

# Czech Republic 2000

**Ten Years On:  
Environment and Quality of Life  
after *Ten Years* of Transition**

Charles University, 2000



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## PREFACE

Since the fall of the Iron Curtain and the collapse of the Soviet bloc, the Czech Republic has become part of the democratic world community. Now, as it prepares for entry into the European Union, it continues to face many challenges. The process of preparation for accession affects all parts of our society, and environmental issues are among those that have been growing in importance.



My country embarked on the process of transformation towards a modern democracy and viable economy burdened with the terrible legacy of a badly damaged environment. Fortunately, the situation has improved substantially as a result of the enormous efforts of many people and the full support of Czech society generally, especially during the first years of transition. We feel that information about this dramatic recovery has not been sufficiently available abroad. I am therefore very pleased to present you with this modest booklet that may - I hope - contribute to a better appreciation of developments in the Czech Republic over the past ten years.

The primary responsibility for both environmental protection and the EU accession process naturally lies with the Government. Both issues, however, are a matter of major public concern and success in both cases depends on the level of public participation and support. Here the academic community feels a special responsibility as intellectual vanguard and as the provider of higher education, a service that is so essential in any modern society.

This publication is the product of fruitful co-operation between the Ministry of the Environment and Charles University. I am confident that it will prove its usefulness as a source of valuable information.

Prague, October 2000

A handwritten signature in blue ink, which appears to read 'Ivan Wilhelm'.

Ivan Wilhelm  
Rector, Charles University




## ACKNOWLEDGEMENTS

This booklet has grown from my experience in various positions during the past ten years. In 1989, as a Minister of the Environment, I faced a truly catastrophic environmental situation in this country. In 1999, as negotiator for the accession of the Czech Republic to the EU in the field of environment I realised how much the Czech Republic has moved towards a better state of affairs and how it has taken on many of the features of more developed countries. My thanks to all the people who persuaded me to highlight the indisputable progress of the Czech Republic in this format.

Most of the work was done in-house. Tomáš Hák drafted the bulk of the publication and Jana Kožnarová has worked hard in the search for all the necessary data.

Various experts have reviewed the draft and assisted in improving the quality of both the data and the text. They include: Vladislav Bízek of DHV Ltd., Martin Braniš of the Faculty of Sciences at Charles University, Stanislav Drápal of the Czech Statistical Office, Věra Havránková of the Czech Ecological Institute, Petr Horáček of the Czech Ecological Management Center, Lubomír Nondek of DHV Ltd., František Pelc of the National Park Administration, Jaroslav Šantroch of the Czech Hydrometeorological Institute and Jiří Večerník of the Sociological Institute of Academy of Sciences, all of whom commented in detail on portions of the manuscript. Zuzana Drhová of the Green Circle, Jan Hošek and Helena Kazmarová of the National Institute of Public Health, Iva Ritschelová of the Food and Agriculture Organisation and Václav Vučka of the TGM Water Research Institute contributed valuable remarks on particular parts of the manuscript. Milan Kuna of the Ministry of Foreign Affairs and Jiří Hlaváček of the Ministry of Environment read and commented on the text from the perspective of the state administration. The resulting draft was reviewed by V. Bízek, L. Nondek, J. Hlaváček and M. Kuna. Their contributions are gratefully acknowledged.

The cover art is by Dita P. Königová. All the graphics were carefully prepared by Vít Gajdůšek of EnviTypo. The publication benefited from final editing and excellent printing by Josef Kleinwächter printers. Finally, Tim Young of AEA Technology not only proof-read the text but also employed his extensive knowledge of the topic and of Czech circumstances to act as reviewer and editor as well.

This presentation of the remarkable changes in Czech society was possible only as a result of the Czech Ministry of the Environment, which funded its publication. A significant share of the costs was also met by Transgas , the Czech importer and distributor of natural gas ([www.transgas.cz](http://www.transgas.cz); [info@transgas.cz](mailto:info@transgas.cz)).



Bedřich Moldan  
Director, Charles University Environment Center

## **ABOUT THIS PUBLICATION**

The aim of this publication is to provide readers with a broad picture of changes in environmental quality and quality of life in the Czech Republic during the period of transition from 1989 to 1999. It offers a summary of the most remarkable changes in the overall wellbeing of the nation during the past ten years in a manner that is easy to understand and use, and that is statistically verifiable. Selected trends are judged simply from the perspective of environmental protection and sustainable development, without offering solutions or recommendations to major challenges. The objective is more modest: to assess national trends in the Czech Republic and to present its position relative to other countries through a series of indicators. The authors are pleased, however, that most of these indicators show dramatic and positive changes accomplished within a historically short period of time. The ten-year transition period provides a temporal framework for the analysis; in order to provide also an international frame of reference, three European Union Member States (Belgium, Austria and Portugal) and two Accession Countries (Hungary and Poland) have been selected for comparison. The selected EU member states vary widely in many respects (economic performance, culture, geographic and environmental conditions, etc.) but are quite similar to the Czech Republic in terms of population size. The Accession Countries were chosen because of comparable developmental trends during the transition period. All the countries chosen are members of OECD.

A set of easily understandable indicators is used to present various data characterising the development of Czech society. Most indicators are presented in graphical form (charts) supplemented by definitions and short explanatory text. Because of data constraints, it has not always been possible to retain our preferred format: a chart comparing current values (1999) with the reference year (1990) for the six selected countries and the average for the 15 member states of the European Union. In some cases, time series data for the Czech Republic and a comparison of the current situation with particular countries, or other data, are presented.

The report builds on the vast literature of statistical data and indicators produced primarily by the Organisation for Economic Co-operation and Development (OECD) as well as on the wealth of data held by Czech institutions (e.g. ministerial reports, data held by the Czech Statistical Office, Human Development Report - Czech Republic, etc.). In all cases the latest publicly available data has been used.

# I. OVERVIEW

The Czech Republic came into existence on 1 January 1993, following the peaceful division of Czechoslovakia. Its government was committed to continue in the efforts to complete the transition to full democracy and an efficient market economy, building on a rich history that can be traced from the Middle Ages through the successful First Czechoslovak Republic (1918-1939). Symbolising the country's new political and economic orientation was the expressed intention to join the key international communities: the Organisation for Economic Co-operation and Development (OECD), the North Atlantic Treaty Organisation (NATO) and the European Union (EU). We are now proud members of the former two and working hard to join the EU as soon as possible.

civic responsibility and a focus on short-sighted and partial solutions.

The Czech economy entered the post-revolution transitional period deeply distorted and damaged. State ownership of economic assets was essentially complete with 100 percent nationalisation of all industry, finance and trade and 95 percent of agriculture and small shops. This traditionally industrial country was converted into one of the heavy industrial centres of the Soviet Empire with world record steel production (almost 1,000 kg per person per year), a large armaments industry, bulk chemical production and so on. Plant was obsolete, capital painfully lacking, and economic structures (such as prices) totally deformed. So it is not surprising that the first years of transition were marked by steep industrial and overall economic decline, inflation and other negative symptoms.

## Box 1.1. Basic indicators for the Czech Republic, 1999

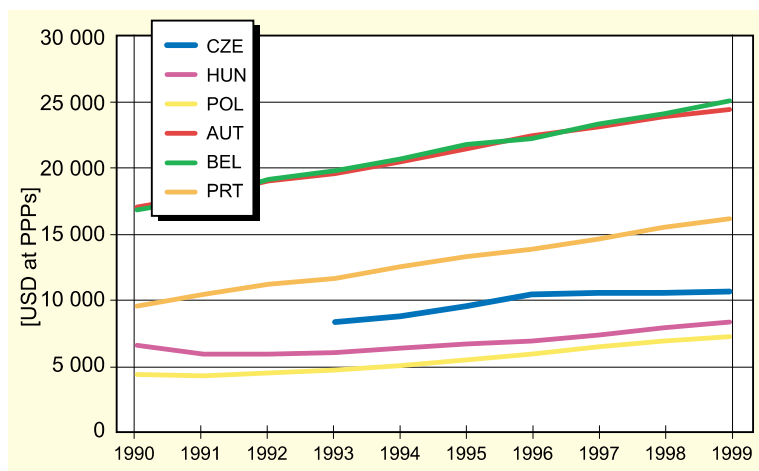
**Population:** 10.3 million  
**Capital:** Prague (1.2 million)  
**Population Density:** 131 persons per km<sup>2</sup>  
**Nationalities:** Czech nationality 94.9 % (Czech 81.2 %, Moravian 13.2 %, Silesian 0.4 %) other nationalities 5.1 % (Slovak, German, Polish, Roma)  
**Religion:** Roman Catholic (40 %), Protestant (4 %), indifferent (40 %), not known (6 %)  
**GDP per capita:** (PPP USD) 13,100  
**Life expectancy at birth:** 74.1 yrs  
**Infant mortality:** 5.0 per 1,000 live births  
**UNDP Human Development Index:** 0.843 (rank 34)  
**Area:** 79 thousand sq. km  
**Bordering countries:** Germany (border 810 km in length), Poland (762 km), Slovakia (252 km), Austria (466 km)  
**Main rivers:** Elbe (Labe) (drains Bohemia to the North Sea), Morava (drains Moravia through the Danube to the Black Sea), Oder (drains South Silesia to the Baltic Sea)  
**Number of chateaux, castles and castle remains:** 2,032  
**Number of public and scientific libraries:** 6,131

Source: OECD, World Bank

## Economy

After the Velvet Revolution in November 1989 the overall state of Czech society was alarming, even if the economic and social situation was better than in say Poland or Hungary. Poor living and environmental conditions were a result of the inhuman totalitarian regime, the low efficiency of a centrally planned economy and totally inadequate practical measures for environmental protection. All spheres of human life were heavily affected by a deep moral crisis, loss of

## Box 1.2. Growth in per capita gross domestic product international comparison, 1990-99



Source: Economist Intelligence Unit

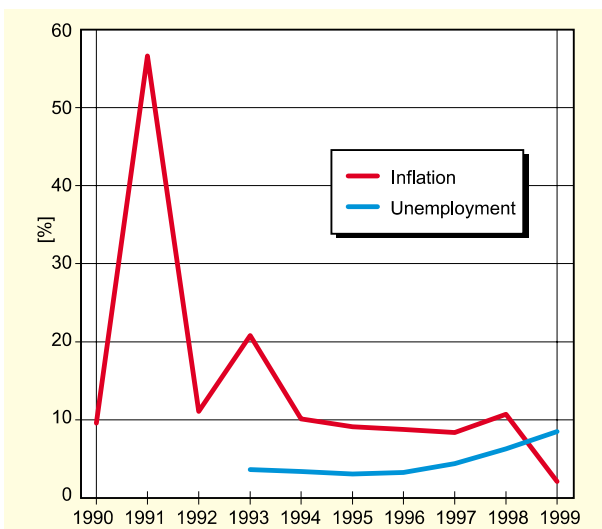
Note:

Country codes: Austria - AUT, Belgium - BEL, Czech Republic - CZE, Hungary - HUN, Poland - POL, Portugal - PRT

A purchasing power parity (PPP) is needed to compare the volume of GDP in different countries. Market exchange rates are not suitable for this purpose, since they do not properly reflect international price differences, and because they are heavily influenced by short-term fluctuations. PPPs are given in national currency units per US dollar

The economy is gradually recovering and slowly acquiring the features of the standard western economic model. The transition, complicated by many factors including the division of Czechoslovakia, is painfully slow and seemingly inefficient but the direction is right and recovery is steady. The pattern of development is essentially following the western industrial model with most of its positive and negative aspects.

**Box 1.3. Inflation and unemployment rates in the Czech Republic, 1990-99**



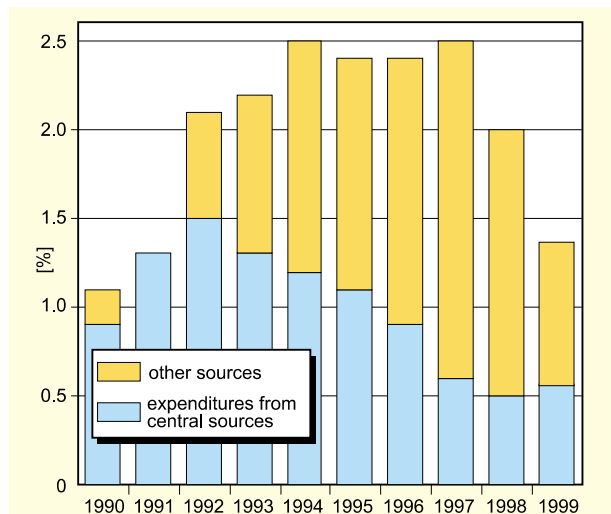
Source: *Economist Intelligence Unit*

One example is the energy intensity of the economy. Though it is decreasing more rapidly than in other industrial countries as the country recovers from the legacy of the past, it is still unbearably high. Another example is transport. The Czech Republic has the most dense railway networks in the world. Transport patterns are however moving towards the environmentally damaging car- and lorry-based western model extremely quickly. A third example is agriculture, where despite a decline in employment, output has increased and the chronic communist problem of undersupply has quickly changed into the problem of oversupply common to most industrial nations.

## Environment

The first comprehensive assessment of the environment in the former Czechoslovakia - the "Blue Book" published in 1990 - characterised environmental conditions as catastrophic. The country occupied the second worst place in Europe at that time. The consequence of these conditions was extensive and often irreversible damage to nature, landscapes, human health and the economy. These problems were tolerated by a compartmentalised administration that created an inadequate legal framework for the protection of most environmental media with weak or no enforcement mechanisms, kept environmental information secret, and suffered from many other systematic failings.

**Box 1.4. Total investment in environmental protection as a share of GDP in the Czech Republic, 1990-99**



Source: *Ministry of Environment*

Note: Data for 1999 are preliminary figures by the Czech Statistical Office. Central sources include state the budget, the State Environmental Fund and the National Property Fund

In the period from 1990 to 1992 the main reason for the observed fall in pollution was a general decrease in industrial production and other economic activity. At the same time, newly established environmental institutions began to work effectively. Basic environmental legislation was smoothly passed by Parliament, creating environmental standards and procedures similar to European norms, and in some cases more stringent than them. Effective public participation was also made a key element of some laws. The new institutions and legislation were effectively supported by high expenditures for environmental protection. All of these things were made possible by broad public

support. The vast majority of the population regarded the achievement of environmental improvements as one of the most pressing tasks for the new regime.

The environmental results of these efforts have indeed been dramatic. Among the most important indicators of change are the following:

Note: Initials stand for the following cities: A1-A10 - Prague districts, BN - Benešov, BM - Brno, CB - České Budějovice, DC - Děčín, FM - Frýdek-Místek, HB - Havlíčkův Brod, HO - Hodonín, HK - Hradec Králové, JN - Jablonec n/N, JI - Jihlava, JH - Jindřichův Hradec, KI - Karviná, KL - Kladno, KT - Klatovy, KO - Kolín, KM - Kroměříž, LB - Liberec, LT - Litoměřice, ME - Mělník, MO - Most, OL - Olomouc, OS - Ostrava, PA - Pardubice, PM - Plzeň, AB - Praha, PB - Příbram, SO - Sokolov, SY - Svitavy, SU - Šumperk, UL - Ústí n/L, UO - Ústí n/O, ZN - Znojmo, ZR - Žďár n/S

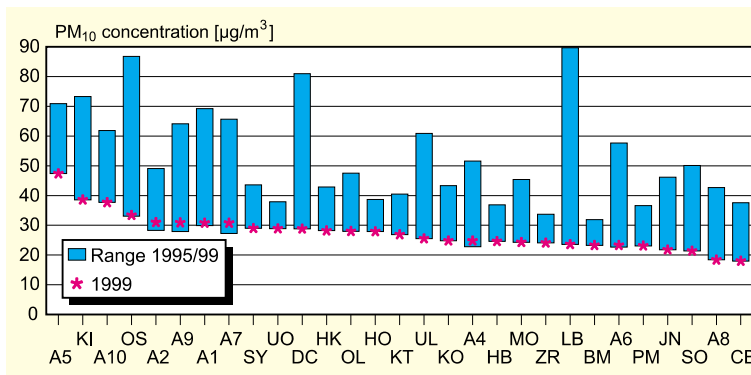
**Box 1.5. Emissions of major air pollutants in the Czech Republic, 1990, 1998 and 1999**

	1990	1998	1999	1999/98 (%)	1999/90 (%)
suspended particulates (kt)	631	86	67	77.9	10.6
sulphur dioxide (kt)	1876	443	269	60.7	14.3
oxides of nitrogen from stationary sources (kt)	532	164	156	95.1	29.3
carbon monoxide from stationary sources (kt)	680	398	353	88.7	51.9
VOCs (kt)	435	269	265	98.5	60.9
Cadmium (t)	4.3	2.7	2.5	92.6	58.1
Mercury (t)	7.5	5.2	4.8	92.3	64.0
Lead (t)	269.4	169.2	154.0	91.0	57.2
PAH (t)	751.6	656.7	654.0	99.6	87.0
PCB (kg)	772.9	457.7	456.0	99.6	59.0
Dioxins (g)	1251.7	766.7	732.0	95.5	58.5

Source: Czech Hydrometeorological Institute

- Emissions of air pollutants decreased in the period 1990-1999 by between 13 and 89 percent. The most marked improvement is for particulates and sulphur dioxide - for the latter, the rate of decrease is a world record. From holding first or second place in Europe in terms of emissions per capita in 1990 we are now around the EU average.

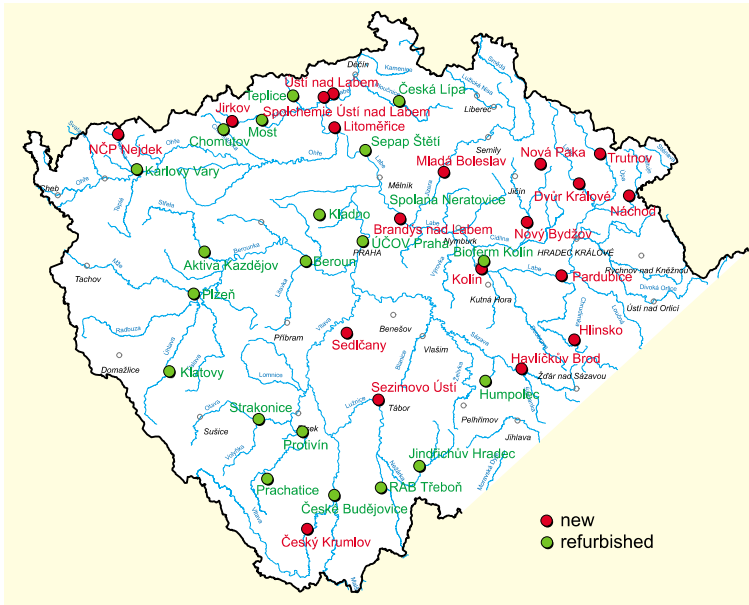
**Box 1.6. Concentrations of particulate matter in ambient air (fraction PM<sub>10</sub>) concentrations, annual arithmetic mean, for cities monitored in the Czech Republic, 1995-99**



Source: National Institute of Public Health

- Ambient air quality improved accordingly. In 1998 and 1999 air quality standards for sulphur dioxide and particulates were exceeded only twice in one monitored city or other locality. The same applies for the standard on heavy metals in aerosol particles. Low-level ozone is starting to become a threat, but levels are still relatively low. Due to increased traffic, ambient concentrations of oxides of nitrogen are stagnating but only rarely exceed legal limits.
- The volume of water abstractions is decreasing as a result of declining water consumption by industry and households. This also means a corresponding decrease in volumes of wastewater.
  - The construction of municipal wastewater treatment plants is taking place rapidly. Between 1990 and 1999, 333 new plants were built. Thus the total number of municipal wastewater plants stands at 959.
  - Pollution discharged into watercourses decreased sharply. In the period 1990-1999 BOD<sub>5</sub> emissions decreased by 85 percent, suspended solids by 84 percent and dissolved inorganic salts by 37 percent.

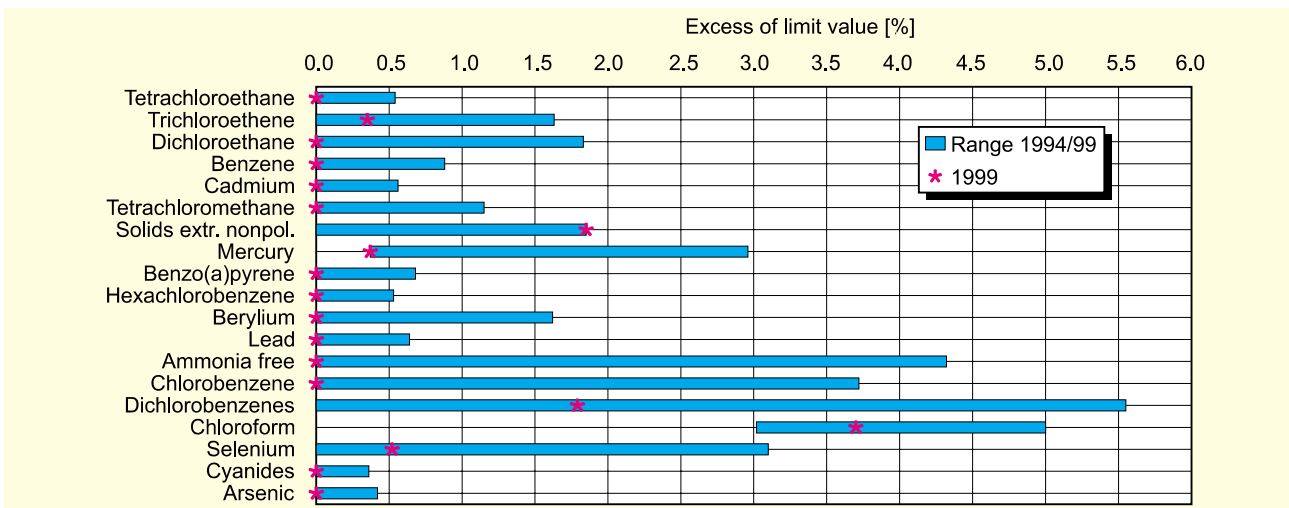
**Box 1.7. New and refurbished waste water treatment plants with capacity over 10,000 population equivalent in the Elbe river basin, Czech Republic, 1990-98**



Source: T.G.M. Water Management Research Institute

- The quality of water in rivers improved markedly. In contrast to the situation in 1990, no major water courses are listed in the "Class V" (very polluted) water quality category any more, and most rivers have been transferred from "Class IV" (polluted) to "Class III" (relatively clean)<sup>1</sup>.

**Box 1.8. Quality of public drinking water, for cities monitored in the Czech Republic, 1994-99 (indicators with NMH or MHPR limits)**



Source: National Institute of Public Health

Note: NMH - maximal limit value is the value of a quality indicator the exceeding of which excludes the use of the water

as drinking water, MHPR - limit value of reference risk is the value of quality, usually of delayed toxic effects derived on the principle of non-threshold effect that induces one lethal case more in a population of 100,000 average consumers upon life-long consumption (for details see System of Monitoring the Environmental Impact on Population Health of the Czech Republic by the National Institute of Public Health)

- The number of inhabitants connected to public drinking water supplies has increased from 82.4 percent in 1989 to 86.9 percent of the population in 1999. Drinking water quality is carefully monitored by the Hygiene Service and is generally very good (the limits for quality indicators important to health were exceeded by 0.27 percent in 7,577 sample analyses). No case of health problems - infection or poisoning - caused by poor drinking water quality has been recorded in recent years.
- On the other hand the quality of water from private wells supplying 13.1 percent of the population is in most cases unsatisfactory (nitrate and microbiological contamination). Users of this water are however well aware of the situation.
- According to the current waste law, municipalities are obliged to provide facilities where citizens can dispose of dangerous wastes. In 1998 (when the law came into force), the amount of municipal waste was 441 kg per capita per year; in 1999, the corresponding figures was 400 kg, out

of which 7.5 percent was separated (glass, paper, etc.) from the main waste stream by citizens.

<sup>1</sup> Summary evaluation of water quality in watercourses carried out pursuant to CS Standard 75 72221 Classification of the Quality of Surface Waters; for details see Report on the Environment in the Czech Republic 1999



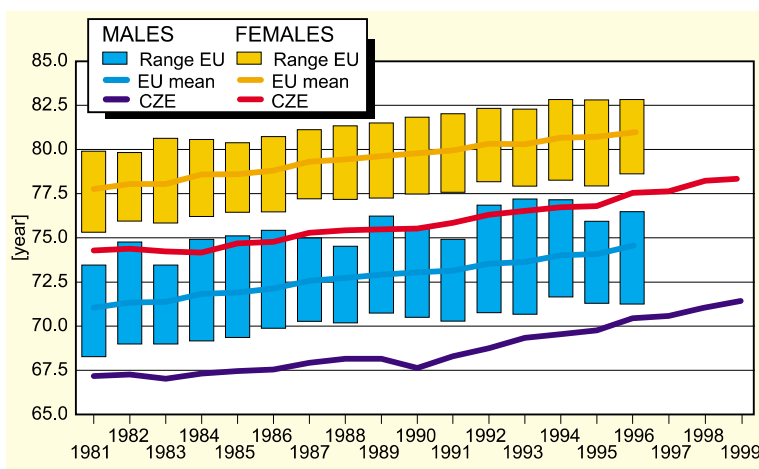
Regardless of these achievements, there are many challenges that lie ahead in continuing these positive trends, such as the extensive construction of new and reconstruction of existing wastewater treatment plants, and clean-up of the legacy of contaminated land and groundwater. Future developments will depend on the performance of key sectors (eg. transport - nitrogen oxides and noise, agriculture and households - nitrogen and phosphorus in water, industry - wastes) and all consumers. With the possible exception of emissions of nitrogen oxides from vehicles, we can expect a continuation of the positive trends in all areas.

## Quality of life

Quality of life is well characterised by the Human Development Index (HDI), produced by the United Nations Development Programme every year since 1990. HDI is an influential and widely cited index comprised of per capita income, educational achievement and life expectancy. The Czech Republic belongs to the group of 45 countries categorised as having high human development, holding 34th place in the overall ranking of 174 countries. The position of the Czech Republic improves slightly when the status of women is considered (in gender-related development index) - women, just like men, were presented with new opportunities under the new conditions.

An extremely positive development is that the fundamentally changed political situation after November 1989 brought about such profound improvements in all the critical factors of the quality of life that it has almost immediately been expressed in a significantly increased life expectancy.

**Box 1.9. Average life expectancy at birth, comparison between the Czech Republic and the EU, 1981-1999**

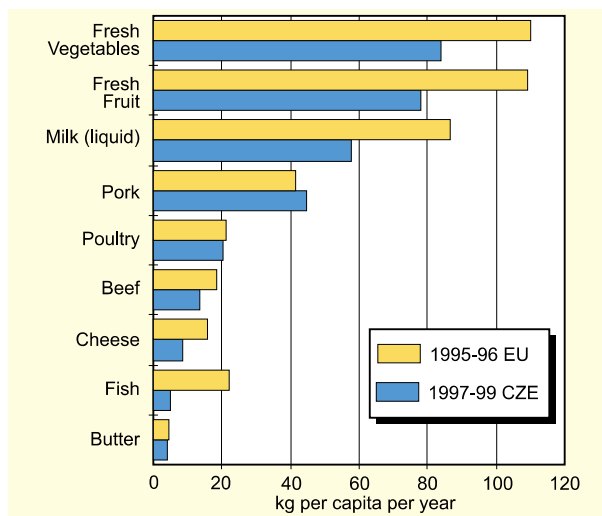


Source: National Institute of Public Health

Many factors contributed to this phenomenon. Undoubtedly, the cleaner environment played a role. Another factor is a better health care. Major advances in health care provision (access to a network of medical facilities, better facilities and medicines, higher quality of medical care etc.) contributed to the improvement of many indicators of population health.

An important issue is a rapid change in lifestyle. One indicator documenting this change is better nutrition. People not only eat food of generally better quality, but because they have vastly greater choice they can select a more healthy diet, eating less fat and red meat and more fruit and vegetables.

**Box 1.10. Consumption of main foodstuff types, comparison with the EU, 1996**



Source: OECD

Improved quality of life is also documented by a large number of other indicators. These indicate a rapid convergence of developments in the Czech Republic with the countries of the European Union in the fields of education, access to information, gender equality, and political freedom.

## Response to environmental challenge

We have already seen that the key prerequisites for a substantial improvement in the present environmental situation were quickly established in the form of well-functioning institutions, stringent and effective laws, a high level

of public support and vast financial expenditures. In section V of this publication these important factors are documented. Administrative and enforcement institutions are effectively supported by bodies providing monitoring, information, scientific and/or educational services. There is also an established system of grants for research and development projects administered by several Ministries where environmental issues are playing an important role.

The issue of sustainable development, however, remains something of an unanswered challenge. It is an issue that has not yet entered the mainstream political agenda and remains confined to the academic and NGO communities, together with a few enlightened private sector partners.

A critically important issue is the development of civil society. This is documented in the rapid rise of numerous types of civil associations and other voluntary non-governmental organisations, of which a large part are organisations of an environmental

**Box 1.11. The Towards Sustainability Project in the Czech Republic**

United Nations Development Programme (UNDP) - Project of the Government of the Czech Republic "Towards Sustainability in the Czech Republic - Building National Capacities for Sustainable Development" (1998-2000).

The 3-year project aims at strengthening national capacities in the Czech Republic to implement and actively pursue goals of sustainable development. Immediate objectives of the project include

- 1) Establishing a firm and broad institutional and professional platform for sustainable development
- 2) Elaboration of a comprehensive frame for a National Strategy for Sustainable Development
- 3) Integration of principles of sustainable development into selected sectoral policies and programmes
- 4) Enhancing awareness of sustainable development and promotion of education for sustainable development
- 5) Strengthening capacities of the Czech Republic for the active involvement in international and global co-operation in the area of environmental protection and sustainable development.

This project will provide a firm information basis for the governmental effort to elaborate a "National Strategy for Sustainable Development".

Source: Ministry of Foreign Affairs

**Box 1.12. The Society for Sustainable Living and the Czech Union of Nature Conservationists**



The Society for Sustainable Living was established in 1992 in Prague by the initiative of Josef Vavroušek, the first Czechoslovak Minister for the Environment who tragically died in March 1995. It is a voluntary non-governmental and non-profit organization. It associates people concerned with ecology and related sciences (namely philosophy, sociology, psychology, economy, or law as well as technical sciences). People involved in the arts, medicine, education and journalism are also active in the organization. The members are bind up by joint effort to search and implement the paths enabling the survival of human beings and all other forms of life on the Earth. The Society

organizes regular discussions, workshops, seminars and conferences and prepares research and specific action projects. It also provides consultation services, prepares standpoints and proposals of solutions aimed at finding and promoting paths leading to sustainable ways of living. Philosophical, ethical, ecological, biological, social, economic, technical and political aspects are considered to point out both the existing and potential problems of human society and to present to the public positive, constructive alternatives of future development.



The Czech Union for Nature Conservation (ČSOP) is the largest non-governmental organisation associating people interested in nature and environment protection in the Czech Republic. Since it was established in 1979, it has been focused mainly on voluntary activities for the nature's benefit. Among its members there are amateur nature conservationists as well as outstanding experts, scientists and, above all, people who are not indifferent to the environment and are resolved to work hard and sacrifice a part of their precious leisure time to improve it. In the first decade of its existence it became a mass organisation with hundreds of local chapters and more than 26,000 members. After November of 1989, many local chapters have become independent and transformed themselves into "green" civil associations of various types, many others have been dissolved. The organization has been transformed into a modern nature protection organisation with nearly 350 local chapters and nearly 8,000 members since 1991. Current activities include among others a number of biodiversity conservation projects, environmental education at various levels, running a network of wildlife rehabilitation hospitals, and starting a landtrust movement.

Source: Society for Sustainable Living, Czech Union for Nature Conservation



nature. Probably the most important factor of all is has been public support for environmental issues. This public commitment during the first years of transition provided the basis for all the positive achievements set in motion during this time. Inevitably and understandably the original enthusiasm faded, but public support for environmental issues is still high.

The Czech Republic is an active member of the international community in relation to environmental issues. We are party to essentially all important international legal instruments of environmental policy. But the overwhelming driver, fundamentally shaping the environmental policy of the Czech Republic, is the process of accession to the European Union.

**Box 1.13. Milestones in the process of EU accession in relation to Chapter 22 - Environment**

Oct. 1993	Europe Agreement between the EU and the Czech Republic
Jun. 1994	Copenhagen criteria set
Dec. 1994	Pre-accession Strategy for the CEE countries
Jun. 1995	White Book on preparation of CEE countries for inclusion in the single market
Jan. 1996	Application of the Czech Republic for EU membership
Jul. 1997	Agenda 2000, opinions ready
Dec. 1997	Decision to start negotiations with six countries (the so-called Luxembourg group: Cyprus, Czech Republic, Estonia, Hungary, Poland, Slovenia)
Mar. 1998	Accession Partnership signed
Mar. 1998	Negotiations start
Mar. 1998	National Programme of the Czech Republic for Accession to the EU
Apr. 1998	Screening starts
Jan. 1999	Screening of Chapter 22 starts
May. 1999	National Programme of the Czech Republic for Accession to the EU (updated)
Apr. 1999	State Environmental Policy
Jun. 1999	Government formally acknowledges the Strategy for Approximation in Environment
Jul. 1999	Position Paper on Chapter 22 submitted to the Commission
Nov. 1999	Common Position of the EU to the Position Paper
Dec. 1999	Chapter 22 open for negotiations
Jul. 2000	The Government approves Implementation Plans for the Environmental <i>Acquis</i> , Revised Position and Additional Information submitted to the Commission
Sept. 2000	Implementation Plans handed over to Commissioner M.Wallström

Source: Ministry of Environment