 1997 the investment in environmental protection reached the highest GDP percentage ever, 2–2.4% (graph 5.1), while it dropped to 0.7% of the GDP in 2002. Since 2002 it seems that the investment has been growing again.

Graph 5.1

Total investment in environmental protection/GDP



Source: Czech Statistical Office (CSO)

The unusual height of investments in the 1990s was especially influenced by the legal deadline of the end of 1998, by which the operators of all the large and medium-size sources of air pollution had to achieve tighter emission limits. Within the scope of this all power plants and large heating plants were dusted off and desulphurised. Such high investments, concentrated in a couple of years, will never be repeated again. At the beginning of the current decade the Czech Republic got into a stage when all relatively „cheap“ measures had been realised and every other improvement was markedly more expensive (the cost curves moved into a non-linear area).

Table 5.1

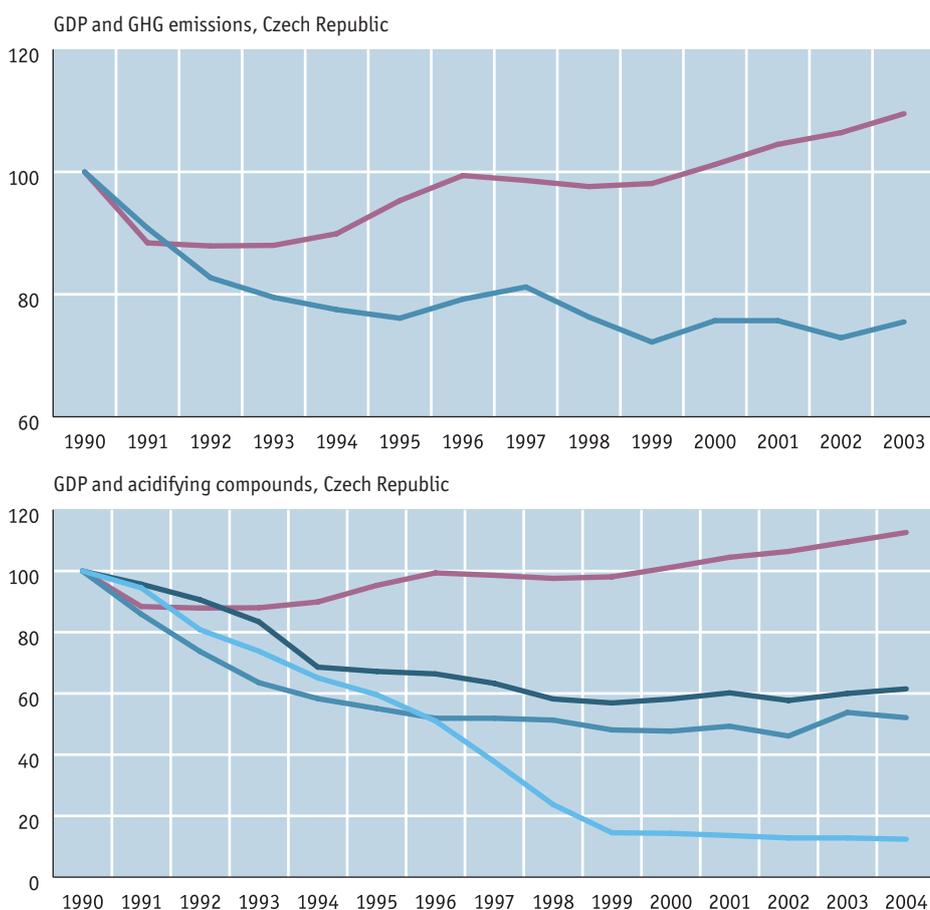
Total investments in environmental protection in the Czech Republic (mil. CZK)

Projects	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
CR Total	3 602	6 048	9 376	16 954	19 890	28 272	32 252	37 036	40 503	35 160	28 956	21 399	19 892	14 919	19 383
Waste water management	2 271	3 268	4 626	7 224	8 715	10 843	10 246	10 011	11 275	8 291	8 839	8 567	8 815	7 034	9 523
Air and climate protection	692	1 688	3 187	5 755	7 876	13 489	17 886	21 475	22 323	20 141	15 762	8 407	7 057	4 149	4 179
Waste management	639	1 092	1 427	3 115	2 893	3 127	2 772	3 449	4 765	4 698	2 597	2 270	1 463	1 236	2 125
Reclamation of land			136	72	109	162	374								
Biodiversity and landscape protection								659	1 081	1 162	1 091	1 549	1 437	511	405
Reduction of noise and vibrations (apart from workplace protection)				788	297	651	974	567	455	313	241	277	632	365	374
Protection and revitalisation of soil, ground and surface water								875	604	555	426	329	488	1 027	2 153
Protection against radiation														15	33
Environmental research and development														132	137
Other activities of environmental protection														450	454

Source: CSO

An issue itself is the new industrial technologies where regular investment within the innovation cycle leads to a lower environmental load in comparison with similar production and older equipment. „Decoupling“ has been relatively strong recently – in other words the level of pollution does not follow GDP growth any more.

Relation between GDP and level of environmental pollution, year 1990 = 100



Source: CHMI, CSO, CENIA

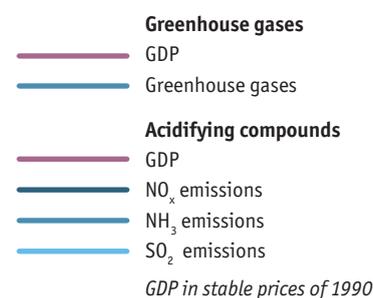
The problem of financial evaluation of the last fifteen years lies in the way in which the funds were used to meet environmental goals. Until 1995 the method of “nominal shares registration” for environmental protection introduced before 1989 had been used. This method did not cover a lot of investment and all non-investment measures. Since 1997 environmental expenditures have been registered according to the EU methodology.

Sources of Financing

STATE BUDGET

The state budget is the most important central source of financing environmental protection projects. Subsidies, refundable aids (free loans) and guarantees for commercial credits are covered by it. The structure of environmental protection costs corresponds to the budget structure issued by the Ministry of Finance from 1997 onwards. The same methodology of monitoring the environmental costs is applied also by the Czech Statistical Office and corresponds to statistical reports used in the EU.

Graph 5.2



According to current methodology, environmental protection activities involve:

- Water protection – waste water treatment plants, storage and accumulation tanks for controlled wastewater discharge, groundwater protection, construction of sludge beds, etc.
- Air and climate protection – elimination of emissions, using of ecological fuels, innovation of industrial technologies with significant or complete removal of emissions, etc.
- Waste usage and disposal – construction of recycling plants for municipal waste, of incinerators, composting plants, landfills, etc.
- Nature conservation and landscape protection – land reclamation, protection against corrosion, landslide and fire, river system revitalisation programme, etc.
- Reduction impacts of physical factors on the environment – reduction of noise, electromagnetic field intensity, radioactive radiation, etc.
- Protection and remediation of soil, ground and surface water including e.g. prevention from pollutant deposition in the soil incl. infiltration into water, prevention from soil contamination and degradation by chemical agents, and land remediation, land protection against corrosion, landslides and degradation caused by physical features, incl. the costs of solving the issue of landslides, costs of geological survey tasks in order to protect the soil, ground and surface water.
- Research and development focus on the protection of air, the climate and the ozone layer, of water, waste disposal, protection of soil and groundwater, reduction of noise and vibrations, protection of biodiversity and the landscape, protection against radiation, etc.
- Other activities to protect the environment include e.g. acquisition of long-term tangible property to prevent floods, education in environmental protection, training exercises, courses.

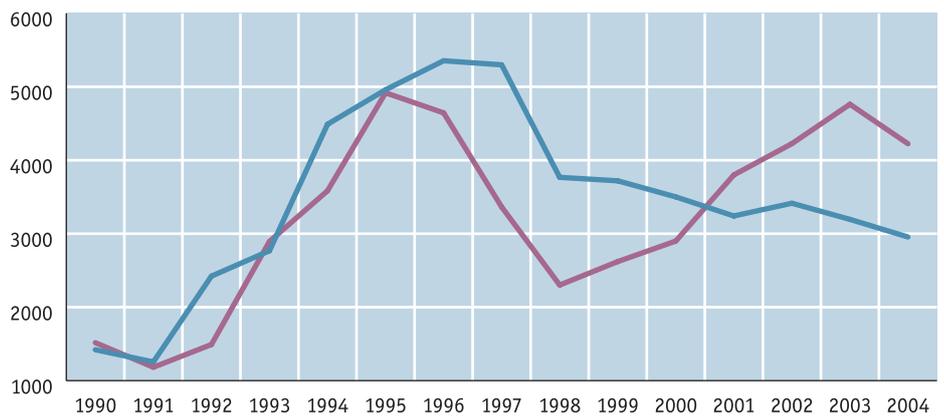
Graph 5.3

— Incomes
— Expenses

STATE ENVIRONMENTAL FUND OF THE CZECH REPUBLIC

To support environmental protection measures, Act No. 388/1991 Coll. established the State Environmental Fund (SEF), which accepted tasks of the former Air Protection Fund and State Water Management Fund. It is the second largest central resource for financing environmental protection. SEF incomes consist of charges for pollution, use of natural resources and a specified part of incomes from penalties for breaching environmental laws imposed by the Czech Environmental Inspectorate. Under Act No. 388/1991 Coll., state subsidies can be granted to SEF – however, this option has not been applied yet. In 1994–1997 SEF was funded by the National Property Fund in the amount of CZK 6.1 billion. This finance was a share of “small” privatisation revenue addressed to the National Clean Air Programme.

Total incomes and expenditures of the State Environmental Fund CR (b il. CZK)



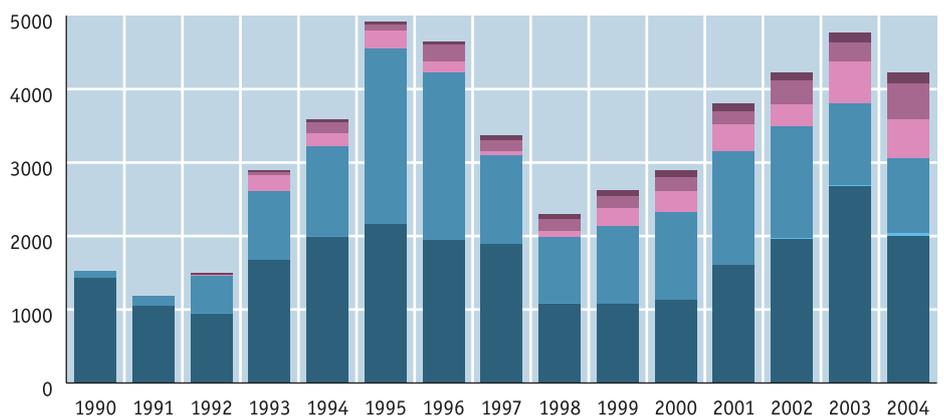
Source: SEF

The SEF has contributed to the implementation of many environmental protection measures in the form of subsidies, loans and contributions to cover partially the interest accrued. The support is intended for measures according to programmes declared annually by the Ministry of the Environment. The areas of support can change according to defined priorities. Since 2002, the SEF has been an implementation agency for EU pre-structural fund ISPA, the Cohesion Fund and the Operational Programme Infrastructure (OPI). By now, the fund has supported 11,665 events and projects, spending more than CZK 45 billion, and thus has become an important tool of environmental policy.

Graph 5.4

■ Others
■ Nature
■ Waste
■ Air
■ ISPA
■ Water

SEF expenses according to the environmental items (bil. CZK)



Source: SEF

NATIONAL PROPERTY FUND OF THE CZECH REPUBLIC

The National Property Fund of the Czech Republic (NPF) founded by Act No. 171/1991 Coll., is another central resource of financing the recovery measures. In the area of environmental protection, it focuses on reclamation related to old ecological burdens in privatised companies. Reclamations of polluted areas, which represent the most serious danger to the environment, are preferred. The NPF will be dissolved as of 31 December 2005 and will be replaced by the Ministry of Finance. By 1 May 2005, NPF had supported 277 events in the area of reclamation, spending almost CZK 24 billion.

Expenditure on environmental protection and drinking water from central sources in the Czech Republic (bil. CZK)

Year	State budget	State funds ²⁾	NPF	Total
1990	3 200	1 900	0	5 100
1991	7 500	1 500	0	9 000
1992	10 700	1 500	0	12 200
1993	9 100	2 900	0	12 000
1994	10 000	3 600	100	13 700
1995	9 201	4 955	818	14 974
1996	8 325	4 645	935	13 905
1997 ¹⁾	4 401	3 269	1 392	9 062
1998	4 732	2 278	2 174	9 184
1999	5 540	2 610	1 768	9 918
2000	5 038	2 884	2 143	10 066
2001	4 314	3 711	2 727	10 752
2002	4 955	4 132	3 230	12 317
2003	5 988	4 723	2 587	13 298
2004	6 614	4 203	3 563	14 380

Source: CSO

LOCAL BUDGET EXPENSES

Local budget expenses, i.e. budgets of municipalities and until 2002 district offices, and regional budgets since 2001, are also used as an environmental protection resource. While state subsidies are granted on the basis of specified and approved programmes or titles, particular expenses are included in the national budget law for a respective year and approved by the Parliament; subsidies of municipalities or regions are granted continuously on the basis of the competence of municipalities or regions. It usually applies to local events – e.g. wastewater discharge and treatment, air protection, waste disposal, soil and groundwater protection, nature and countryside protection and measures related to appearances of municipalities and public greenery.

OWN RESOURCES OF PRIVATE INVESTORS

The most important sources for environmental protection are own resources of private investors. Their share constitutes about two thirds of investment costs spent for this purpose. The collection of funds for specified measures at the level of individual investors was thus one of the main problems in the area of protection of the environment.

Table 5.2

¹⁾ Drinking water expenses have been excluded from the environmental expenses since 1997.

²⁾ Until 1996 only the State Environmental Fund, the State Fund for Soil Fertilization and State Agriculture Intervention Fund.

Note: Until the EU budget structure was adopted in 1997 the data comparability was restricted by a number of changes in the methodology.

Table 5.3

By the end of 1994 environmental investments had not been registered according to the sources of financing.

Acquired investment in environmental protection (bil. CZK)

Year	Total acquired investments	Own resources	Grants and subsidies from public budgets	Grants and subsidies from abroad	Credit, loans, etc.	Other
1995	32 280	17 108	7 276	1 892	4 586	1 418
1996	37 037	22 921	5 659	152	7 138	1 166
1997	40 503	24 843	5 570	277	7 586	2 226
1998	35 160	23 555	3 338	184	6 680	1 402
1999	28 956	21 960	2 572	174	3 566	684
2000	21 400	15 751	2 597	265	2 441	346
2001	19 892	12 465	3 640	589	2 482	716
2002	14 918	9 808	2 190	132	1 713	1 075
2003	19 383	11 189	3 477	604	3 115	998

Source: CSO

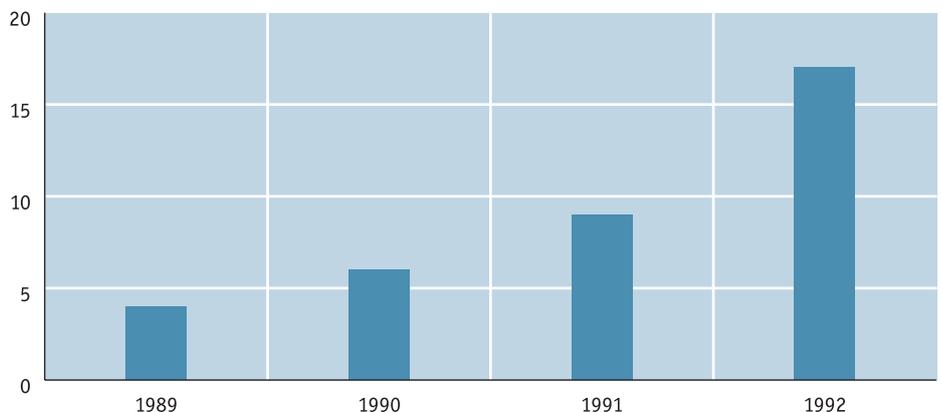
Founding Period (1989–1992)

Between 1990 and 1992 the investment and expenditures into the environment in the Czech Republic increased significantly. The reason was the effort to improve the bad condition of the environment. The total investment volume increased from CZK 3.6 billion in 1989 to CZK 17 billion in 1992 and the dynamics of investment growth proportionate to GDP were the highest in the last 15 years.

In 1991 the State Environmental Fund of the Czech Republic was established and owing to a gradual increase in pollution charges this institution started to support activities and measures of environmental protection.

Graph 5.5

Investment in the environment in the Czech Republic 1989–1992 (bil.CZK)



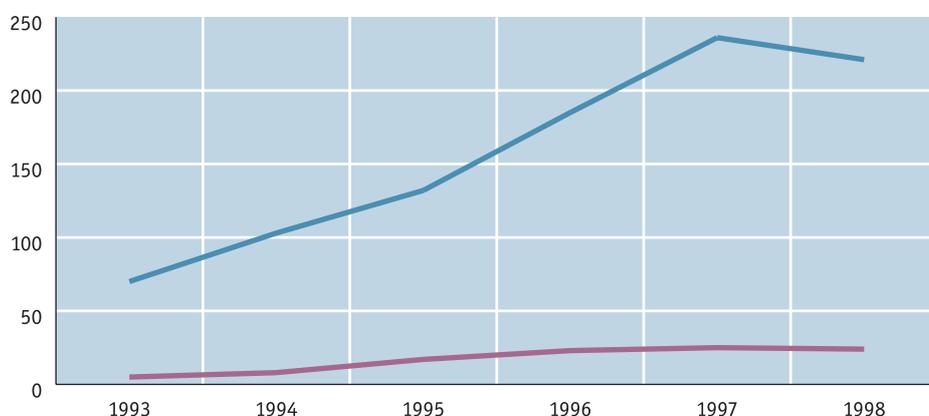
Source: CSO

In 1992 the so-called deferred payment of the charges was introduced. This means that polluters may use the resources to finance directly their environmental investment provided that they take measures with respect to the pollution source. Deferred payments amounting to 40–80% of the total charges were a significant financial resource and a stimulus for implementation of environmental measures.

Implementation Period (1993–1998)

Between 1993 and 1997 investment into the environment was at its peak, amounting to 2.1 to 2.4% of GDP (see graph 5.1). In absolute values it was CZK 20 billion in 1993 with a CZK 40 billion accrual in 1997, which was the greatest amount of the whole assessed period.

Gross fixed capital formation – private resources (bil. CZK)



Source: CSO

The advance of privatisation also meant increased investments paid for by private resources, in other words by companies established in compliance with the Commercial Code. Private investment aimed at air and water protection and waste management. This environmental investment as a share of the gross fixed capital formation is given in graph 5.6. Public investment (or investment goals controlled by municipalities) were aimed at public interest facilities, especially urban water treatment plants, environmental measures concerning municipal heating plants and public institutions (hospitals, schools, military quarters, etc.).

The State Environmental Fund co-financed many environmental measures, especially in the municipal sector. An important stimulus to reduce the emissions of small and medium pollution sources was the National Clean Air Programme financed with CZK 6.1 billion transferred from the National Property Fund to the State Environmental Fund between 1994 and 1997. It was in particular this programme that helped the gasification of more than 2,000 cities and municipalities between 1992 and 2004.

Remediation of old environmental burdens, financed by the National Property Fund, started in 1994 (after the 2nd wave of the coupon privatisation). Since it concerns only the 2nd wave of privatisation, some old environmental damage in companies privatised during the 1st wave has not been removed yet.

Pre-Accession Period (1999–2003)

Between 1999 and 2002 investment in the environment was decreasing, and since 2003 we have been experiencing an opposite trend. The reason for that was to meet the objectives prescribed by air protection law (completion of the desulphurisation programme of coal-fired power plants and heating plants) and a slow growth of investment into a better water quality.

While in 1999 the investment amounted to CZK 29 billion, in 2002 it was CZK 15 billion and in 2003 CZK 19 billion. The biggest expenses have been used for waste water treatment, especially construction of the sewage system and water treatment plants in municipalities and cities in compliance with the requirements of adopted European regulations, in particular Council Directive No. 91/271/ECC.

Graph 5.6

— Gross fixed capital formation
— Gross investment into the environment from private resources

Investment by ČEZ, a. s.

The environmental programme of ČEZ, a. s. (Czech Power Company), played a major role in the decrease in air pollution during the 1990s. The programme was implemented between 1992 and 1998. ČEZ, a. s., was also the biggest private investor in the environment during the 1990s. They invested over CZK 46 billion into remedial measures.

Before the upgrading and desulphurisation programme of coal-fired power plants started, their total installed capacity was 8,482 MW. A part of the capacity was phased out completely, and a major part of the power plants was upgraded and desulphurised. The total 6,462 MW of the installed capacity was desulphurised of which 5,930 MW were cleaned by means of the combustion gas removal (5,710 MW wet scrubber removal, 220 MW medium-dry scrubber method), 497 MW by replacement of old boilers with upgraded new ones, fitted with fluid combustion, and 35 MW by a fuel change.

Further work on coal sources cleaning started the phase-out programme of the oldest equipment. A total of 2,020 MW were phased out in 20 production units of coal-fired power plants. 1,640 MW were phased out in northwestern Bohemia which was affected most by the bad environment due to a high concentration of energy and industrial productions.

Emissions of SO₂ and dust from ČEZ sources dropped by 90% by 2000, compared to 1990, and emissions of nitrogen oxides by 50%.

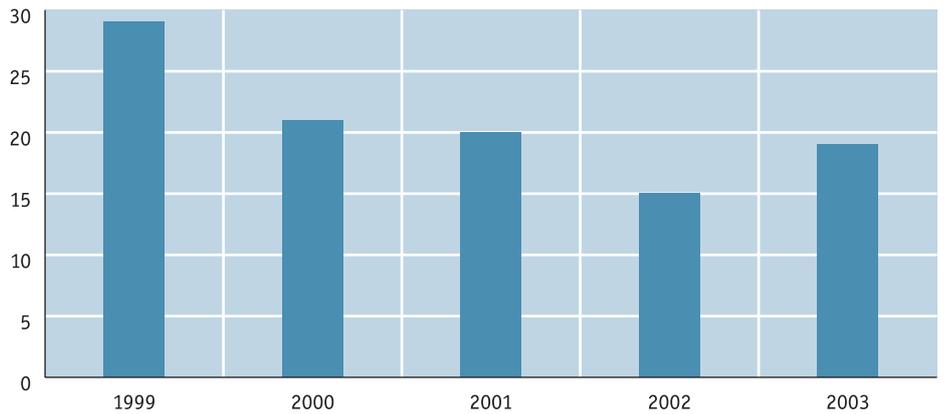
Source: ČEZ, a. s.

Graph 5.7

Investment in the environment in the Czech Republic 1999–2003 (bil. CZK)

According to the Framework Strategy of Financing the Investments Ensuring Implementation of the Environmental Law of the EC, which was adopted by the Government Decision No. 1230/1999, meeting the requirements resulting from the adopted legal regulations of the European Communities will require investment to the extent of CZK 304.1 billion by 2010.

According to the recently made calculations, it will be necessary to invest around CZK 180 billion in the time period 2005–2010.



Source: CSO

Graph 5.8

Current and capital costs of environmental protection from public budgets

- Other environmental activities
- Administration of the environment
- Environmental research
- Waste management
- Biodiversity and landscape protection
- Water protection
- Reduction of impacts of physical factors
- Air protection
- Soil and groundwater protection



Source: MoE and Ministry of Finance

European Period (from 2004)

With respect to the cost of the EC directive on waste water treatment, the amount of investment into the environment and its percentage of GDP is increasing again, although it has not reached the level of 1995–1998.

The state budget deficit hinders higher subsidies into the environment. The income of the SEF from pollution charges has been decreasing on a long-term basis which is caused by implementation of various environmental measures and also by a production slump of certain big polluters.

As the public investment into environmental protection has been stagnating for the last years the weight of private environmental investment is expected to be dominant (approximately 2/3). Investment from private resources is important especially in order to meet the demanding goals of water protection.

Resource acquisition for compliance with European requirements has become a topical problem of environmental financing, both at public and private levels.

Tax Relief due to Environmental Protection

In recent years, several other economic measures favourable to environmentally-friendly technologies and/or means of transport and fuels, have been applied for the protection of the environment. They have included mainly exemptions from the road tax for some modes of transport; variances in excise duties on leaded and unleaded petrol; exemption from the property tax in case of real estates important for environmental protection; and application of a reduced VAT rate on some environmentally-friendly products.

In the early 1990s environmental tax reliefs were only exceptional. The whole system of taxation was rather unclear, especially because of the sales tax. This tax consisted of hundreds of rates and was used instead of the VAT and concise taxes. In this context we should point out a high sales tax imposed on the sale of passenger vehicles and fuels.

Different kinds of tax reliefs are provided only according to the environmental cost determination as specified by the Ministry of the Environment, the Ministry of Finance and the Czech Statistical Office. This list is not complete. Other tax reliefs (e.g. income tax, inheritance tax, gift tax and real property transfer tax) have not been monitored by the Ministry of Finance.

On 1 January 1993 the Czech Republic made a tax reform. New tax laws contained a number of tax reliefs for environmental protection.

REAL ESTATE TAX

The tax relief of the real estate tax for environmental reasons is specified in letters h), j), k), l), m), o) of Article 4, and regarding construction in letters l), m), r) of Article 9 of Act No. 338/1992 Coll., on Property Tax.

Amounts of individual exemptions from real estate tax for reasons of environmental protection (mil. CZK)

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Estate land	87	93	80	66	66	64	65	60	62	60	59	61
Buildings	40	130	177	176	218	242	233	217	191	178	159	155
Total	127	223	257	242	284	306	298	274	253	238	218	216

Source: Calculated by CENIA according to data provided by the Ministry of Finance

Table 5.4

Table 5.5

The amounts of tax exemption from road tax for reasons of environmental protection (bil. CZK)

Year	Letter e)	Letter i)	Letter j)	Letter k)	e+i+j+k total	Car age surcharge	Environmental reasons
1995	43	69	380	1,1	483	–	493
1996	182	70	614	0,7	867	–	867
1997	211	69	964	0,5	1244	–	1244
1998	206	124	1315	0,6	1645	–	1645
1999	205	0	0	0	205	–	205
2000	214	27	308	0	549	–	227
2001	216	175	1307	0	1698	–	304
2002	214	386	721	0	1321	-194	407
2003	149	491	693	0	1334	-161	394
2004	167	569	567	0,1	1303	-18	392

Source: Calculated by CENIA according to data provided by the Ministry of Finance

e) City transport vehicles, i.e. buses and trolley-buses. According to Act No. 143/1996 Coll. also vehicles of domestic line traffic with over 80% of the mileage since 1996.

i) Combined transportation vehicles (containers) up to 50 km in rail, water and air transportation (cancelled as of 1 January 1999). The tax relief applies only to combined transportation which is not monitored any more. The combined transportation included a road-air entity that was not environmentally friendly. Since 2000 letter i) has provided for a tax relief for complying with the emission limits of Euro 3.

j) Vehicles complying with the emission standard given by the Directive 91/542/EEC and 94/12/EEC. According to the Act No. 16/1993 Coll., on Road Tax as amended, there are exemptions for cars compliant with the EURO 3 norm at 66%, and for cars compliant with EURO 2 norm at 60%.

k) Electric cars.

A surcharge to the road tax for the age of a vehicle was introduced in 2002. Its impact was CZK 194 million in 2002, CZK 161 million in 2003 and CZK 18 million 2004.

ROAD TAX

The road tax provides for reliefs in compliance with Article 3 of Act. No. 16/1993 Coll., on Road Tax as amended.

CONCISE TAX ON FUELS

The concise tax on fuels was determined by Act No. 587/1992 Coll., on Concise Tax, and since 2003 it has been given by Act No. 353/2003 Coll. Rates of the sales tax and concise tax on fuels grew only a little between 1989 and 2004 in comparison with consumer price inflation. Therefore environmentally demanding road transportation was indirectly preferred. International water transportation and environmentally demanding international air transportation have been exempted from any concise taxes on fuels based on international agreements. Domestic air transportation has been exempted from the concise tax on fuels since 1 January 2001 and domestic water transportation since 1 January 2004. In 2004 the extent of this allowance was CZK 178 million for water transport and CZK 5446.4 million for air transport.

A lower sales tax rate was applied between 1991 and 1992 and a lower concise tax rate on unleaded petrol between 1993 and 1995. The tax advantage of unleaded petrol was cancelled from 1 January 1996 and since 1 January 2001 it has not been possible to sell leaded petrol.

A zero concise tax on biodiesel was applied until 2000. A lower concise tax rate has been applied to LPG used as a fuel for vehicles. Until 2003 there was a zero concise tax on CNG used as a vehicle fuel. A relatively high concise tax on CNG and substantially increased concise tax on LPG and diesel oil were applied in 2004, and the concise tax on petrol has been increased too. Economic advantages of more environmentally-friendly fuels in the form of lower concise taxes dropped in 2004 to ca ½.

The amount of the economic advantage for reasons of environmental protection in concise tax for automotive fuels in transportation of the Czech Republic (bil. CZK)

Year	Unleaded petrol	Biodiesel fuel	Liquified gases LPG	Compressed gases CNG	Total
1993	438	low	low	10	448
1994	876	low	low	21	897
1995	1 103	209	12	28	1 352
1996	0	250	38	30	318
1997	0	1 398	62	33	1 493
1998	0	1 261	557	40	1 858
1999	0	1 624	658	48	2 330
2000	0	315	710	50	1 075
2001	0	79	827	41	947
2002	0	395	1 051	50	1 496
2003	0	648	1 118	51	1 817
2004	0	424	554	2	980

Source: Calculated by CENIA according to the concise tax rates and estimated transport consumption (Transport Research Centre Brno)

VALUE ADDED TAX

A lower VAT rate (5%) covered a whole number of products between 1993 and 2003 supporting fuel and energy savings (especially flow metres), use of renewable fuels and energy sources and biodiesel. These were mostly lower absolute but important relative values.

The advantage of 5% VAT on biodiesel until 1996 concerned very small amounts at first, but later as the biodiesel production increased it became more significant – see the table below. Economic advantages of biodiesel must be considered as a sum of the concise tax advantage, the VAT advantage (including potential recovery) and subsidies.

Biodiesel subsidies of rape – advantage of 5% VAT rate (bil. CZK)

Year	1997	1998	1999	2000	2001	2002	2003
Subsidy	100–150	100–150	200–250	958	624	835	836

Source: Ministry of Agriculture

Inclusion of three-port catalysts into the 5% VAT rate amounted to an advantage of CZK 300–900 million per year between 1993 and 2003 depending on the number of produced cars.

Since 2004 all products under the lower VAT rate (for the purpose of environmental protection, fuel and energy savings and use of renewable sources) have been transferred to the basic VAT rate, i.e. 22% (respectively 19% as of 1 May 2004).

Table 5.6

Sale of fuels for transportation in the Czech Republic in 1993–2004 (thous. t)

Year	Petrol total	Diesel	Others
1993	1 425,60	1 682,50	175,30
1994	1 651,60	1 685,60	140,50
1995	1 684,40	1 982,90	207,00
1996	1 850,10	2 285,30	194,50
1997	1 941,00	2 239,60	330,50
1998	1 788,70	2 275,00	356,50
1999	1 975,60	2 232,00	433,30
2000	1 920,60	2 393,10	484,30
2001	1 977,60	2 668,40	481,10
2002	1 979,00	2 659,30	529,30
2003	2 110,80	3 046,00	599,90
2004	2 305,20	3 413,50	591,30

Source: Transport Research Centre Brno

Table 5.7



PAYMENTS FOR ENVIRONMENTAL IMPACTS

The new system of environmental protection, developed in the Czech Republic after 1989, uses a wide variety of economic instruments, including various payments for pollution and utilisation of the natural resources.

The payments have been utilised since the mid 1960s. They include charges for air pollution, charges for discharge of waste water into surface water, charges for consumption of surface and ground water, as well as charges for the use of agriculture land resources.

The transformational changes since the beginning of the 1990s (especially privatisation and the introduction of the market economy) created the need for the application of economic measures, mainly with regard to impacts of these payments on entities polluting or utilising the living or natural environment. The environmental law has been changed significantly, including changes related to the extent and structure of pollution sources, charges for pollutants, rates of charges and other aspects related to the charges.

In the 1990s, other charges were introduced – especially for waste dumping, extraction of mineral resources and forestland exclusion.



▶ Payments for Environmental Impacts

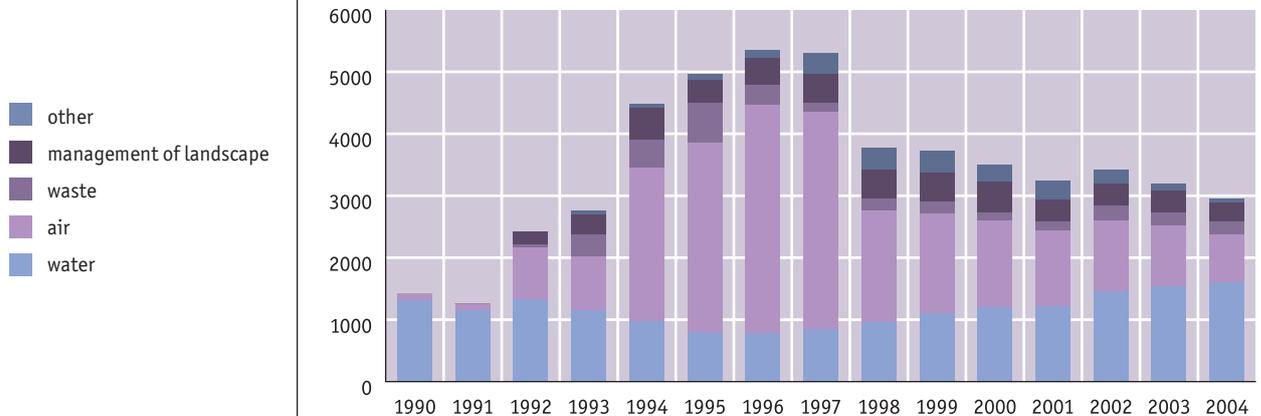
Some general payments – such as excise duty on fuels, and some local charges – function partially as payments for the pollution or utilisation of the environment as well. Some other payments – such as specific environmental taxes, compensation for environmental damages or other payments for utilisation of natural resources – have only been proposed.

Payments for damage to the environment have not been high enough to actively effectuate environmental protection, even though the introduction of a market economy provided a more suitable instrument for its realisation.

Within environmental policy tools the application of administrative tools significantly prevails (definition of limits, standards, bans, regulation, etc.). Economic instruments (incl. payments) thus serve only as a complement to the administrative tools, and are usually not considered equivalent in the process of forming a particular policy in individual segments. The main reason for their existence is their fiscal effect – it means the possibility to use income from the payments for the financing environmental protection or for compensation for negative impacts. E.g. income from payments to the State Environmental Fund of the Czech Republic (SEF) is used completely in this manner.

Graph 6.1

Income of SEF Acc. to environmental components (mil. CZK)



Source: SEF

The charges are paid according to the rules stipulated by relevant laws (including rates per pollution unit). They are paid mainly by industrial companies and companies providing services to citizens (e.g. within the supply of drinking water, and waste water discharge and treatment, within municipal waste treatment, within centralised heating supply). The payment of the charges is controlled mainly by the Czech Environmental Inspectorate or regional authorities, most of the charges are collected by tax offices and the financial revenue is received by the State Environmental Fund of the Czech Republic or municipalities. The majority of the collected charges are used to support activities dedicated to environmental protection.

Founding Period (1989–1992)

At the turn of the 1980s and 1990s, charges in the Czech Republic included:

- charges for polluting the air ¹⁾
- charges for the discharge of waste water into surface water, charges for withdrawal of groundwater and charges for withdrawal of water from water courses ²⁾
- charges for agricultural land use ³⁾

Under the condition of a centrally-controlled and planned economy (i.e. till 1989), these charges did not act as an economic incentive that would influence payers towards more environmentally-friendly behaviour. However, the stage was set for the further application of these payments, esp. for their incorporation into legislation occurring at the beginning of the 1990s.

AIR POLLUTION CHARGES

Air pollution charges are regulated by Act No. 309/1991 Coll. on the Protection of Air against Pollutants, and Act No. 389/1991 Coll. on the State Administration of Air Protection and on Charges for Air Pollution. Important changes related to the extent and structure of pollution sources, charged pollutants, rates of charges and other aspects related to air pollution charges were adopted here.

From 1992 to 1994, the charges for small air-pollution sources (heat output up to 50 kW) utilised for business purposes was set at a fixed amount of up to CZK 10,000 per year and was levied by the relevant local authority.

If a pollution source exceeds the stipulated emission limit, a surcharge amounting to 50% is added to the stipulated basic charges (emission volume multiplied by rate). The charges were stipulated by means of the so-called “start-up curve”, which means that they amounted to 30% from 1992 to 1993; 60% from 1994 to 1995; 80% in 1996; and 100% from 1997.

Charges for air pollution imposed on operators of large (including extra large since 2003) and medium sources of pollution (CZK/t)

Pollutant	1968–1991 ¹⁾	1992–1993	1994–1995	1996	1997–2002	2003 ad.
Dust emissions	100	900	1 800	2 400	3 000	3 000
Sulphur dioxide	100	300	600	800	1 000	1 000
Nitrogen oxides	X	240	480	640	800	800
Carbon monoxide	X	180	360	480	600	600
Hydrocarbons	X	600	1 200	1 600	2 000	X
Volatile organic compounds	X	–	–	–	–	2 000
Be, Cd, Hg, Tl and the compounds	X	6 000	12 000	16 000	20 000	20 000
Sb, Sn, Cr, Co, Mn, Cu, Ni, Pb, Te, V, Zn and the compounds	X	3 000	6 000	8 000	10 000	20 000
Ammonia	X	300	600	800	1 000	1 000
Methane	X	–	–	–	–	1 000
Polycyclic Aromatic Hydrocarbons (PAH)	X	6 000	12 000	16 000	20 000	20 000
Burning or steamy part of a coal mine or stonepit in CZK/m ²	X	60	120	160	200	200
Burning landfill or dump, CZK/m ²	X	60	120	160	200	2 000
Freons ²⁾	X	–	200 000	200 000	200 000	400 000
Pollutants, 1 st class	X	6 000	12 000	16 000	20 000	20 000
Pollutants, 2 nd class	X	3 000	6 000	8 000	10 000	10 000
Pollutants, 3 rd class	X	300	600	800	1 000	–

Source: CENIA according to the relevant legal provisions

Legislative basement of primary charges

¹⁾ Act No. 35/1967 Coll. on Measures against Air Pollution

²⁾ Act No. 138/1973 Coll. on Water, and Government Decree no. 35/1979 Coll. on Payments in Water Management (amended by Act No. 91/1988 Coll.)

³⁾ Act No. 53/1966 Coll. on the Protection of Agricultural Land, including Government Decree No. 102/1976 Coll. and No. 39/1984 Coll.

Table 6.1

¹⁾ In 1968–91, dust and SO₂ emissions were charged at 100 CZK/t, which applied to sources exceeding an applicable hygienic (pollutant) standard in relation to the height of a chimney, which amounted to ca 1/3 of volume of the emissions.

²⁾ Charges for Freons were imposed in 1995 by Act No. 86/1995 Coll. – effective from 1 July 1995 (later new act – Act No. 86/2002 Coll.).



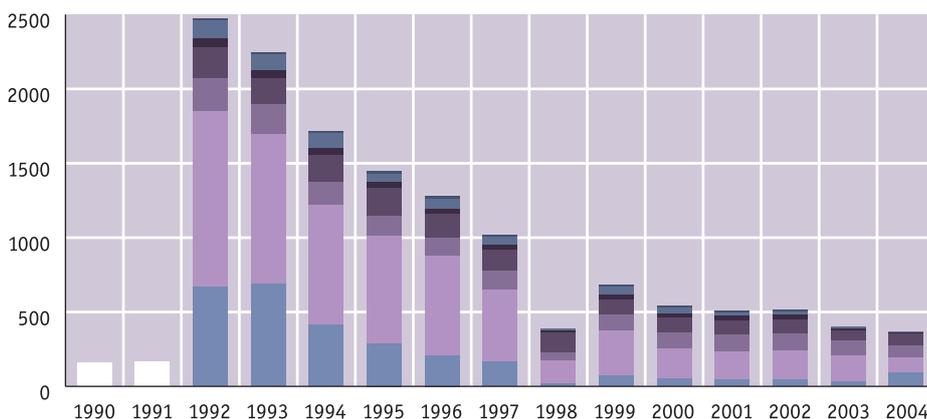
Payments for Environmental Impacts

Graph 6.2

- Total per year
- Class III. Pollutants
- Class II. Pollutants
- Class I. Pollutants
- Hydrocarbons
- Carbon monoxide
- Nitrogen oxides
- Sulphur dioxide
- Particulate matter

In 1990–91 income of the Air Protection Fund amounting to 40 % of the air pollution charges. Since 2003, VOC have been charged instead of C_xH_y .
Nominal charges = charges without deferral and surcharges.

Nominal charges for air pollution from large sources in the Czech Republic between 1990–2004 (bil. CZK)



Source: SEF, CEI, regions from 1 January 2003

PAYMENTS FOR DISCHARGING NON-TREATED OR INSUFFICIENTLY TREATED WASTEWATER

Payments for discharging non-treated or insufficiently treated wastewater were newly regulated by Act No. 281/1992 Coll., which amends a government decree on payments for water pollution. The rates were increased by ca 100 % to reflect relevant inflation.

Table 6.2

Accounting of actual rates is given by MoE decree (at the beginning by the decree of the Ministry for Water Management and Forestry) and is quite complicated. Since 1999 only the total sum of charges has been registered.

Rates for discharge of waste water into surface water

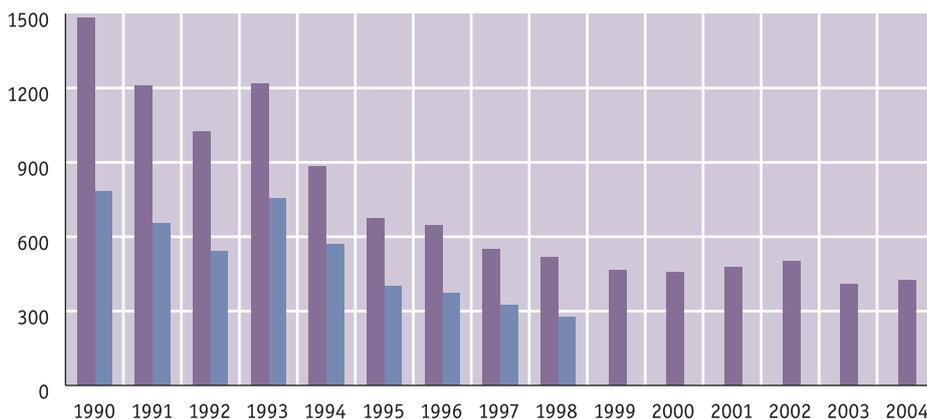
Pollutant (unit)	Till 1992	1992–1998
BOD ₅ (CZK/kg)	5–17,7	10–35,5
Insoluble compounds (CZK/kg)	0,05–1,3	0,1–2,6
Oil compounds (CZK/kg)	1–3	2–6
Dissolved inorganic compounds (CZK/kg)	120–600	240–1200
Apparent acidity and alkalinity (CZK/kmol)	135	270

Source: CENIA according to the relevant legal provisions

Graph 6.3

- Total sum of charges
- Water supplies and sewerage of that

Total sum of basic charges for discharging waste water into surface water reduced by deferrals (bil. CZK)



Since 1999 the water mains and sewerage has not been monitored as an independent category.

Source: Ministry of the Environment of the Czech Republic – Report 3-01, 1999, MoE – Water report 1-01

CHARGES FOR THE DEPOSIT OF WASTE

In the Czech Republic, charges for the deposit of waste have been imposed only since 1 April 1992 by Act No. 238/1991 Coll. on Waste and Act No. 62/1992 Coll. on Charges for the Deposit of Waste. Rate I (in 1992–1997) and a basic charge (since 1998) were paid for waste deposit in a landfill. It was received by the municipality within which the landfill was located, and served as compensation for harm connected with the operation of the landfill. Until 31 July 1996, Rate II was paid for waste dumping on a site not contemplated by the Act on waste (later, from 1 August 1996, it has been impossible to dump waste on such a site).

Rates of charges for the deposit of waste (CZK/t of the waste)

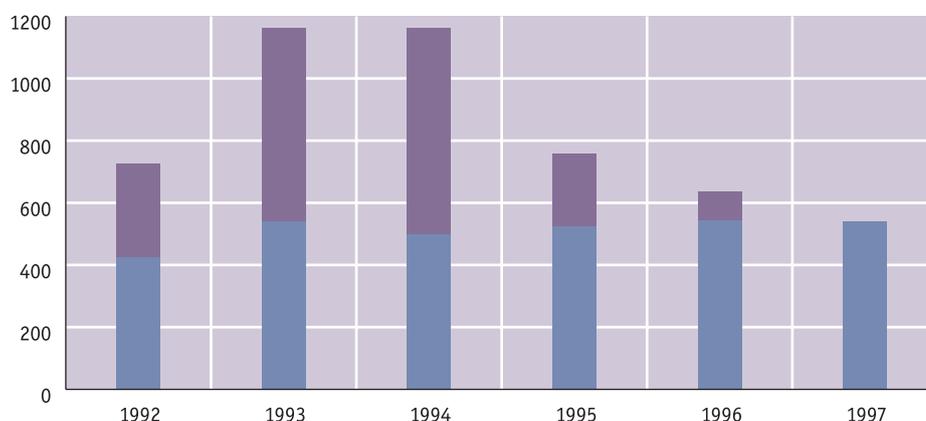
Rate	Year	Soil and gangue	Other waste	MSW	Special waste	Hazardous waste
Rate I	1992–97	0	10	20	40	250
	1992	1	25	20	110	3 000
Rate II	1993	3	70	70	320	4 000
	1994–96	6	140	210	640	5 000

Source: CENIA according to the relevant legal provisions

Table 6.3

MSW = municipal solid waste

Charges paid for waste dumping according to waste categories in 1992–1997 (mil. CZK)



Source: CENIA from MoE data

Graph 6.4

Rate II
Rate I

CHARGES FOR SURFACE WATER CONSUMPTION

At the beginning of the 1990s, charges for surface water consumption and water withdrawal from rivers were paid under Government Decree No. 35/1979 Coll. at 0.46 CZK/m³ of surface water consumption. Water consumed for steam turbine flow cooling was charged at 0.05 CZK/m³. In 1991–92, the existing system of a regulated rate for surface water consumption was imposed, under which a consumer of a larger volume of surface water pays a rate to a relevant basin entity, which was calculated for the relevant basin. The basin entity cannot include listed items of its expenses into the rate. The prices are thus differentiated according to individual basins, the average rate amounting to ca 2 CZK/m³.

GROUNDWATER CONSUMPTION CHARGES

Charges for groundwater consumption were given at 2 CZK/m³ under Government Decree No. 91/1988 Coll. Waterworks consumption was not charged.

Implementation Period (1993–1998)

CHARGES FOR AIR POLLUTION FROM LARGE AND MEDIUM – SIZED SOURCES

Charges for air pollution from large and medium – sized sources were gradually increased in accordance with Act No. 389/1991 Coll. (see table 6.1). Act No. 158/1994 Coll. regulates the range of rates for small sources of air pollution. Charges from the large and medium sources were imposed by the Czech Environmental Inspectorate and collected by the relevant tax offices. The income was received by the SEF. Charges from small sources of pollution were imposed by the individual relevant municipalities, as specified by law (see the following table). These charges were collected and received by the municipalities themselves.

Table 6.4

Rates for air pollution imposed on operators of small sources of pollution (entrepreneurs) (CZK/t)

Type of fuel	0–50 kW	50–100 kW	100–200 kW
Light fuel oil	400–800	800–1 250	1 250–1 700
Other fuel oils	700–1 400	1 400–2 100	2 100–2 800
Bituminous coal	1 000–2 000	1 000–1 500	1 500–2 000
Brown screened coal, brown coal fuels	500–1 000	1 000–1 500	1 500–2 000
Brown power coal, lignite	2 000–4 000	4 000–6 000	6 000–8 000
Coal sludge, partings	10 000	10 000–20 000	20 000–40 000

Source: CENIA according to the relevant legal provisions

EXTRACTED MINERALS CHARGES

In the Czech Republic, extracted minerals charges were imposed in 1993 by Act No. 541/1991 Coll., which amends Act No. 44/1988 Coll. on the Protection and Utilisation of Minerals. A set charge for a mined area and 50% (75% from 23 November 2000) of charges based on volume of extracted minerals partially compensate damages caused by mining to relevant municipalities. The second part is income of the state budget, where it is bound to reversing the impact of mining. Charges based on the volume of extracted minerals have been stipulated for 44 types of minerals, and this for the range of 0,5–10% of the entire revenue for the extracted minerals, evaluated by the market price. The rates are fixed by the Decree of the Ministry for Economic Affairs No. 617 of 3 December 1992 and the Decree of the Ministry of Trade and Industry No. 426 of 23 November 2001. The highest rates (10%) for the period until 2001 have been set for magnesite, rock salt, technically usable crystals, precious stones and heavy lime stone, and from the year 2002 for ore, technically usable crystals, precious stones and heavy lime stone.

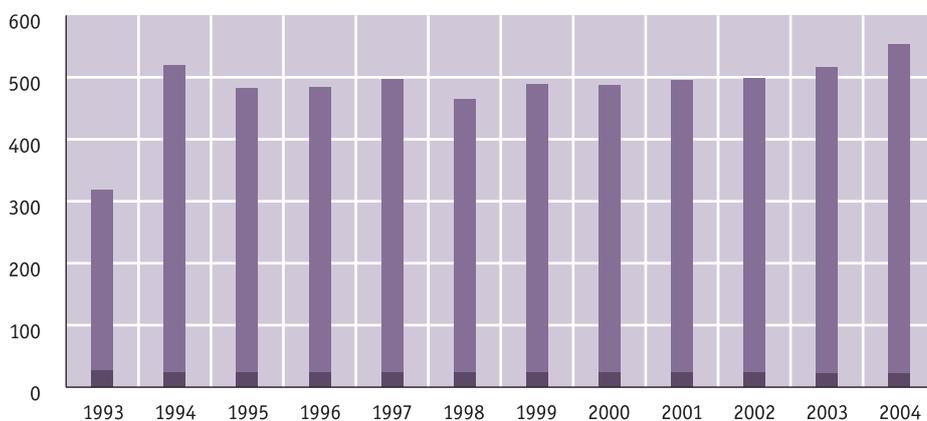
Table 6.5

Rates of charges based on a mined area and extracted reserved minerals

Charging	Rate	Income received by
1 km ² of the mined area	10,000 CZK/year	relevant municipality
To 2 ha of the mined area	2,000 CZK/year	relevant municipality
Volume of extracted minerals	0.5 to 10% of the market price	relevant municipality + state budget

Source: CENIA according to the relevant legal provisions

Charges based on a mined area and extracted reserved minerals (bil. CZK)



Source: Czech Mining Office (year 2004 estimated)

Graph 6.5

- For mining volume
- For using an area

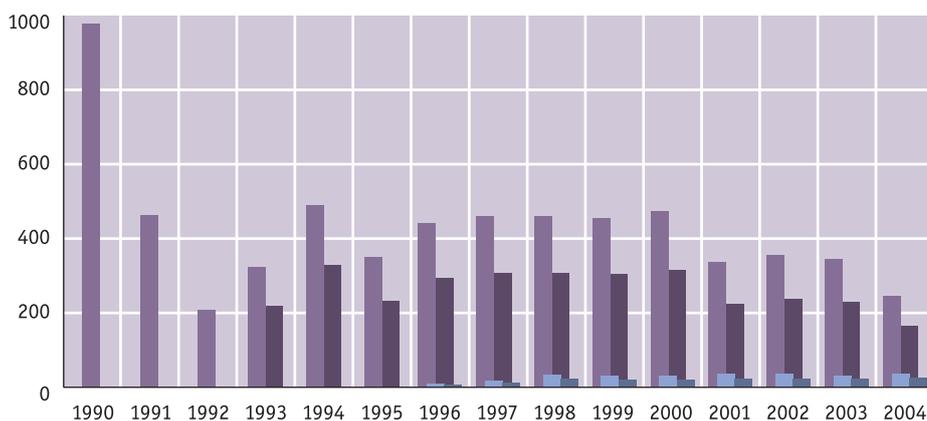
CHARGES FOR THE LAND USE

Since 1993, charges for agriculture land use have been regulated by Act No. 334/1992 Coll. on Agricultural Land Protection. The rates are based on detailed land valuation and/or it amounts to a hundredfold of the 1989 net agricultural production in Czechoslovakia without evaluation of the ecological function of the land. 60% of the income goes to the SEF and 40% to relevant municipalities.

CHARGES FOR FOREST LAND EXCLUSION

In the Czech Republic, charges for forest land exclusion from the fulfilment of the function of a forest, were imposed in 1996 by Act No. 289/1995 Coll. on Forests. They are based on fiftyfold of net timber production of a relevant forest, which is increased by a coefficient reflecting its extra-production functions. 60% of the income is received by the SEF and 40% by relevant municipalities.

Incomes from charges of land use (bil. CZK)



Source: 1990–1991 State Ameliorative Administration; 1992–2004 SEF

Graph 6.6

- Agricultural land (SEF)
- Agricultural land (municipalities)
- Forest land (SEF)
- Forest land (municipalities)

Pre-Accession Period (1999–2003)

AIR POLLUTION CHARGES

Since 2003, the charges for air pollution have been regulated by Act No. 86/2002 Coll. on Air Protection (see tab. 6.1).

Table 6.6

Rates for air pollution imposed operators of small sources of pollution – entrepreneurs (CZK/t)

Type of fuel	50–100 kW	100–200 kW
Fuel oils containing sulphur from 0.1 to 0.2 %	1 000–1 500	1 500–2 000
Fuel oils containing sulphur to 1 %	1 500–2 500	2 500–3 000
Other liquid fuels and matters	6 000–8 000	8 000–12 000
Bituminous coal	1 500–2 000	2 000–3 000
Brown screened coal, brown coal fuels	2 500–4 000	4 000–5 000
Brown power coal, lignite	4 000–6 000	6 000–10 000
Coal sludge, partings	10 000–20 000	20 000–40 000

Source: CENIA according to the relevant legal provisions

CHARGES FOR DISCHARGING POLLUTED OR INSUFFICIENTLY TREATED WASTEWATER

Charges for discharging polluted or insufficiently treated wastewater into surface water are regulated by Acts No. 58/1998 and No. 254/2001 Coll. Since 2002, a charge based on the volume of discharged wastewater has been added to the charges for discharging polluted wastewater, amounting to 0.10 CZK/m³ (if the volume exceeds 100,000 m³/year).

Table 6.7

Rates of basic charges (no surcharge added) for discharging polluted or insufficiently treated wastewater into surface water (CZK/kg)

Pollutant	1999–2001	Since 2002
COD of non-treated wastewater ¹⁾		16
COD of treated wastewater		8
COD for treated wastewater from cellulose production and cotton and flax textiles processing		3
Dissolved inorganic salts		0,5
Insoluble compounds ²⁾		2
Total phosphorus		70
Ammonia nitrogen	40	–
Inorganic nitrogen	–	30
Mercury		20 000
Cadmium		4 000
Discharging non-treated wastewater from households into groundwater (CZK/household)	–	3 500
Groundwater consumption for drinking water (CZK/m ³)	–	2
Groundwater consumption for other purposes (CZK/m ³)	–	3

Source: CENIA according to the relevant legal provisions

¹⁾ COD = chemical consumption of oxygen

²⁾ The charges for this coefficient are paid only by polluters, who either fail to pay for chemical oxygen demand (COD) while the pollution exceeds the limit for charging insoluble compounds or discharge a greater amount of insoluble compounds than the triple amount of charged COD.

GROUNDWATER CONSUMPTION CHARGES

In 2002, Act No. 254/2001 Coll. changed the charges for groundwater consumption. For industry, the rate was increased from 2 to 3 CZK/m³, and charges for waterworks (drinking water) amounting to 2 CZK/m³ were introduced. In both cases, the income is received by the SEF.

CHARGES FOR WASTE DEPOSITION ON A LANDFILL

Charges for waste deposition on a landfill are regulated by the Acts on Waste No. 125/1997 Coll. and No. 185/2001 Coll. Since 1998, a charge for hazardous waste dumping /deposition on a landfill/ has been paid.

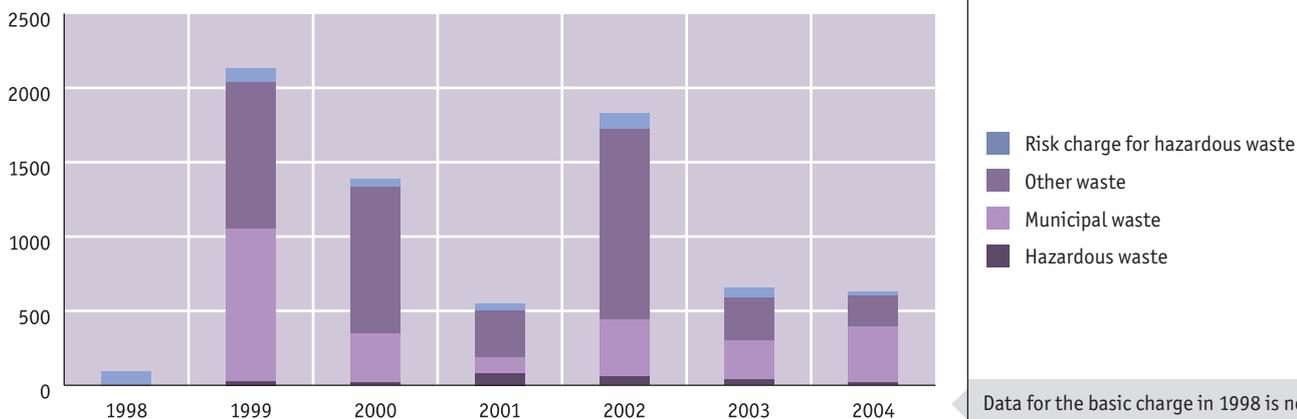
Rates of charges for waste deposition (CZK/t)

Year	Basic charge for hazardous waste	Basic charge for municipal and other waste	Risk charge for hazardous waste
1998	200	20	300
1999–2000	250	30	500
2001	350	50	750
2002–2004	1 100	200	2 000
2005–2006	1 200	300	2 500

Source: CENIA according to the relevant legal provisions

The so-called monetary reserve for landfill reclamation after its lifetime amounts to 100 CZK/t of hazardous and municipal waste and 35 CZK/t of other waste and asbestos waste.

Charges paid for waste dumping /deposition/ according to waste categories (bil. CZK)



Source: CENIA on base of MoE data

Table 6.8

Graph 6.7

Data for the basic charge in 1998 is not available.

- In agreement with the Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity the taxation of fuels and electricity is also being prepared in the Czech Republic. The height of the taxation differs depending on the type of energy source and the way of fuel use. This change can be understood as an introduction of consumer tax of its kind or as a part of ecological tax reform. The preparation of a budget neutral ecological tax reform is a part of the policy statement of the current government.
- Introduction of trade with air emission permits is a new economic tool for environmental protection in accordance with the Act No. 695/2004 Coll. Through the mentioned act the Directive 2003/87/EC of the European Parliament and the Council was implemented in the Czech legal order.

Table 6.9

Present Time

At present, 16 types of charges (payments) are paid in the CR. They include charges:

- for air pollution – operators of extra large and large stationary sources,
- for air pollution – operators of medium-sized stationary sources,
- for air pollution – operators of small stationary sources,
- for production and import of regulated substances and products containing them (Freons) (they in fact, but not de jure, ceased as of 1 May 2004 after the accession of the Czech Republic into the EU),
- for discharging wastewater into surface water,
- for permitted discharging of wastewater into groundwater,
- for surface water consumption in order to pay for the river basin management,
- for groundwater consumption,
- for waste dumping on a landfill
- to support the collection, processing, usage and removal of selected car wrecks, which have been paid since 22 April 2004 by the car importer, amounting to 5,000 CZK/car, if the imported used car does not comply with the emission standard for new cars,
- for the operation of a system of collection, transport, separation, usage and removal of municipal waste /for municipal waste – this is a fee for municipal waste disposal,
- for registration and annual recording in a list of authorised entities under the Act on packaging,
- for a mined area,
- for a volume of extracted minerals,
- for the agricultural land use exclusion (permanent and temporary),
- for forestland use exclusion

A special category of payments includes fines – sanctions for not observing limits or duties defined by the State.

The Upper limit of fines for breaching the duties resulting from the environmental protection laws

Environment sector	Upper limit of the fine	Pursuant to Act no.
Waste ¹⁾	50,000,000 CZK	185/2001 Coll. ²⁾
Chemical compounds ¹⁾	5,000,000 CZK	356/2003 Coll. ²⁾
Air protection	10,000,000 CZK	86/2002 Coll. ²⁾
Integrated prevention	7,000,000 CZK	76/2002 Coll. ²⁾
Water protection ¹⁾	10,000,000 CZK	254/2001 Coll. ²⁾
Packaging	50,000,000 CZK	477/2001 Coll. ²⁾
Forest protection	1,000,000 CZK	282/1991 Coll. ²⁾ , 289/1995 Coll. ²⁾
Nature protection	1,000,000 CZK	114/1992 Coll. ²⁾
CITES	1,500,000 CZK	100/2004 Coll.
Cruelty to animals	500,000 CZK	246/1992 Coll. ²⁾
Agricultural land protection	500 × min. wage	334/1992 Coll. ²⁾
Evaluation of products ⁴⁾	300 × min. wage	244/1992 Coll.
Nuclear safety	100,000,000 CZK	18/1997 Coll. ²⁾
Public health protection	3,000,000 CZK	258/2000 Coll. ²⁾
Prevention of serious accidents caused by chemical compounds ¹⁾	5,000,000 CZK	353/1999 Coll. ²⁾
Genetically modified organisms	5,000,000 CZK	78/2004 Coll.
Land planning and building code ³⁾	1,000,000 CZK	50/1976 Coll. ²⁾
Other	1,000,000 CZK	17/1992 Coll. ²⁾
Other ⁵⁾	100,000 CZK	36/1975 Coll. ²⁾

¹⁾ In the case of repetitions within 1 year, the fine can be doubled.

²⁾ as amended

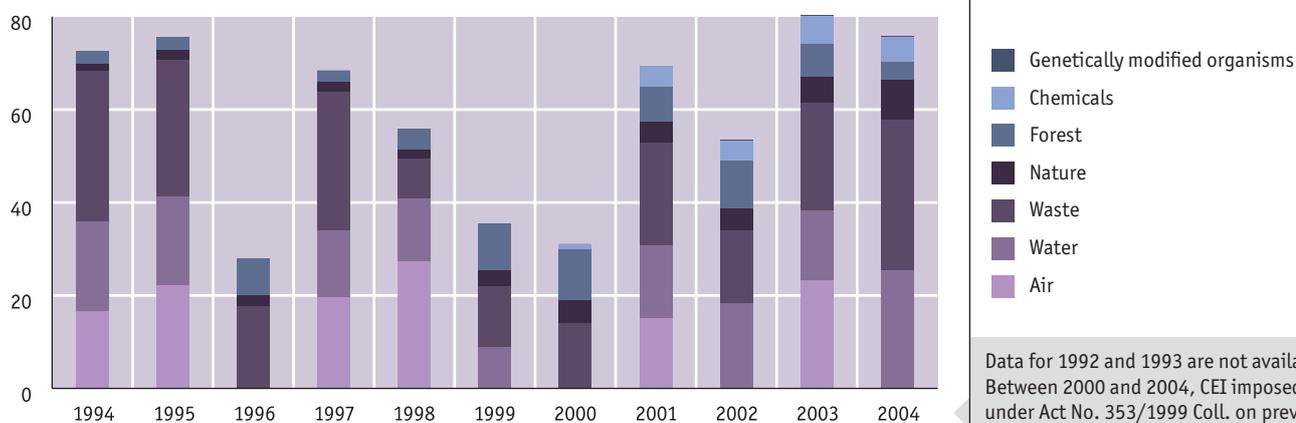
³⁾ In the case of a construction without permission by a natural person, the fine can be ten times higher.

⁴⁾ cancelled by Act No. 100/2001 Coll.

⁵⁾ cancelled by Act No. 258/2000 Coll. (especially penalties for unauthorised excessive noise)

Within the last 11 years, the Czech Environmental Inspectorate imposed fines amounting to 795 mil. CZK. Usually, 50% of this is income of the SEF, and 50% of the municipality within which the law was violated.

Amount of fines imposed by CEI in sectors of environmental protection (bil. CZK per year)



Source: Czech Environment Inspectorate

Graph 6.8

- Genetically modified organisms
- Chemicals
- Forest
- Nature
- Waste
- Water
- Air

Data for 1992 and 1993 are not available. Between 2000 and 2004, CEI imposed no fines under Act No. 353/1999 Coll. on prevention of serious accidents and under Act No. 153/2000 Coll. on genetically modified organisms.

Incomes from charges and fines received by the SEF are generally used for measures for environmental protection. Similar incomes that go to the state budget or budgets of regions or municipalities (and earlier districts offices) are not bound to environmental protection. Incomes from the basic rate of waste dumping charges and charges for extraction of minerals that are received by relevant municipalities are used to compensate for damages incurred to the municipalities. Part of incomes from charges for extraction of minerals, which goes to the state budget, is bound to recultivation of the land devastated by mining.

The range of economic instruments available for environmental protection applied in the Czech Republic is one of the largest in Europe and probably in the world (Slovakia and Poland have a similar, though less numerous range of charges). However, environmental charges have not always been introduced and modified systematically and ideally. Therefore, there are cases when charging is ineffective (e.g. with regard to administration or transaction expenses). For this reason, the existing system of charges, its improvement and gradual coordination with other tools of environmental policy, should be explored.



Concealment of environmental information before 1989 resulted in strong demand for this type of information and the Ministry of the Environment was established with the goal to “guarantee and control an Unified Information System on Environmental Issues including comprehensive monitoring of the environment, also in reference to international treaties”.

Regulations Supporting the Access to Environmental Information

In the autumn 1983 the Ecological section of Association of Biology of the Czechoslovak Academy of Sciences elaborated a Report on the Environment in the Czechoslovak Socialist Republic on the instigation of the Czechoslovak Government. The authors of this document hoped that the data involved would positively change the approach of the state political leaders to the environment. However the data were only submitted to several political representatives and there was no subsequent outward effect. One of the printouts disappeared and via signatories of the Charter 77 the data were successively published, first in the samizdat periodical Information on the Charter, consequently a part of the Report was issued in the Parisian *Le Monde*, after that the report was quoted in the radios Voice of America and Free Europe, and it was also published in *Tageszeitung* in Berlin, in the *Czech Listy* (Gazette) and in June 1984 in *Die Zeit*. The released information proved that Czechoslovakia belonged to the most devastated countries in Europe. With or without previous intention, the Ecological section so appeared to be in the opposition to the regime. The importance of this document consisted in breaking the information blockade and in a resulting decision of the Government to become engaged in the problems of the environment and in the improvement of its quality.

Miroslav Vaněk: It was impossible to breathe here

The UISEI acts as an umbrella information system covering 37 principal information systems and almost 5,000 databases.

Demand for environmental information during the 1990s was so significant that a law on right to access to environmental information was passed (Act No. 123/1998 Coll.) before adoption of a general law on free access to information (Act No. 106/1999 Coll.). It is the only one-department act regulating access to information (besides the personal data protection laws). It also was the first act of the approximation period during which the legislation of the European Communities was adopted. This act envisaged the Aarhus Convention, signed by the Czech Republic in June 1998 at the 4th Ministerial Conference in Aarhus, Denmark.

Act No. 123/1998 Coll. on the Right to Information on the Environment sets rules of communication between the state administration (the data administrator) and the applicants for data (users). This Act has also had an indirect positive influence on the data acquisition regime from the subjects (companies in particular) with reporting obligations. Thanks to this Act people can acquire information which is the fundamental and initial precondition of their participation in decision-making and environmental problem-solving processes.

Act No. 123/1998 Coll. ensures access to information on the comprehensive state of the environment, environmental pressures and impacts, exploitation of natural resources, impacts of construction, human activities and industrial technologies, and to information on the environment protection measures.

Unified Information System on Environmental Issues

The necessity to establish an Unified Information System on Environmental Issues (UISEI) is established in Act No. 2/1969 Coll., on the Establishment of Ministries and Other Central Authorities of the State Administration of the Czech Republic.

The objective of the UISEI is to meet the information obligations with respect to the public pursuant to Act No. 123/1998 Coll., on the Right to Information on the Environment, providing foundation for data collection and information assessment in compliance with the environmental legislation and providing the information support to the state administration.

The development stages of the UISEI as a supportive tool were different from the stages of the environment protection:

UNTIL 1995

This period can be best characterised by a radical analytical work which helped define the scope of data to be collected and connection to international information systems. Moreover, the principles of monitoring and the role of the Ministry of the Environment and other departmental institutions within the UISEI were defined. Majority of information systems operated by departmental institutions were formed.

Based on the concept of the late 1980s there was an attempt to centralise the outputs of the individual data sources in one supercomputer in the Centre of Environmental Information. Only the content aspect of the information was taken into account but the technical solution was underestimated. Ensuing substantial problems with the implementation of the project resulted in early project termination.

1996–1999

After the failure of the centralised solution the Ministry of the Environment concentrated its attention to setting up the individual information subsystems which were fundamentally decentralised. In order to support the implementation of new regulations, the environmental information systems were developed, unfortunately without mutual connections. Uncontrolled development of data sources caused problems in later harmonisation of the systems; on the other hand, it enabled to comply quickly with legal requirements and to enlarge the scope of collected data.

2000–2001

In 2000 the first information strategy of the Ministry of the Environment was approved. This strategy evaluated the steps which had been taken to date and identified what was necessary to build the information infrastructure. The strategy addressed communication, technology and safety together with personnel, financial and regulatory prerequisites. A new computer network connecting all bodies enabled direct communication between the data creators and end users. Additional measures included user support, centralised security, cataloguing of data sources, etc.

2002–2003

An updated information strategy informed about achieving sufficient infrastructure for further development of data sources and identified the necessity to develop common tools. A central environmental portal was built, as well as map and indicator services, etc. These tools were later reused by the departmental institutions as well as many other public bodies facilitating technical interoperability of the data sources.

FROM 2004 ONWARDS

The information strategy for 2004–2006 is based on the existing infrastructure and technical inter-institutional interoperability of data sources. The accomplishment of existing information strategies showed that many data acquisition and publishing problems are still to be solved, namely absence of assignment, methodology and quality objectives, non-compliance with technical standards, absence of validation, cataloguing, data storage, cross-cutting interpretation and unified centralised publication. These problems are solved by commencing the information management process and consequential process of information assessment and publishing.

Environmental Information

The key element for successful provision of information on the state and development of the environment in an efficient way is the detailed knowledge of main user groups information needs. In 2001 fourteen major interest groups were identified, including especially the state administration, the public and non-governmental organisations, as well as business entities, teachers, students, courts, etc. The cataloguing of information needs started in 2002 and is mainly used for controlled information publishing at the Environmental Portal.

Main Information Sources

ENVIRONMENTAL PORTAL

The Portal to the Environmental Information, is a central place for publishing environmental information. It provides access to sustainable development indicators, environmental maps, environmental statistics and metainformation alike. The newest part of the Portal is the Czech Integrated Pollution Register and it has been one of the most sought-after portal components ever.

ENVIRONMENTAL INFORMATION SYSTEMS**Information System of Nature Conservation** www.nature.cz

- Locations, botany, zoology, small-area nature reserves, specially protected trees (memorable trees), geology, remote sensing, aerial photo archive, etc.

Environmental information systems were mostly finished and their integration and interdepartmental use started.

The information sources were refocused on delivery of services and further development in terms of quality.

To effectively institutionalise and implement these processes, CENIA, Czech Environmental Information Agency was established. The main objective of the Agency is to foster the development of UISEI.

Important links:

<http://portal.env.cz>

<http://indikatory.env.cz>

<http://geoportal.cenia.cz>

<http://mis.env.cz>

At the beginning of the 1990s a quality system of cooperation of public information service centres in departmental organisations was established, and since then it has been coordinated by the Ministry of the Environment. It enables to collect data effectively and to enlarge the scope of environmental information.

Edition EKO VIS of the Ministry of the Environment:

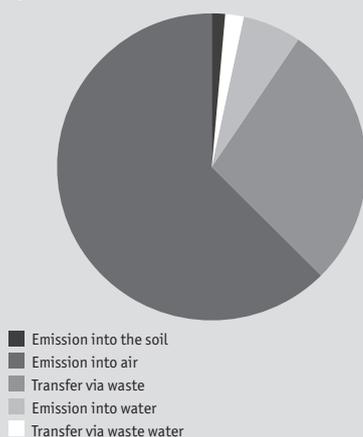
- Information bulletin; 6 issues per year since 1991
- Guide to public library and information services of the organisations of the Ministry of the Environment and cooperating organisations; since 1992
- Translations of the environmental laws of the EC, since 1996
- Environmental laws of the EC, since 1996
- Register of the periodicals of the libraries and information centres of the Ministry of the Environment and cooperating organisations; since 1992

Also printed publications and publications on electronic data carriers belong to the main environmental information sources. The Ministry of the Environment issues several dozens of titles yearly:

- Report on the environment of the Czech Republic; first published in 1991, issued yearly in Czech and in English
- Statistical environmental yearbook of the Czech Republic; first published in 1990, issued yearly in Czech-English version
- The state of environment in regions of the Czech Republic; first published in 1996, issued yearly
- Selective bibliography from the field of environment; first published in 1992, issued yearly
- Support of environmental protection in the Czech Republic; first published in 1999, issued yearly

Basic information on the state administration activities is involved in the Bulletin of the Ministry of the Environment which has been issued since 1991

Reports into the CIPR in 2005 according to the type of emission



Central Nature Protection Register www.nature.cz

- List of national natural monuments, national natural reserves, natural monuments, natural reserves and natural parks.

Hydroecological Information System <http://heis.vuv.cz>

- Models of the water volumes and quality, watercourses, surface water facilities, water utilities, sampling and water discharge sites, time series, map layers.
- Groundwater and surface water hydrology, water quality, volume, hydrologic forecast, hydro fund, etc.

Air Quality Information System www.chmi.cz

- Register of emissions from large pollution sources, emission balance, consumption of principal fuels, emission density, etc.
- The current state of atmosphere, ground ozone, air quality monitoring, air pollution models, atmospheric deposition (S, N, H, Pb, Cd, Ni), precipitation, airborne monitoring, etc.

Meteorological and Climatic Information System www.chmi.cz

- Weather forecast, wind forecast, European forecast map, early warnings, biometeorological forecast, UV index, lightning and tornadoes detection system, etc.

Waste Management Information System <http://ceho.vuv.cz>

- Register of waste and packaging management, waste dumps and facilities for waste treatment, use and disposal, information on waste production and disposal, etc.

Environmental Burdens <http://map.env.cz>

- Site remediation, old waste landfills, elimination of environmental burdens caused by the former Soviet Army.

Decisions and Penalties of the Czech Environmental Inspectorate www.cizp.cz

- Charges for pollution sources and discharge of waste water into surface water.

GeoInformation System www.geology.cz

- Geo-database "GeoČR" 25, 50, 500 – GIS of digital geological maps. A digital atlas of the Czech Republic GEOČR 500, a geological database GEOČR 1:25000, other geo-databases such as important geological locations, a litho-geochemical database, petrographic and mineralogical analyses, a geo-database of radon risk maps 1:50 000, geochemistry of surface water, geochronology of rocks, GEOMON – monitoring of small catchment areas, database of petrographic and mineralogical analyses, etc.

Mineral Resources Information System www.geofond.cz

- Maps of protected raw material deposit, other deposits, survey areas

Geofund www.geofond.cz

- Bore-hole register, landslides, deposits, undermined areas.

Information System of Environmental Impact Assessment www.cenia.cz

- Subjects under EIA, activities, authorised persons, etc.

IPPC Information System www.ippc.cz

Decisions of the Minister of the Environment, proposed by the State Environmental Fund www.sfzp.cz

Natura 2000 www.nature.cz

Alternative Energy Sources www.vukoz.cz

Non-productive Plant Gene Pool www.vukoz.cz

Register of approved GMO and Register of GMO Users www.env.cz

Information System of Public Library and Information Services www.env.cz

Integrated Pollution Register www.irz.cz

INTEGRATED POLLUTION REGISTER

The Czech Integrated Pollution Register (CIPR) is a database of selected pollutants, their emissions and transfers in compliance with the requirements of the European Pollutant Emission Register (EPER). Since the data in the database has a geographic location (company, plant), the CIPR can be used to determine the quality of the environment in a given place. The CIPR is used to monitor the success of environmental policies. By facilitating access to the pollution sources' emission data CIPR promotes public participation and control, contributing to more responsible environmental behaviour of the companies. Industrial and agricultural enterprises may use the data from the register as an environmental management tool (reduction of inputs, implementation of new technologies).

The register contains information on the release of the registered pollutants into air, water and soil (emission) and the pollutants contained in waste and waste water of production facilities (also known as transfer). The obligation to report in terms of the CIPR is effective only if the amount of a released pollutant over a calendar year is equal to or exceeds the threshold level, as specified in Governmental Decree No. 368/2003 Coll.

The Central Registration Office (CRO) unifies and facilitates reporting on the use of a registered substance and its emission in water, air and soil. The objective is to unify all environmental reporting through the CRO so that the environmental portal is used as a single output and the CRO as a single input of the sector.

Installations with obligation to report into the Czech Integrated Pollution Register

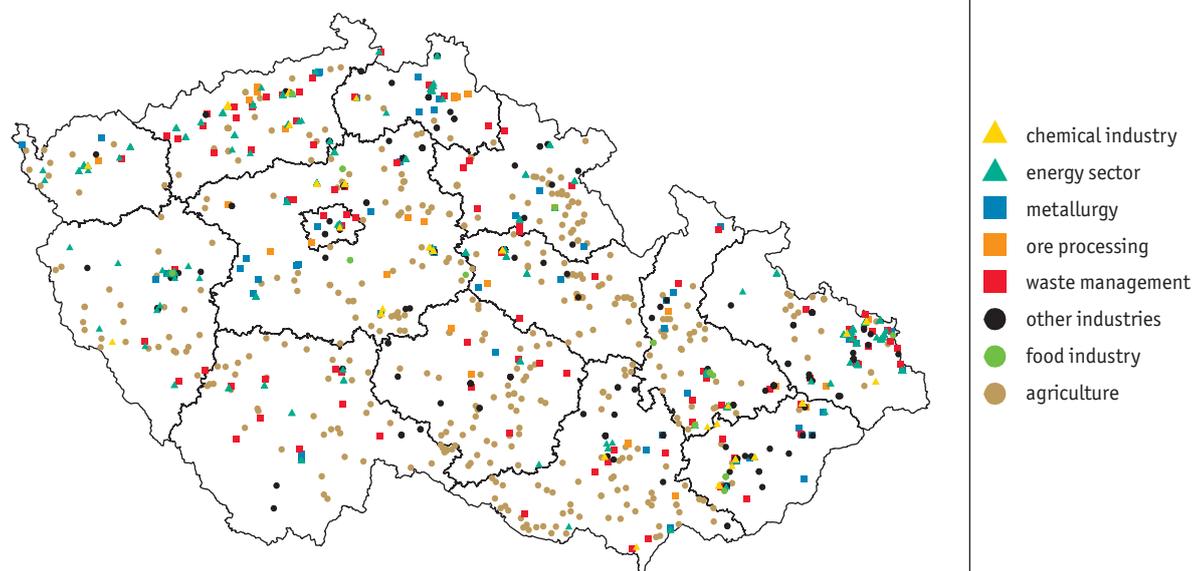


Fig. 7.1

Source: CENIA

Assessment of Environmental Information

At present high-quality and easily accessible publications exist, both in printed and in electronic versions, as well as large databases. As early as in the mid 1990s information over-saturation became visible – extensive facts cannot bring quick answers to the questions of politicians and citizens. There were no interpretations, systematic interdisciplinary analyses and prognostics.

One of the main reasons to establish CENIA was to provide information support including interdisciplinary analyses and syntheses also in the international context. Assessment is carried out by experts from many areas not only from CENIA.

Information on the state of environment is also involved in the yearbooks of other ministries, as e.g.:

- Report on the state of agriculture in the Czech Republic, issued by the Ministry of Agriculture
- Report on the state of water management in the Czech Republic, issued by the Ministry of Agriculture
- Report on the state of forests and forest management in the Czech Republic, issued by the Ministry of Agriculture
- Public water services, issued by the Ministry of Agriculture
- Yearbook of transport, issued by the Ministry of Transport
- Tourism in the Czech Republic, issued by the Ministry for Regional Development
- Panorama of the Czech industry, issued by the Ministry of Industry and Trade
- Statistical yearbook from the field of labour and social affairs, issued by the Ministry of Labour and Social Affairs
- Czech health statistics yearbook, issued by the Ministry of Health

08



Throughout the monitored period, there has been an obvious strong political influence on perception of the society and on optimistic expectations for further development in the Czech Republic. Polls show that political orientation and satisfaction with the political situation influence also the view on the condition and development of the environment in the Czech Republic, as well as the view regarding administrative bodies.

Access to environmental information provided in Act No. 123/1998 Coll., including the state's duty to publish the information actively, is not a sufficient reason for creating an objective civic rational attitude to environmental issues. Over the past 15 years the perception of the environment as an urgent issue has decreased, people's satisfaction with the condition of their environment has grown, and the perception of institutions dealing with environment protection has been favourable.

The Public Opinion Research Centre (PORC) of the Institute of Sociology of the Academy of Sciences of the Czech Republic (formerly the Poll Opinion Research Institute) deals with public attitudes to the environment. The systematic research of PORC applies to four types of questions, esp. satisfaction with the environmental condition in the place of residence (1990–2005); satisfaction with the condition of the environment in the Czech Republic (1996–2004); urgency to solve problems in certain social areas (1992–2005); and evaluation of governmental and non-governmental institutions in the area of protection and management of the environment (1995–2002).

Other institutions carried out several ad hoc surveys upon request by the Ministry of the Environment, the Czech Environmental Institute and some companies.

Research is carried out with a representative sample of Czech citizens. Most often, about 1,000 respondents over 15 are surveyed in the form of "face to face" interviews. Respondents are selected with a quota method based on the data received from the public census by the Czech Statistical Office.

Graph 8.1

— dissatisfied
— satisfied
Horizontal axis: year/month

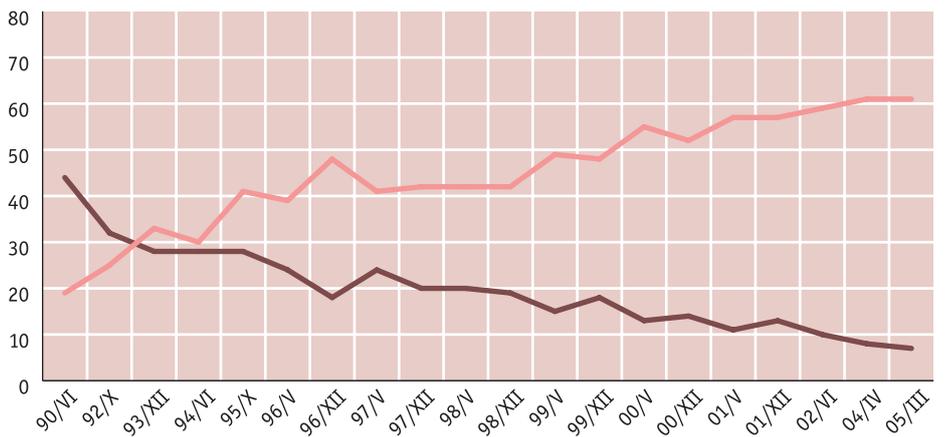
In the European Union sociological indicators have been observed since 1973. Under the patronage of the European Commission standardized researches of the mass observation in the Member States are carried out.

For more than 30 years the Eurobarometer has mapped the European public opinion in such areas as social situation, health, culture, information technologies, environment, defence and education.

Development of Views on the Environment

Over the past 15 years, public satisfaction with the environment in the place of residence has tripled so that most people are satisfied today (61% in 2005). It can be deduced that the public opinion is based on personal experience. At the beginning of the 1990s, citizens were experiencing obvious evidence of low quality environment (smoking chimneys, dirty water in rivers, frequent smog situations in winter inversions, esp. in northern Bohemia and northern Moravia). Currently, the obvious pollution has been reduced and people evaluate their environment e.g. acc. to the option to separate waste, better surface water quality (wastewater treatment plants were built almost in all municipalities with over 5,000 equivalent citizens – wastewater treatment involves 78% of people). The need to protect the environment was indicated by several catastrophic events, such as floods in CR in 1997 and 2002, and the tsunami in Thailand in 2005.

Public satisfaction with the environment in the place of residence 1992–2005 (%)



Source: PORC

People evaluate the environmental condition in the Czech Republic in completely different ways. The public opinion of the environment has been continuously monitored since 1996. Throughout that period, dissatisfaction with the environment has prevailed, though it has gradually decreased almost by 40% and satisfaction has grown by 2.5 times. At the same time, education and social situation of dissatisfied respondents has shifted. In the period of "obvious pollution", less educated people of a lower social status were dissatisfied; currently, better situated university graduates are mostly dissatisfied.

Graph 8.2

— dissatisfied
— satisfied
Horizontal axis: year/month

Satisfaction of inhabitants with the environment in the Czech Republic 1996–2004 (%)

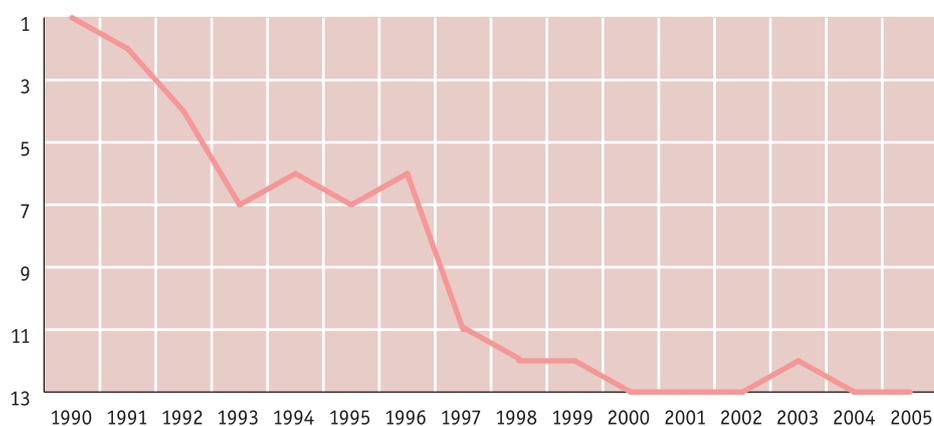


Source: PORC

Urgency of Environmental Issues and Their Solutions

The perception of the urgency regarding environmental issues has been decreasing, although inhabitants still consider the environmental condition to be very important. In a large (non-standardised) opinion poll in 1990, citizens placed environmental protection first in a value hierarchy. In 1993 most people considered the environmental issue to be very important (7th place out of 16 monitored social areas) in 2005, only one fourth of inhabitants were of the same opinion (13th place out of the 15 monitored) – see table 8.1. and graph 8.3.

Public perception of the environmental condition



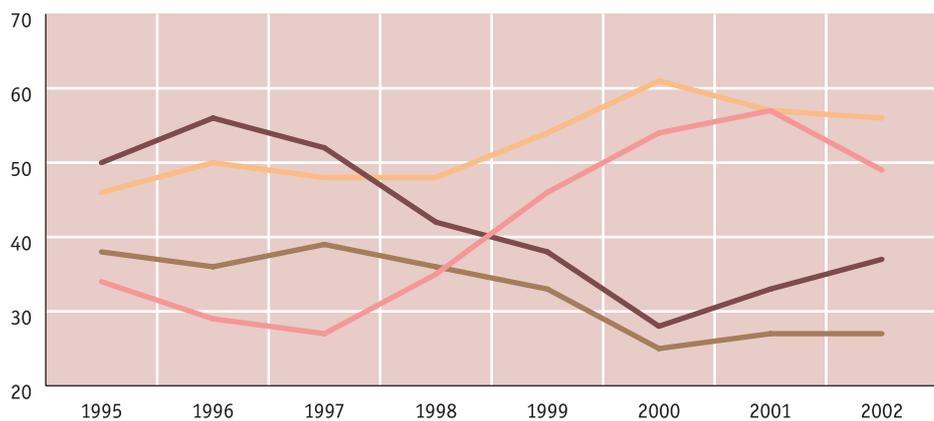
Source: PORC

Activities of environmental institutions have been evaluated in the same way as the perception of the environment – the most positive evaluation is related to personal experience. While activities of the government have been perceived negative so far (though the evaluation has been better), satisfaction with local self-government has grown (see graph 8.4). Non-governmental environmental organisations have been considered reliable too.

Although the environmental condition has improved in the last fifteen years in part because of, also due to measures taken by large industrial companies, the attitude of companies to the environment is evaluated negatively by over 60% of respondents.

The public survey of environmental issues showed a rational approach from people as regards environmental problem solving (introducing power savings as a solution to growing power consumption) and the willingness to participate in the environmental protection (sorted waste, purchase of environmentally friendly products).

Public satisfaction with activities of the Ministry of the Environment and municipal offices



Source: PORC

Graph 8.3

The assessment of the Ministry of the Environment has considerably improved since 1999.

Graph 8.4

- Ministry of the Environment
 - dissatisfaction
 - satisfied
- Municipal offices
 - dissatisfaction
 - satisfied

Table 8.1

Time series of the perception of individual social areas as very urgent between 1992 and 2005 (%)

Year/month	92/X	93/III	93/X	94/IV	94/X	95/IV	96/VI	97/V	98/V	99/V	99/X	00/V	00/X	01/V	01/X	02/IV	03/III	04/III	05/I
Bribery, economic crime	–	–	70	76	77	73	70	83	82	76	78	79	80	80	74	73	70	65	67
Unemployment	44	42	40	47	42	37	26	32	55	74	67	76	70	59	48	67	74	84	70
Organised crime	–	–	68	76	73	66	68	68	71	64	68	70	67	63	70	70	72	65	66
General crime	73	81	83	85	79	76	72	68	70	62	69	62	63	60	60	64	66	59	57
Social security	–	55	48	57	59	60	53	55	60	55	58	58	59	52	50	52	57	62	50
Functional legislation	–	51	45	47	48	48	39	53	55	50	53	54	58	56	53	50	60	48	49
Health service	–	59	55	45	46	56	54	75	65	49	47	50	51	52	51	58	59	70	63
Living standard	54	57	52	58	54	54	49	48	54	47	48	45	47	44	44	51	46	52	45
Economic reform	69	58	53	47	42	41	33	61	58	64	56	57	46	48	37	47	33	51	45
Housing and rent	–	–	32	39	41	43	49	50	44	32	38	40	37	31	33	46	44	47	41
Agriculture	56	44	37	42	45	41	36	39	39	40	45	38	35	38	36	43	47	44	37
Education	–	46	36	35	35	36	28	42	36	24	25	26	33	35	41	43	37	41	36
Environment	55	66	51	57	48	52	50	38	36	27	29	27	29	29	32	35	33	31	25
Refugees in the Czech Republic	–	–	20	25	–	15	18	16	17	18	23	18	23	13	23	19	23	24	17
Racism	–	–	–	–	–	–	–	–	22	17	16	18	16	15	18	21	22	20	16
Living with the Romanies	–	–	28	31	24	22	19	16	13	11	13	11	15	9	11	–	–	–	–
Relationship with the Slovak Republic	–	27	15	16	12	10	10	16	10	5	6	5	5	8	5	–	–	–	–
Territorial administration	–	–	–	10	8	9	7	5	6	5	4	5	5	6	5	–	–	–	–

Source: PORC

Development of Opinions in the Monitored Periods

After 1989

In 1990–1992, when citizens mostly felt the need to solve problems of the environmental protection, the following laws were passed:

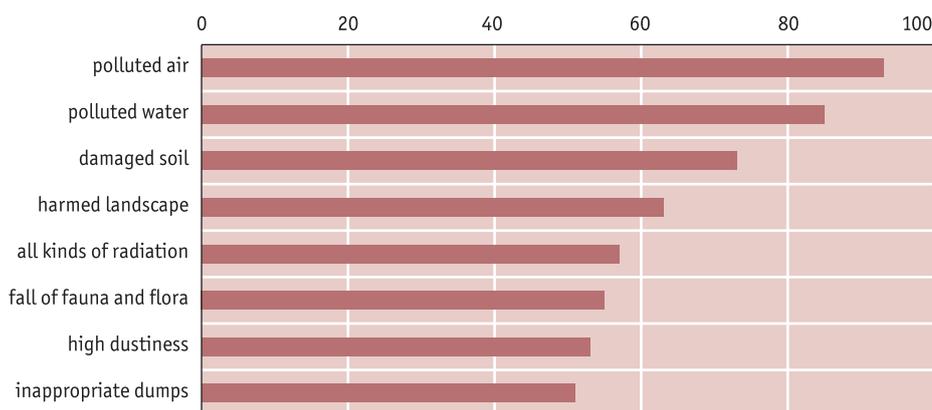
- 1991: the Act No. 282 on the Czech Environmental Inspectorate
- 1991: the Act No. 388 on the State Fund for the Environment of the Czech Republic
- 1992: the Act No. 17 on the Environment

The environmental damage caused before 1989 was extensive in some localities, and it was one of the main drivers for rejecting the state policy in this area (for instance demonstrations in northern Bohemia at the end of the 1980s, the first demonstration of Prague Mothers in Prague, etc.). For these reasons – according to first “post-revolution” polls carried out in 1990 – citizens put environmental protection in the first place in a value hierarchy. They were strongly dissatisfied mainly with the quality of air, drinking water and the environment in the place of residence. Citizens perceived the unsatisfactory quality of the environment as the main cause of health risks. 83 % of respondents were dissatisfied with the environment in the place of residence.

From a global point of view, industrial pollution of environmental components was seen as the primary danger to the mankind. As much as 92 % of respondents were of the same opinion.

People were dissatisfied with the quality of air, drinking water, food, and with solid waste disposal. This was reflected in the order of urgency of solutions to individual environmental problems.

Priorities of environmental components improvement – May 1990 (%)



Source: PORC

Public interest in information related to the environment has been steadily high since the beginning of the 1990s. Since 1992, it has ranged from 80% to 90%. Generally, the higher the dissatisfaction with the environment, the higher the interest (81% of the fully satisfied and 97% of the very dissatisfied showed interest). In 1992, 91% of respondents showed interest.

The 1990s

Public opinion of the impact of economic transformation on the environment is striking. At the time of large investments in environmental restoration (see chapter 5) when buyers of companies were bound to remedy damage to the environment in the privatisation process, most citizens perceived impact of economic changes on the environment negatively.

View of impact of economic changes on the environment (%)

changes in economy –	yes				no			
	1995	1996	1997	1998	1995	1996	1997	1998
effective remedy of environmental damage from the past	34	35	25	28	61	55	64	60
environmental damage prevention at present	34	33	24	29	60	57	64	61
development of conditions of environmental improvement	44	41	33	33	46	46	51	52

Source: PORC

Before Accession to the European Union

A public administration reform had formed regional councils, which took over important part of the state administration in the environmental area. While the regional councils have become more prestigious – at least with those who have some opinion of them (and probably experience with them), the Parliament, which was included in the surveys and did considerable work in the area of the European legislation approximation during the monitored period, was seen negatively (table 8.3).

Graph 8.5

In 1993–1998, when the perception of urgency of environmental problems rapidly decreased, fundamental changes in environmental protection took place:

- Drop in sulphur dioxide air pollution
- Drop in dust air pollution
- Drop in insoluble substances water pollution
- Drop in oil substances water pollution
- Decrease in the mining of mineral resources
- Increase of investment in environmental protection

Table 8.2

In 1998 the right of the public to information on the state of the environment gained a legal framework. The Act No.123/1998 Coll. on the right to information on the environment was adopted.

Table 8.3

View of activities of the Parliament and regional offices in the environmental area (%)

		2001	2002	2004
Parliament of the CR	Good	30	23	22
	Bad	48	50	52
	Do not know	10	27	26
Regional offices	Good	23	27	36
	Bad	25	27	32
	Do not know	52	46	32

Source: PORC; Note: PORC did no such research in 2003

Investigation of the non-profit sector as a whole carried out by PORC in 2003 showed that 63 % of respondents consider it an indispensable part of the society.

On the other hand, behaviour of companies and enterprises to the environment has been negatively evaluated by more than 80 % citizens, although there are no obvious reasons.

Present Time

As in the period before the accession to the EU, citizens have become more satisfied with the environment in the place of residence. In December 2001, 57 % of inhabitants were satisfied; 61 % in March 2005. People are most satisfied with factors listed in table 8.4.

Table 8.4

Satisfaction in place of residence (%)

	Satisfied	Dissatisfied	Do not know
Access to free nature	86	14	0
Purity of the surroundings	74	26	0
Quality of drinking water	72	24	4
Quality of air	67	32	1
Level of noise	63	35	2
Quality of surface water	51	37	12

Source: PORC

People also like to participate in the environment protection if it is easy to do so. However, they are not active in solving this issue. For example, only one third of respondents participated in the conservation of nature.

Table 8.5

Attitude of households to the environment (%)

	Always	Often	Rarely	Never	Don't know
Deliver, separate hazardous waste	36	34	17	9	4
Separate ordinary waste	32	35	20	12	1
Save energies and water to protect the environment	12	30	30	24	4
Buy environment-friendly products	4	22	36	25	13
Reduce driving by car to protect the environment	4	11	34	41	10

Source: PORC

The right of citizens to influence the decisions of the state administration regarding environmental issues is confirmed by the Act No. 100/2001 Coll. on environmental impact assessment and in several other laws.

Are We Different from the Other Europeans?

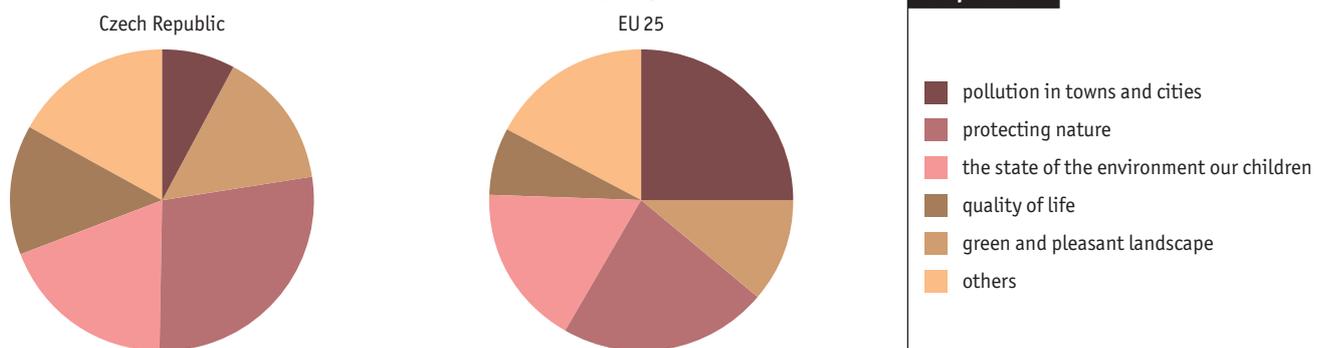
In November 2004, environmental issues were researched in Europe upon request by the European Commission (Eurobarometer 217). The research involved almost 25,000 respondents; 1,025 respondents were questioned in the Czech Republic.

Question *“What is your first association if you hear the Environment?”* was most frequently answered by: polluted environment in towns, nice countryside, nature and environment protection for the children. The answers differed significantly according to regions: the most frequent association in countries with large population density in southern Europe is polluted towns (Italy 43%, Portugal 41%); in contrast, polluted towns are hardly a problem for Scandinavian countries (Finland 7%). In the Czech Republic, the most frequent answer was “protection of the nature” followed by “the environment for our children” (see graph 8.6). Main dangers related to the environment (respondents could give 5 answers) included climatic changes, industrial accidents, air and water pollution, and the growing volume of waste. In the Czech Republic, people were most afraid of industrial accidents, air and water pollution; in some countries, people were most afraid of climatic changes (Sweden 68%) – see graph 2. In the Czech Republic, the proportion of people who felt well informed about environmental issues was almost the same as the proportion of those who did not feel so. The Danes felt they were best informed (77%); the Lithuanians (34%) and the Portuguese (39%) feel to be least informed. The majority of European citizens felt a lack of information in the area of genetically modified organisms and the health impact of chemical compounds contained in food. People said they would like to have more information in the area of solutions to the environmental problems (EU15 average: 55%; accessing countries: 60%) rather than on the problems as such (EU15: 14%, CR: 10%).

Question *“What do you do or what would you give up to contribute to the improvement of the environment?”* was most frequently answered by: separation of waste (72% in EU15, 80% in CR), power savings in households (39%), usage of environmentally friendly products (31%) and public transport (30%). Only 8% of people on average said they would be able to live without their cars (graph 8.7).

From the Eurobarometer research results the following: the Czech citizens perceive the term environment somewhat differently than do other EU-citizens. On the other hand the willingness of our citizens to protect the environment is directed in the same areas as in other European regions.

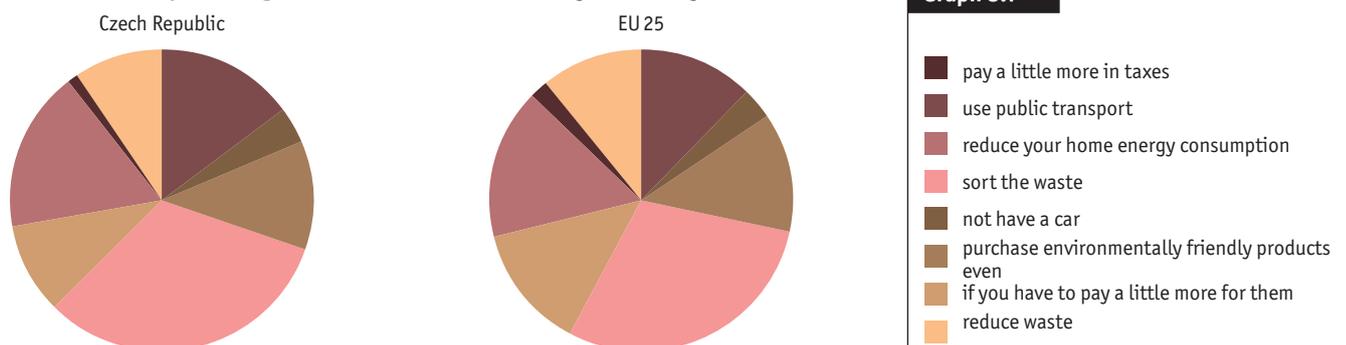
When people talk about „the Environment“, which of the following do you think of first?



Source: Eurobarometer 217

Graph 8.6

In order to contribute protecting the environment, what would you be ready to do?



Source: Eurobarometer 217

Graph 8.7



Environmental education leading to responsible behaviour not only with respect to society, but also towards nature, has been involved in the Rainbow Programme from 1990. At present environmental education is embedded in Section 13 of Act No. 123/1998 Coll., on the right to access environmental information. In 2000 the Czech government made a decision regarding the issue of environmental education and recommended it to the whole state administration. The Gestor of the environmental education is the Ministry of the Environment.

Non-governmental non-profit organisations dealing with environmental protection were started from “scratch” after 1989. Only some conservationist organisations, e.g. Czech Union for Nature Conservation or the famous Brontosaurus movement, survived the previous regime. At the moment there are more than 420 non-governmental environmental organisations in the Czech Republic.

New post-revolution environmental regulations provide for participation of general public and their associations in deciding public matters which might influence the environment. The Czech Republic joined the Aarhus Convention (Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters) in 1998. It was ratified by the Chamber of Deputies in 2004.

Environmental Education, Enlightenment and Public Awareness

Founding Period (1989–1992)

During the whole of the 1990s the term ecological education as the relation to the environment was also referred to as ecology. Due to later discussions as to whether ecology as a more general term outside the scientific ecology should be used for the environment or not, the term environmental started to be used also in environmental education.

Ecological education was included in the proposal of the conception for the state ecological policy elaborated by a team of workers from the federal State Commission for Scientific, Technological and Investment Development (later the Federal Committee on the Environment) and from the republic's ministries of the environment. In the conception such important personalities took a share as Josef Vavroušek, the head of the Federal Committee on the Environment, Bedřich Moldan, Czech minister of the environment, and Vladimír Ondruš, the head of the Slovak Commission on the Environment. The conception was approved by the decision of the Czech Government No. 210 of 18th July 1990 and consequently by the decision of the federal Government No. 511 of 26th July 1990.

Non-governmental non-profit organisations, schools, centres of environmental education and information, mass media and the state administration were identified as the most important areas to influence environmentally more acceptable behaviour of society in the Strategy of the Czech and Slovak Republic for Environmental Education from the perspective of non-governmental organisations, which was prepared by non-governmental organisations with support of the World Wide Fund, and published in Brno in 1992.

Environmental education, public awareness and dissemination of interpreted information or public education (hereinafter also EE) were together with the state administration one of the biggest domains of non-governmental non-profit organisations. Although these activities are supported by the state which formulates relevant programmes and priorities, they are actually implemented by environmental organisations. Their activities are based on and related to the interest in environmental information. The lack of such information was one of the visible triggers of the Velvet Revolution.

The dialogue between the state administration and non-governmental organisations resulted in a number of conceptual documents on EE. In 1990 the agency of the Civic Forum in Prague published the Strategy of Environmental Impacts on Population between 1990-1992 (authors: Blažek, Kruliš, Slavotínek). This strategy was the first document to define target groups of environmental education.

The 1990 Rainbow Programme says the priorities are: a strategy of environmental education for 1990s in the Czech Republic, implementation of a new philosophy of human education, support to scientific research focused on philosophical, sociological, psychological and pedagogical aspects of environmental protection, support to specific projects, development of environmental education for the state administration officers and implementation of the environmental aspect within education at primary and secondary schools.

Obligations resulting from the Rainbow Programme were detailed in the Strategy of the State Support for Ecological Education in the Czech Republic for the 1990s, approved by the Government by Decree No. 232 of 1 April 1992. The body to coordinate the ecological education was the foundation EVA. The Foundation was granted the status of the National Centre for Ecological Education. The Government also approved the obligation to inform on the Strategy performance once a year in the Environmental report of the Czech Republic.

The 1992 strategy was the only implementation of environmental education in the Czech Republic for a long time. The Strategy included basic principles of environmental education generally accepted also today. However, EVA, founded by non-profit organisations (especially Brontosaurus), never became a respected agent and organiser of environmental education.

Implementation Period (1993–1998)

After first experience with EE the Ministry of the Environment prepared conditions of providing grants and support for non-governmental associations. The number of entities systematically pursuing environmental education increased.

The state environmental policy from 1995 defines the mission of the EE as a change in attitudes and actions of man towards nature, creating preconditions of normative and economic tools. The policy says that there is not a uniform system of environmental education in the Czech Republic as there is no legislative and institutional support.

In June 1998 the parliament passed Act No. 123/1998 Coll., on the right to information on the environment. Pursuant to Article 13 the Ministry of the Environment has the duty to support environmental education with a special focus on children and young people. The Ministry of the Environment and the Ministry of Education, Youth and Sports has to create conditions to help public bodies and organisations to provide access to environmental information, creating conditions of environmental education within the competence of public administration bodies.

Pre-Accession Period (1999–2003)

In 1999 the Ministry of the Environment initiated the programme National Network of EE Centres, a joint programme of the Association of Environmental Education Centres Pavučina (the Web) and the Czech Union for Nature Conservation and since 2004 there has also been the Eco-Counselling Network (STEP). The programme contributed to the development of EE in regions. The programme involves about 50 non-governmental non-profit organisations. The project of the Associ-

ation of Environmental Education Centres “Pavučina” called Methodology and Implementation of Comprehensive Regional Environmental Education has run since 2001.

The 1999 Environmental Policy declares the necessity to incorporate the environmental aspect into education at all levels.

The Czech Government adopted the state EE programme in its Decree No. 1048 of 23 October 2000. The EE programme included the Action Plan for 2001–2003 with 45 specific tasks to be fulfilled prior to accession into the EU. More emphasis was placed on consulting and public participation, and more information on sustainable development and active civic participation in implementation and development of local Agendas 21. Attention was also aimed at enhancing qualifications of civil servants and elected representatives to reach the environmental minimum at least.

In 2001 the objectives and tools of environmental education became part of the National Programme of Education Development in the Czech Republic (so-called White Book approved by Decree of the Government No. 113 of 7 February 2001).

State resources used to support environmental education, enlightenment and public awareness in the Czech Republic

Year	Project	Implemented by	CZK
1999	Národní síť CEV/SEV	SSEV Pavučina	4 400 000
2000	Národní síť CEV/SEV	SSEV Pavučina	4 000 000
2001	Národní síť CEV/SEV	SSEV Pavučina	4 000 000
2002	Národní síť CEV/SEV	DEV Lipka Brno	3 600 000
2003	Národní síť CEV/SEV	DEV Lipka Brno	3 600 000
	MA21	DEV Lipka Brno	1 400 000
2004	Národní síť CEV/SEV	SSEV Pavučina	5 000 000
	MA21	NSZM	600 000
Total			26 600 000

Source: MoE

Environmental education, enlightenment and public awareness are supported also by municipal and regional budgets.

Present

Act No. 561 of 24 September 2004 on pre-school, basic, secondary, advance vocational and other education (the Education Act), which became effective on 1 January 2005, talks about environmental education as one of the key topics.

Amended Act No. 123/1998 Coll., amends provisions regarding environmental education. The new regulation is based on experience and the needs of regions and statutory cities. It regulates obligations of individual entities (central administrative bodies, regions and municipalities) of EE and defines the term of environmental consulting.

The Inter-departmental Group is an institution founded under the Ministry of the Environment for the purpose of EE. The Czech Ministry of Education participates in the Group and is the gestor of its sector. A lower level of EE is organised by regional coordinating bodies. The project of environmental education is supported also by the CENIA, Czech Environmental Information Agency, the National Park Administration, the Nature Protection Administration, and non-governmental organisations are represented by the Czech Union for Nature Conservation, the Association of Young Conservationists, the Eco-Counselling Network STEP, the Association of Environmental Education Centres Pavučina, the Environmental Education Club, and the associations of Brontosaurus, Tereza, Koniklec, and Zelený kruh.

“Environmental education within the meaning of sustainable development must be viewed as one of the vital conditions of the continuity of human society and its culture. This education not only brings new information but also helps develop a relationship with nature and acquire abilities and motivation, form a healthy environment and do away with global poverty.”

Source: *National Programme of Educational Development in the Czech Republic (White Book), Chapter 1 – “General Objectives of Education”*

Table 9.1

Financial aid from the EU

The most important programme in terms of the volume of finance which currently supports the sectional activities including environmental education is the Human Resources Development Operational Programme financed by the European Social Fund.

Non-Governmental Non-Profit Organisations

„Recognize and protect“ is a famous motto of the oldest and for many years the only non-governmental ecological organisation in Czechoslovakia. This motto is inscribed in the emblem of the organisation together with a twig of yew – the red, ancient, scarce, and very resilient wood of Central Europe. Under this emblem in 1958 in Prague the first modern voluntary conservationist organisation then called Sbor ochrany přírody (Environmental Protection Group) was established on the instigation of the zoologist Otakar Leisky.

... From the beginning the YEW, in the name of its motto, focused not only on protection of the environment and landscape, but also on education; it paid extraordinary attention to the young generation.

Miroslav Vanek: It was impossible to breathe here

Non-governmental environmental organisations started to emerge after 1989 as newly established or on the basis of older ones which were more or less tolerated or supported during the communist regime. The best-known were TIS – Union of Nature and Landscape Protection, Czech Union for Nature Conservation and Brontosaurus.

A large number of non-governmental organisations were established at the beginning of the 1990s thanks to enthusiasm of many people. These organisations were provided institutional support from the Ministry of the Environment and financial support from US government resources and foundations, and also from the Netherlands, Great Britain and the EU programme Phare.

This boom died down in the mid 1990s when some smaller organisations cease to exist.

Powerful and important centres of environmental education got ahead in the late 1990s (SEVER, Lipka, Chaloupky, Paleta, Dřítatka, Víta, Toulcův dvůr) which started another wave of centres (and experience) established after 2000.

Zelený kruh (Green Circle) is an important representative of non-governmental organisations which gathers comments for all strategic and programme documents prepared by the Ministry of the Environment.

The public awareness of non-governmental organisations was represented by organisations with good communication skills which were able to prepare noticeable events – Děti Země (Children of the Earth), Greenpeace, Hnutí Duha (Rainbow) and others.

In 1989, 537 citizen-action public entities were registered (mostly successors of social organisations of the communist National Front), and by 2001 it was more than 48,000 organisations. During the 1990s two new legal forms of non-profit organisations developed – the general interest society (o.p.s.) has existed since 1995 and the endowment fund since 1997.

According to the Czech Statistical Office, there was only one foundation in 1989 (Hlávkovo nadání). In 1990 the figure was 37, and in 1991 their number grew to 420, while when the foundation and endowment act was passed in 1997 there were 5300 foundations.

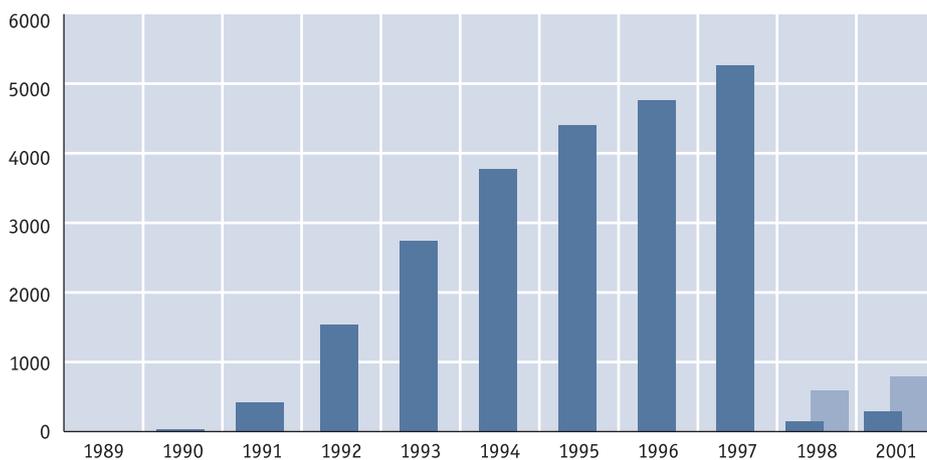
Table 9.2

Projects of non-governmental organisations supported by the Ministry of the Environment

Year	Number of submitted projects (pcs)	Total number of supported projects (pcs)	Required contributions of NGO (thousand CZK)	Amount of provided subsidies (thousand CZK)
1995	329	153	16 902	11 669
1996	507	204	30 306	17 300
1997	497	193	49 375	18 800
1998	680	230	76 532	19 350
1999	581	143	69 606	19 350
2000	498	158	51 823	19 350
2001	523	157	56 100	19 350
2002	465	145	49 183	19 350
2003	499	159	55 005	22 000
2004	519	164	49 426	20 000
Total	5 026	1 706	504 258	186 519

Source: MoE

Number of foundations and endowment funds



Source: MoE

One of the important motivational factors for activities of non-profit organisations is the yearly announced prize of the minister of the environment, the Prize of Josef Vavroušek. Also the prize of the Sasakawa peace foundation for the best projects of non-governmental organisations is very prestigious.

The way of pursuing the ecological education by environmental organisation can be demonstrated by several successful international projects.

- One of the most famous is the project “Wild”. By means of more than eighty activities this project in a natural way educates children regarding environmental protection. The project is realized in education centres.
- In the programme “GLOBE” students from nearly a hundred schools take measurements and observe the quality of the environment in such fields as meteorology, hydrology, biometry, phenology, pedology and Earth Remote Sensing. The project is coordinated by the non-governmental organisation Tereza which is also in charge of the project “Blue from the sky – are you interested in what you breathe?”. The goal of this project is to draw attention of the public and of the competent officials to the regional and global consequences of air pollution.
- The aim of the project “Vitalizing water” coordinated by Alcedo is to collect as much information about the watercourses as possible and submit them to experts and competent officials to solve problems related to them. From July 2002 to November 2003 a pilot project called “Vitalizing water for the municipality” proceeded within which several Czech schools under the assistance of Tereza came up with and realized their own projects on water quality protection.
- Also the campaign “Clean up the world!” has its place in this list. Its goal is to increase the ecological knowledge of children and adults and to support education for waste minimisation. Every year more than 8000 volunteers join this project. This project is realized by the Czech Union for Nature Conservation.

Graph 9.1

■ Foundations
■ Endowment Funds

Organisations specialising in environmental education:

- Association of Environmental Education Centres Pavučina – 28 members, e.g. SEVER Horní Maršov, Lipka and Rezekvítek Brno, Vita Ostrava operate nation-wide
- Eco-Counselling Network STEP – 9 members, e.g. Veronika, Environmental Legal Service operate nation-wide
- Tereza – association for environmental education, Prague
- Brontosaurus – 31 founding units and children clubs Brdó
- Association of Brontosaurus
- Environmental Education Club

Organisations using environmental education enlightenment and public communication as a tool of direct environmental protection and sustainable development:

- Czech Union for Nature Conservation – 28 accredited and 10 registered environmental centres, about 150 groups of Young Conservationists associating 3,500 children
- Zelený kruh (Green Circle) – 25 organisations, some of them operating nation-wide: Duha, Děti Země, Arnika, Greenpeace PRO-BIO, Sustainable Development Society

Source: Non-profit sector prior to Czech accession to EU – Development, Capacity, Needs and Orientation of Czech NGO Specialised in the Environment and Sustainable Development, Foundation Partnership 2004



VOLUNTARY ACTIVITIES OF COMPANIES AND PUBLIC SECTOR

Over the last 15 years, the improvement in the quality of the environment in the Czech Republic has been brought about not only by promotion of mandatory measures prescribed by law, but also by voluntary activities of industry and public administration, especially municipalities, carried out by means of the so-called voluntary instruments of environmental policy.

The first voluntary regulatory instruments (i.e. instruments reducing the negative impact on the environment) to be implemented in our country were: ecolabelling (1993), Responsible Care (1994) and Cleaner Production (1994). These were followed by voluntary agreements between industry and state administration (1995), implementation of ISO standards of the 14 000 series (1997) and since 1998 also by EMAS (Eco-Management and Audit Scheme).

In mid-2005, more than 300 products of 75 producers have been labelled as environmentally friendly products (179 ecolabelling licences granted) in 41 product categories.

29 companies of the chemical industry are entitled to use the Responsible Care trade mark, 118 Cleaner Production projects have been implemented, seven voluntary agreements have been made, 1 332 firms have been certified ISO 14 001 and 18 companies have implemented EMAS.



National Programmes Promoting the Voluntary Activities

National Programme for Labelling Environmentally Friendly Products (EFP)

The preparation of the Czech National Programme for Labelling Environmentally Friendly Products started in September 1992. The first documentation for governmental discussion on implementation of the programme was drawn up. It contained various management scheme proposals, texts of basic documents and proposed criteria for product evaluation.

The Decision of the Government No. 159 of 7 April 1993 commissioned the Minister of the Environment to implement the National Programme for Labelling Environmentally Friendly Products and harmonise its rules with the emergent EU Ecolabel Scheme.

The Czech National Programme for Labelling EFPs was started in April 1994. Criteria were set for evaluation of thermal insulating materials from scrap paper, lubricating oils for chain saws, detergents for textiles and water-based painting and coating materials.

In 2005, the National Programme encompasses 41 evaluated product categories, ca 300 labelled products and 75 companies – ecolabel holders. The Ministry of the Environment is the guarantor of the programme, which is administered by CENIA, the Czech Environmental Information Agency (formerly the Czech Environmental Institute).

The programme and the placement of the ecolabel on a product guarantee the consumer that the labelled product has only minimum detrimental impact on the environment.

The Czech Republic was the first post-communist country to develop a successful national ecolabelling programme.

In 2000, the Czech Ecolabelling Programme became part of the Global Ecolabelling Network (GEN), an organization currently (2005) associating more than 35 most significant world ecolabelling programmes.

In the Czech Republic, the National Programme is being implemented in parallel with the EU Ecolabel Scheme and the ecolabel "Environmentally Friendly Product" is awarded together with the EU ecolabel "The Flower".

On 7 June 1994, the first ecolabel was awarded to the product CLIMATIZER PLUS (thermal and sound insulation) of the company CIUR a. s.

On 11 February 2005, the first EU ecolabel "The Flower", was awarded in the Czech Republic – to the Czech textile producer, Hybler Textil, a. s.

Fig. 10.1

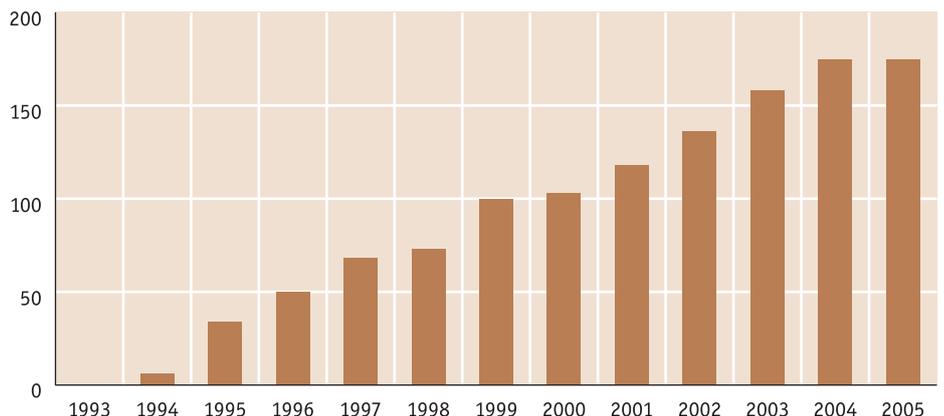
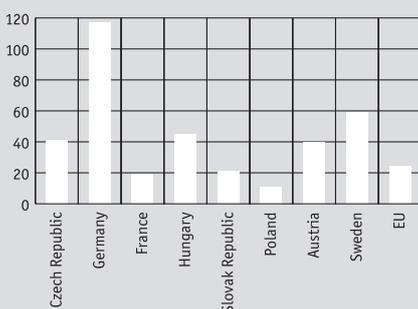
Logo of the Czech ecolabel and the logo of the EU's "The Flower"



Graph 10.1

Number of labelled products (ecolabelling licences granted)

Product categories in national ecolabelling programmes of EU countries



Cleaner Production

The first (demonstrational) Cleaner Production project in the Czech Republic was carried out in Chemopetrol, Litvínov in 1992–93. Initiated by the Czech Environmental Management Centre (CEMC), it was implemented by the World Environmental Centre. It resulted in a reduction in VOC emissions as well as annual savings in the amount of CZK 4 mil.

In 1999, the Czech Republic joined the International Declaration on Cleaner Production which was proclaimed at the international level in Seoul, South Korea in 1998. At the same time, the Declaration was joined by the city of Zlín and by the companies Škoda Plzeň and Znovín Znojmo. The national framework was provided by Government Resolution No.165 of 9 February 2000 which declared the National Cleaner Production Programme (NCP). The activities of NCP as an agency were entrusted to the Czech Cleaner Production Centre. In 2000, the International Declaration on Cleaner Production was joined by 6 more organizations (the city of Moravská Třebová and the companies Mora Moravia, Provio Jaroměř, ŽS Brno, Plzeň heating plant and Xaverov holding). The seventh International High-Level Seminar on Cleaner Production was held in Prague in 2002, where a new activity was declared – the Life Cycle Initiative – promoting the evaluation of products' life cycles. At this seminar, the International Declaration on Cleaner Production was signed by 3 more organisations (Kovohutě Příbram, Eastman Sokolov, the "Eco-building" association). The total amount of signatories of the declaration in the Czech Republic rose to 12.

In 2004 the functions of the NCP Agency and of the National Cleaner Production Centre were entrusted to the Czech Environmental Institute (today's CENIA).

During the 12-year history of Cleaner Production in the Czech Republic, 118 projects were implemented in businesses from the fields of light and heavy industry, transportation, chemical and textile industry, health care, food industry, costume jewellery production, agricultural primary production, bakeries, brewing as well as forestry. 32% of these projects resulted in financial savings. In the year following the Cleaner Production implementation, 37 businesses saved a total of CZK 177 million. The average saving was almost CZK 5 million. The ROI varied between 0 and 72 months with an average of 27 months.

National EMAS Programme

The EMAS system entered into force in April 1995 by Council Regulation (EEC) 1836/1993/EC of July 1993 (EMAS I) and it was opened mainly to businesses from the production (industrial) sphere. The National EMAS Programme based on this Regulation was approved by Decision of the Government of the Czech Republic No. 466 of 1 July 1998. The EMAS Programme Council and the EMAS Agency were established as bodies responsible for the EMAS implementation in the Czech Republic.

The accreditation body of the Programme is the Czech Accreditation Institute, o.p.s.

Government Decision No. 651/2002 of 19 June 2002 on Updating the National Implementation Programme incorporated the Regulation (EC) No. 761/2001 of the European Parliament and of the Council (also referred to as EMAS II) into the National Programme.

The main purpose of the new Regulation was to extend the applicability of the Regulation from the field of industry to all economic sectors (incl. public institutions), to strengthen the compatibility between EMAS and ISO 14 001 by using ISO 14 001 as an essential EMAS basis and to encourage the participation of SME in the programme.

Cleaner Production Project: Minimization of Waste from Surface Treatment in the company

KOH-I-NOOR Praha, a.s., in 1995

The main production programme of KOH-I-NOOR, a.s., is formed by products for textile industry and small consumers. The project dealt with reducing waste water consumption from plating lines and reducing consumption of chemicals in these lines. The impact of the changes on the production quality of the nickel plating lines was also monitored.

Cleaner Production Measures:

- returning water from economical rinsing to plating baths, thickening the economical rinsing
- lowering plating currents
- introducing consumption record-keeping
- reducing the amount of added chemicals

Economic Benefits:

The costs of the CP measure were insignificant, the return period instantaneous. Through cleaner production implementation, the company saved CZK 761,732/year. The savings do not include the costs of saving 21,621.6 kWh (approximately CZK 40,000).

Environmental benefits:

- waste water reduction of 8,250 m³/year
- waste water load reduction of 5 g Ni/l
- reduction in the amount of NiCl₂ by 231 kg/year
- reduction in the amount of NiSO₄ by 656 kg/year
- reduction in the amount of H₃BO₃ by 203 kg/year
- elimination of Saccharine – approximately 2 t/year

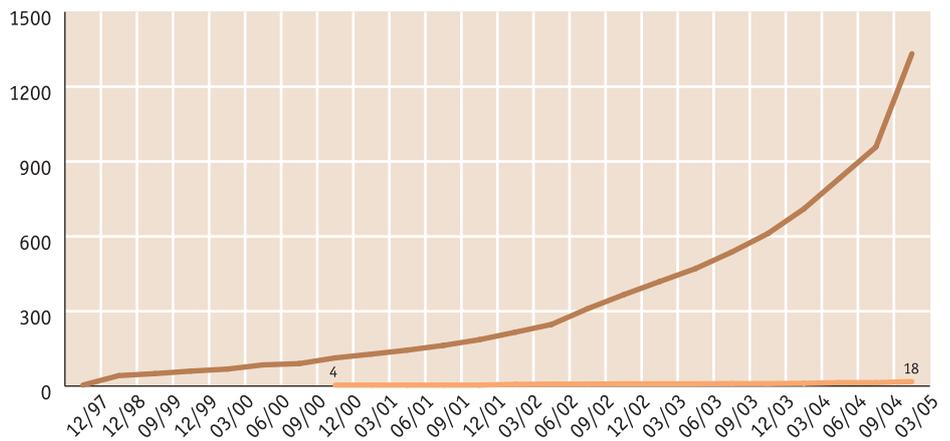
Source: KOH-I-NOOR, a.s.



Graph 10.2

Number of enterprises with EMAS and ISO 14 001 by year quarters

— ISO 14 001
— EMAS



Source: CENIA, Czech Environmental Management Centre (CEMC)

Barum Continental, Ltd, is a company with a long tradition of tyre production established by the company Bata in Zlin as long ago as 1932. It currently produces tyres for cars (this production with 100,000 pieces a year is dominant), trucks and agricultural machinery. The company has had a certified EMAS System in place since 1997 – according to the Council Resolution 1836/93. The EMAS emergency plans helped to minimize losses (chemical leaks) when the seat of the company was hit hard by the 1997 extensive floods. No environmental emergency occurred thanks to the readiness of the company as regards storing materials and harmful substances.

On 6 November 2005, Barum Continental became the first organization registered in the National EMAS Register in the Czech Republic. The efforts and results of the company in the field of environmental protection were rewarded in 2002, when the company was awarded the European prize "Awarded for Best Practice in Environmental Management". Barum was the only company among non-EU countries that received this prize.

Source: Environmental statement 2004, Barum Continental, Ltd.

The graph shows a sharp increase in ISO 14 001 implementation. ISO 14 001 surpasses EMAS as regards the number of certified businesses mainly for economic reasons. ISO is the less demanding option, valid worldwide and its implementation is currently seen as a full market factor. This trend is apparent all over Europe, despite the pressure from EU authorities to implement EMAS.

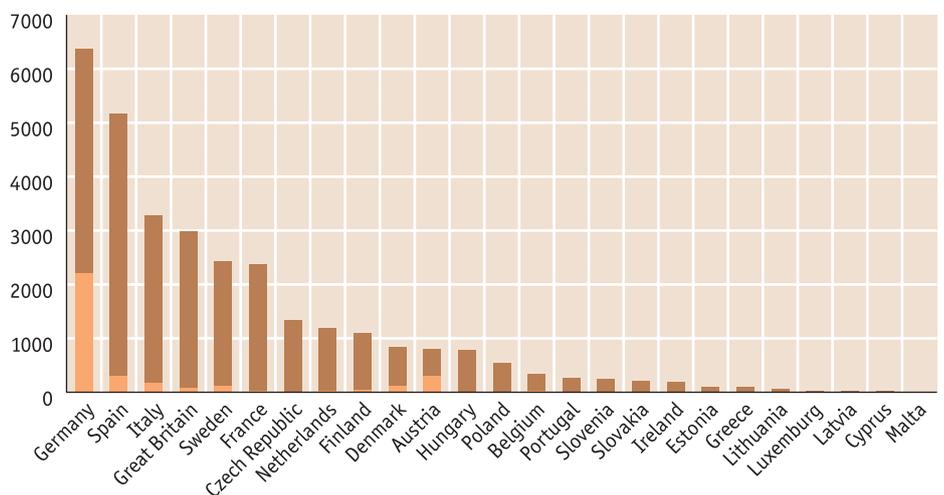
The most subjects with implemented EMAS are in Germany, Austria, Italy and Spain. In these countries EMAS is strongly supported by state programmes.

The Czech Republic ranks seventh among the European Union Members concerning the number of ISO 14 001 certificates (2004/2005). Among enterprises with EMS (ISO 14 001 + EMAS) manufacturing enterprises prevail, by which accepting environmental system is caused by competitive pressure.

Graph 10.3

EU Countries by number of ISO 14 001 and EMAS certificates

■ ISO 14 001
■ EMAS



Source: CENIA, CEMC

Other Voluntary Activities

Responsible Care

In the Czech Republic, this instrument was named “Responsible Enterprise in Chemistry” and the commitment of compliance with the established principles has been voluntarily endorsed by businesses of the chemical industry since 1994 – at present 29 companies are entitled to use the label Responsible Care. The administrator of this programme in the Czech Republic is the Association of Chemical Industry of the Czech Republic.

Voluntary Agreements

A voluntary environmental agreement, i.e. a contract between a public law entity on one side and one or more subjects on the other side, was first implemented in the Czech Republic in 1995. It was concluded between the Ministry of the Environment and the Czech Soap and Detergent Products Association with the aim to reduce the phosphate content in their products. The content of voluntary environmental agreements varies significantly. By the end of mid-2005, there were 7 voluntary agreements concluded in the Czech Republic.

- Agreement on Gradual Reduction in Environmental Impact of Detergents (Ministry of the Environment – MoE – and Czech Soap and Detergent Products Association, 1995)
- Agreement on Packaging (MoE, Czech Industrial Coalition for Packaging and the Environment, 1999)
- Agreement on Cooperation with the Czech Business Council for Sustainable Development and Confederation of Industry of the Czech Republic (MoE, Confederation of Industry of the Czech Republic and Czech Business Council for Sustainable Development, 1999)
- Agreement on Portable Batteries Collection (MoE, Czech Portable Battery Association, 2001)
- Voluntary Agreement on Reduction in Mercury Load from Dental Medical Institutions (MoE, Czech Dental Chamber, 2001)
- Cooperation Agreement with Building Industry (MoE, Association of Entrepreneurs in Building Industries and Association for Eco-building, 2002)
- Cooperation Agreement (MoE, Common Section for the Environment at the Economic Chamber)

Environmental Managerial Accounting

Environmental managerial accounting presents a tool, which is generally applicable to support decision-making processes in enterprises, but also in other institutions and in municipalities. The environmental managerial accounting system collects, records, evaluates and transfers to the user the information on material and energy flows, flows of all types of waste and waste management, as well as information on costs, savings and revenues relating to all activities with potential impact on the environment. The first attempts to use environmental accounting on the level of enterprise in the Czech Republic were made in the beginning of the 1990s in connection with introduction of several environmental laws, which significantly influenced the economy of the entrepreneurial sector, and it was necessary to make analyses of impact of these laws. Regarding the fact that no integrated policy on the national level was available, in some enterprises a simplified version of environmental accounting was applied, which was based on monitoring the main cost items relating to environmental protection and influencing the accounting of the enterprise. In 2002 the Ministry of the Environment elaborated the “Methodical instructions for introducing the environmental managerial accounting” according to which it is possible to introduce this system.

The impulse to form the tool “Responsible Care” or statement of responsible care guiding principles in chemical industry was a big accident in a chemical plant in Bhopal in 1984, which led to significant decrease in call for work in chemical plants.

Environmental agreements among industry and state administration bodies first appeared in OECD countries in the 1960s and in the beginning of 1970s. In larger extent they began to develop in the EU and in other OECD countries in the beginning of the 1990s. They can be found in different problematic areas of environmental protection, in different economic sectors.

The EU countries use agreements relating to industry and energy sector focusing on pollution reduction the most. Whereas voluntary access in the EU Member States usually has the form of negotiated agreements, in the USA the public voluntary programmes play the main role.

Voluntary agreements with industry or other sources of environmental pollution are becoming a more and more relevant component of the current systems of the environmental policy tools.



The concept of sustainable development is part of the first legal regulation for environmental protection drafted since 1989 – Act No. 17/1992 Coll., on the Environment. It has been endorsed by all environmental policies so far, though wordings may differ. In 2004, the Czech Government approved the Strategy of Sustainable Development in the CR.

In regions and municipalities, sustainable development has been promoted mainly by the Local Agenda 21, which has been in use since 1997. Currently, more than 60 municipalities and regions participate in these activities.

The Concept of Sustainable Development

“Sustainable development means development which satisfies current needs without compromising the possibilities for future generations to fulfill their own needs.” (UN World Commission on Environment and Development led by G. H. Brundtland, the report “Our Common Future” (1987).

Czech legislation defines sustainable development in Section 6, Act No. 17/1992 Coll., on the Environment: *“Sustainable development is such development which preserves the possibility to secure the necessities of life for contemporary as well as future generations without reducing biodiversity and which preserves the natural functions of ecosystems.”*

The Strategy was designed by the Government Council for Sustainable Development, which was set up by the Government Resolution No. 778 of 30 July 2003 as a permanent advisory, initiative and coordinating governmental body in the fields of sustainable development and strategic management. The members of the Council represent central and local government authorities, social partnerships, academics and non-profit organizations. The Council initiates, designs, coordinates, monitors, evaluates and promotes strategic dimensions of state management. It proposes measures to harmonize long-term objectives with mid- and short-term objectives

Local Agenda 21 is defined as a process which improves the administration of public matters, allows strategic planning (management), involves the public and uses the achieved level of knowledge of sustainable development in individual areas, enhancing the quality of life in all its aspects and aims towards citizens' responsibility for their lives as well as for the lives of other beings in time and space.

The concept of sustainable development in the meaning of the first 1987 definition has been implemented in the Czech Republic since the very beginning of the evaluated period.

The 1990 environmental policy – Rainbow Program – lists “the concept of sustainable development against economic growth leading to high consumption of natural resources” as the primary principle used by the Ministry of the Environment within its activities.

With different intensities and wordings, the principle of sustainable development has been endorsed by all environmental policies so far. In the 1990s this concept was implemented mainly through activities associated with the Agenda 21 adopted at the 1992 conference in Rio de Janeiro. The state and development of all three pillars of sustainable development (economic, environmental and social) have begun to be measured by indicators in the Czech Republic as well. Basic indicators were published by the Ministry of the Environment at <http://indikatory.env.cz>

Since the end of the 1990s the discussion on sustainable development has culminated in several attempts to formulate a sustainable development strategy of the Czech Republic to be adopted by the Government. The first draft was prepared by the team led by prof. B. Moldan, another was formulated by the Czech Environmental Institute in 1999. A third and final draft was prepared by the Institute for Environmental Policy in cooperation with DHV. The Government Council for Sustainable Development prepared the Strategy on the base of this draft. The Sustainable Development Strategy of the CR was approved under Government Decision No. 1242 on 8 December 2004. The Strategy was presented to the Czech Parliament and became the basis for the preparation of conceptual documents, for strategic decision-making within the state administration and for its cooperation with interest groups. The Strategy is also intended as a long-term framework for political decision-making in the context of international obligations assumed or to be assumed by the Czech Republic on the basis of its membership in the UN, OECD and EU, but respecting the specific conditions and needs of the country. The promotion of the Local Agenda 21 is a part of the Sustainable Development Strategy. The following part of this publication will deal with the implementation of the Sustainable Development Strategy.

Local Agenda 21

The Agenda 21 from Rio had a positive worldwide acceptance and the term Agenda 21 became a synonym for sustainable development. The Agenda is implemented in particular at local and regional levels as described in Chapter 28 of the Rio outcomes – Local Agenda 21.

The implementation of Local Agenda 21 (LA21) allows citizens' participation not only in environmental protection. In our country, this activity began to develop in 1997, mainly with foreign financial assistance to projects of NGOs.

At the same time, the Ministry of the Environment (MoE) started to support LA21, mainly through the Czech Environmental Institute (CEI), today's CENIA. The project “Cooperation with the British Council on Capacity-Building for the LA21 Implementation in the Czech Republic (1997–2001, participants: MoE, CEI, Institute for Environmental Policy)” was carried out with the aim of sharing British experience in the practical implementation of LA21.

The project was prepared as a joint action of the District Authority of Děčín, the Association for the Development of the Šluknov Area, the Administration of the Nature Reserve Poodří, the municipal part Prague 15 and the Brontosaurus Movement Ecocentre Toulcův Dvůr under the official patronage of MoE, which guaranteed its implementation on the Czech part. The coordination and implementation of the project was entrusted to CEI. Three pilot projects were implemented – the city of Kladno, microregion Poodří and region Děčínsko, which provided materials for the methodology of sustainable development implementation by means of LA21s. The methodology is still in use.

LA21 is one of the objectives of the current State Environmental Policy (SEP) for 2004–2010 and is also supported by the State Program of Environmental Education.

List of Municipalities in the LA21 Database (as of August 2004)

Name of municipality/town/region registered for LA21	Population	LA21 adopted in
Brno	389 000	1998
Kladno	72 000	1998
Děčínsko		1999
Jindřichovice pod Smrkem	623	1999
Polička	9 000	1999
Vsetín	30 000	1999
Český kras		2000
Hlučín	15 000	2000
Hodonín	28 000	2000
Boskovice	11 000	2001
Chrudim	24 000	2001
Karviná	65 000	2001
Krnov	26 000	2001
Kroměříž	30 000	2001
Letovice	7 000	2001
Mikroregion Poodří		2001
Moravská Třebová	12 000	2001
Orlová	34 000	2001
Prostějov	50 000	2001
Třebíč	40 000	2001
Litoměřice	26 000	2002
Valašské Meziříčí	12 000	2002
Zlín	83 000	2002
Praha 7	44 000	2003
Velké Meziříčí	12 000	2003
Kopřivnice	23 000	2004
In the archive of the LA21 database (formerly involved in LA21, not involved any more)		
Havířov	88 000	?
Český Krumlov	14 000	1997
Kolín	31 000	1998
Mikroregion Novojičínsko		1998
Studénka	11 000	1999
Liberec	101 000	2000
Frýdlant nad Ostravicí	10 000	2001
Veselí nad Moravou	12 000	2002

Source: CENIA

The database of Local Agendas 21 in the Czech Republic is operated by the CENIA, Czech Environmental Information Agency. More on www.cenia.cz, www.ma21.cz

Table 11.1

In the governmental statement of policy of August 2002 sustainable development and environmental protection belong to the priorities of the current term of office.

„In the field of regional development it is necessary to create conditions for the reduction or elimination of regional economic disparities, and, at the same time, to use possibilities to support the trans-boundary cooperation of regions and realisation of Local Agenda 21.

One of the strategic goals of the Sustainable Development Strategy of the Czech Republic is to ensure such position of regions/municipalities that would comply with their perspective function in obtaining balance among the constituent dimensions of sustainable development. To meet this target the Government using its disposable tools will among others support the introduction of Local Agendas 21 including their economic securing and will establish conditions for the integration of sustainable development principles into the regional development documents.”

Sustainable Development Strategy of the Czech Republic, Prague 2005

The town of Vsetin, an example of a successful realization of Local Agenda 21

Vsetin is the first town in the Czech Republic to obtain the ISO 14001 certificate. The Vsetin town hall managed to achieve the integrated system in the field of certification according to ISO 9001 (quality control) and simultaneously ISO 14001 (friendly approach of an organisation to the environment).

Since 2003 Vsetin has been a signatory of the Aalborg charter. At the same time it entered the project focusing on creating and monitoring common European indicators.

These activities were acknowledged by the Prize of Minister of the Environment, which was obtained by the town mayor for his personal engagement, thanks to which Vsetin now sets an example in practical enforcing of sustainable development to other municipalities.

The project of common indicators was launched at the third Conference on Sustainable Cities and Towns, Hanover, 2000.

For example, the measurement of the sustainable development level according to the ECI indicator No. 3 "Local Mobility and Passenger Transportation" in Hradec Kralove has shown that as opposed to the beginning of the 1980s when the hard (cars) vs. soft (public transportation, walking, cycling) transportation ratio in Czech cities was 20 : 80 with the hard transportation percentage gradually increasing, the current ratio in Hradec Kralove is 21.73% : 78.27% – despite a sharp increase in "hard" transportation in other Czech cities.

Graph 11.1



Activities of Towns and Municipalities for Sustainable Development

The awareness of global consequences of even "small actions" of citizens at their place of residence has led some Czech towns to join the Charter of European Cities and Towns towards Sustainability (the Aalborg Charter – adopted at the first European Conference on Sustainable Cities and Towns, Aalborg, Denmark, May 1994). Out of the 2400 European towns joining the Charter (August 2005) only three are Czech: Hlucin (2002), Vsetin (2003) and Hradec Kralove (2004).

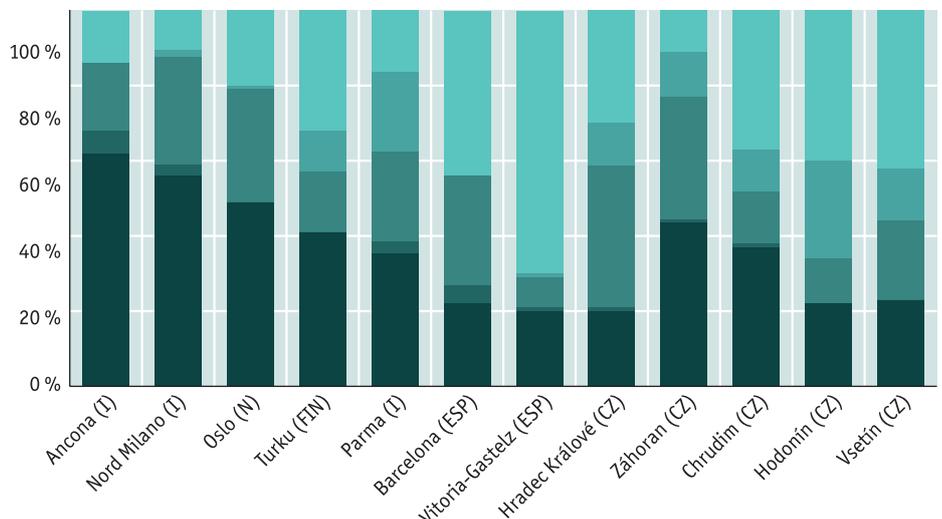
On signing the Aalborg Charter, approximately 160 European towns also joined the European Commission project "European Common Indicators of Sustainable Development at the Local Level" (ECI).

The Czech towns participating in the ECI project are: Krnov, Hradec Kralove, Svitavy, Vsetin, Chrudim, Kladno, Mlada Boleslav, Trebic, Hodonin, Decin, microregion Zahoran.

At present, 10 indicators of ECI are assessed:

1. Citizen Satisfaction with the Local Community – overall citizens' satisfaction with life in a municipality
 2. Local Contribution to Global Climate Changes – CO₂ emissions (over a longer period of time and with simplified methodology - this indicator focuses on environmental consequences)
 3. Local Mobility and Passenger Transportation – daily means and distances of transportation
 4. Availability of Local Public Open Areas and Services – accessibility of the closest public green spaces and basic services
 5. Quality of Local Ambient Air – number of days with good air quality
 6. Children's Commuting to School and Back – means of transportation used by children
 7. Sustainable Management of the Local Authority and Local Businesses – percentage of state and private organizations using environmental and social management systems (EMS and EMAS)
 8. Noise Pollution – percentage of population exposed to harmful noise levels
 9. Sustainable Land Use – sustainable development and protection of land in a municipality
 10. Products Promoting Sustainability – percentage of certified environmental friendly products and eco-agriculture in the total consumption;
- Ecological Footprint is used as an additional indicator.

Mobility and passenger transportation in cities (%)



The list of LA21 projects supported by MoE

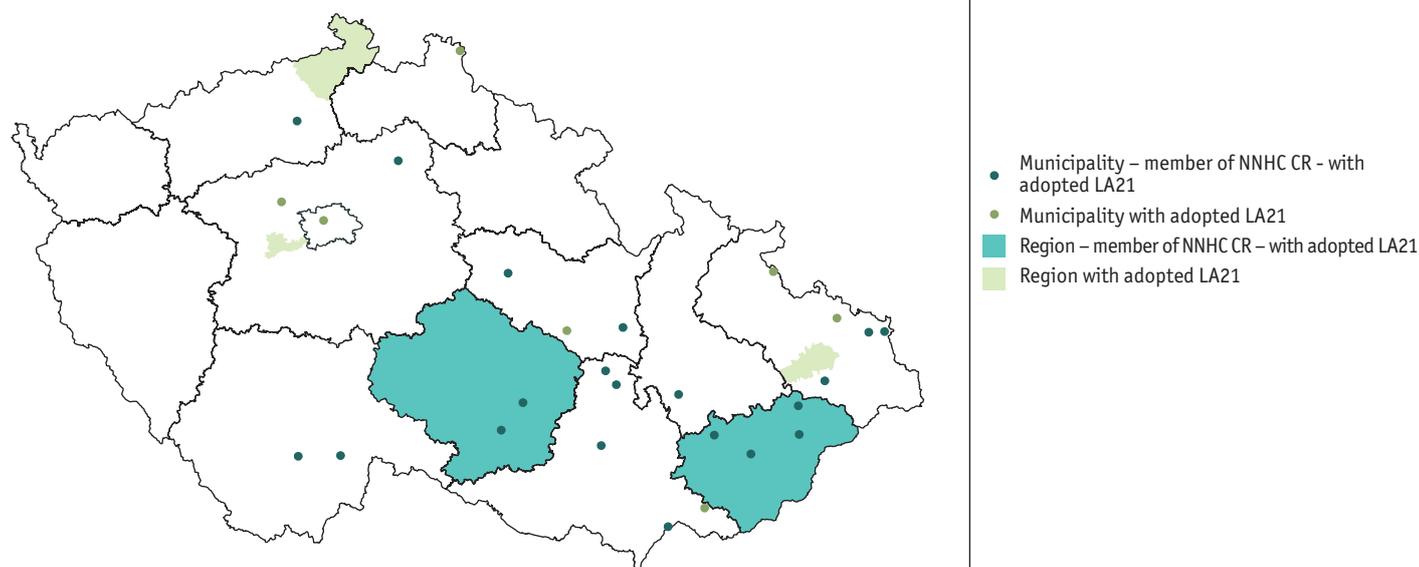
Year	Number of projects supported	Subsidies in total (CZK)
1997	1	180 000
1998	3	349 000
1999	8	877 500
2000	7	765 000
2001	7	1 036 900
2002	8	1 082 930
2003	8	1 273 745
2004	11	1 371 100
2005	6	1 191 620

Source: MoE

The creation of the National Network of Healthy Cities dates even further back, it was based on a 1988 international project of the UN World Health Organization (WHO) – the Healthy Cities Project. In 1994 eleven active Czech cities established the National Network of Healthy Cities of the Czech Republic (NNHC CR). Since 1998, the NNHC CR methodology supported by the UN Development Program became a common guide for all cities, municipalities and regions. According to this methodology, a number of LA21s as well as local action plans for health and environment were created in member cities, municipalities and regions.

The National Network had 63 members by 1 July 2005 – 1 district, 22 cities qualify as regular members and 1 district, 32 cities and municipalities and 7 micro-regions qualify as affiliated members.

Cities involved in LA21 on the map of the Czech Republic (by 31 July 2005)



Source: CENIA

Table 11.2

Fig. 11.1



Dear readers,

The publication you have just finished reading is the first, more extensive cross-cutting report on the environment in the Czech Republic, which came into existence in the CENIA, Czech Environmental Information Agency.

We have made an effort to demonstrate the fundamental change in the state of the environment in the Czech Republic within the last fifteen years. This change is measurable and provable, and documented in this report. The Czech Republic has not only a higher quality environment, but also developing economy, a quality health service and a good social security system for its citizens.

Apart from the state of the environment also the goals of environmental protection are also developing. The protection of the environment harmoniously supplements the requirements of social and economic development. Enterprises do not any more regard the environment as only a limitation on their business activities, but also as a possible competitive advantage. Citizens perceive the impact of the state of the environment not only on their health, but also on the quality of their lives as a whole. I believe that voluntary environmental protection will present increasingly important partners for the state administration.

This publication is an image of CENIA, Czech Environmental Information Agency. Its authors have managed to find data, which had often been regarded as having disappeared. They also found a way of presenting the data in a well-arranged manner and in context. Therefore I would like to express my thanks to everyone who has contributed to writing this book.

The Czech Republic has moved forward on the way to sustainability. The answer to the question as to whether this statement is correct or too daring will be the subject of an expert evaluation exercise of CENIA and the topic of the next volume of this publication, which will focus on sustainable development.



Jiří Hradec

Director of CENIA, Czech Environmental Information Agency



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