Lecture 8 (JK, April 9)

Environmental Policy in the Central European Context

Time: Thursdays 3 p.m. – 6 p.m.
Location: at CERGE-EI, Room # 10

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Undergraduate Program in Central European Studies

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WEEK: TOPICS: DATE: INSTRUCTOR
1 Introduction (history/outline) Feb 19 JK/AO
2 Market failures: externalities, tragedy of the commons, enforcement as public good, also, (rise and fall) of the environmental Kuznets Curve February 26 AO
3 Interventionalist solutions to the Externality problem – Pigouvian taxes and standards and charges, also environmental labeling and incomplete consumer information in laboratory markets March 5 JK
4 Interventionalist solutions to the Externality problem – Marketable pollution permits March 12 AO
5 Non-Interventionalist solutions to the Externality problem – The Coasian solution March 19 JK
6 Non-interventionalist solutions to the Externality problem – Self-regulation March 26 AO
7 *Mid-term exam April 2*
8 Environmental Policy in the Czech Republic – History and current issues April 9 JK/AO
9 Environmental Policy in the EU – History and current problems April 23 (April 16 falls into Semester break and on Easter Holiday) AO
10 Environmental Policy in the world context – History and Current problems April 30 JK/AO
11 Contingent valuation and related issues May 7 AO
12 To be determined by the interests of the class
Final exam: to be determined (according to schedule May 18 – 21)

Recall the evidence:

INTERVENTIONIST SOLUTIONS:

Plott (1983)

the MOST efficient: the **permits** policy > **taxes** > **standards** > the **unregulated** market is the LEAST efficient

Plott 1982, p. 107: "The standards approach is the one found most frequently in application. The current air pollution are a good case in point."

Porter et al (2009, p. 190) "Among economists at least, the use of tradable emission allowances under an aggregate emission cap is generally considered a mature policy technology. It has become the default policy option in controlling a variety of large scale air emissions and is being increasingly considered for replacing inefficient sourcespecific regulation of water pollutants (Tietenberg, 2002). The same policy technology is also being used in fisheries regulation and elsewhere (National Academy of Sciences, 1999). In a competitive emissions market with low transaction costs, the initial allocation of rights will not affect the final use of the allowances. However, how the rights are allocated can have significant economic consequences through their effect on the entry and exit decisions and marginal tax rates (Goulder et all 1999)."

Tradable emission permits ("allowances")

- Polluters with high abatement costs have incentives to buy them
- Polluters with low abatement costs have incentives to sell them
- In the aggregate the number of permits is determined by a desirable standard of pollution (as in the standards policy)
- Important design issues for such permit markets:
    - How to endow firms (consumers) with permits?
    - How to minimize the transaction costs?
- in absence of transaction costs, no efficiency losses, "only" distributional concerns
    - in presence of transaction costs, "cost-effectiveness" is compromised
    - What are the consequences of particular transaction costs / endowments

Cason, Gangadharan (2004)
By and far the theory (as reflected in the hypotheses) gets confirmed.
With decreasing marginal t-costs, final cost-effectiveness greater the further the initial endowment of allowances is away from the cost-effective allocation; with constant marginal t-costs, … no impact on final cost-effectiveness

NON-INTERVENTIONIST SOLUTIONS:

Experimental evaluation of Coase's Theorem:

Hoffman & Spitzer (1982)

- the results provide strong support for Coase's proposition that agents will bargain to a joint-profit-maximizing outcome when it exists in 2- and 3-party bargaining situations under full information and when one party has the right to make the decision unilaterally under limited information.

Harrison & McKee (1985)

- strong support for the Coase Theorem
- In the absence of transferable property rights the parties will not choose the joint payoff maximum

- The establishment of joint property rights increases the number of joint maximum payoff outcomes.
- The establishment of unilateral property rights increases the number of joint maximum payoff outcomes.

VOLUNTARY PROGRAMS:

Cason, Gangadharan (2002)

- a market with incomplete information (about the environmental quality of the good) and consumers that care for environment
- no signaling, no reputational concerns => market failure
- various treatments to remedy the market failure:,
- (costly) **certification** ("eco-label") > seller **reputation** > **cheap talk** signals (when looking at the quality provision, there are some efficiency costs of certification)
- laboratory results suggest that government regulators or non-governmental organizations can improve environmental performance by providing the option of certified green labeling

Potoski, Prakash

- an empirical test for Vogel's (1995) "California effect" where trade serves as a vehicle for transmitting importing countries regulatory standards to exporting countries
- their results suggest high levels of adoption of ISO 14001 in the importing countries encourage firms in the exporting countries to adopt this voluntary environmental program (that's a confirmation, with qualification, of the Vogel' conjecture hence fears of a regulatory race to the bottom where developing countries' exporters exploit their allegedly less stringent environmental standards to capture markets in developed countries seem unwarranted)

Evans et al.

- Voluntary programs … one the hand …
- On the other hand … mandatory information disclosure programs such as The EPA's Toxics Release Inventory (TRI)
- Mandatory information disclosure programs require that the firm report information that could be damaging … (e.g., reputationally).
- Reporting, while being done on the firm level to EPA etc., is initiated within firms by individuals… clearly, that means there is all kinds of potential for moral and other dilemmas.
- Do firms report?
- Old Government Accountability Office data from 1991 suggest that about one third of firms that should have reported did not, Intentionally or unintentionally (they did not know)

Environmental policy in the Czech Republic - CURRENT ISSUES

1. Air

Greenhouse effect:

The term is used to refer to two different phenomena:

- the **natural** greenhouse effect that occurs naturally on Earth, without which the Earth's surface average temperature would fall to minus 18 °C

- the **additional (anthropogenic)** greenhouse effect, which results from human activity and which is most likely the cause of global warming.

Anthropogenic greenhouse effect

- its significance is subject to ongoing dispute
- current scientific knowledge has proven that human activity (the production of greenhouse gases) does have an impact on the Earth's climate
- The basic principle of this phenomenon consists in the fact that greenhouse gases release solar radiation to the ground, while they absorb and emit heat radiated by the Earth, consequently warming up both the lower layer of the atmosphere and the Earth's surface.

Main anthropogenic greenhouse gases

- carbon dioxide (CO2)
- methane (CH4)
- nitrous oxide (N2O)
- partly or fully fluorinated hydrocarbons (HFC, PFC)
- sulphur hexafluoride (SF6).

Global Warming Potential (GWP)

- each of the greenhouse gases influences the climate differently => GWP has been specified for each individual greenhouse gas
- is expressed in CO2 equivalent values in order to allow for comparison (CO2 eq.).

Monitoring emissions

Emissions of greenhouse gases are monitored under the **UN Framework Convention on Climate Change** including its **Kyoto Protocol** and by **Decision of the European Parliament** and of the **Council 280/2004/EC**. Emission values are determined according to the prescribed IPCC methodology (Intergovernmental Panel on Climate Change). It is mainly based on official statistical data from different sectors of the national economy. Since 2006, a **National Inventory System (NIS)** has been implemented to ensure that compilation of the GHG inventory is in accordance with the requirements of the Kyoto Protocol and with the Decision of the National Inventory System (NIS). More detailed information on GHG emissions can be found or at http://www.chmi.cz/cc/.

Trade in greenhouse gas emission allowances

- the system of tradable rights to reduce the amount of greenhouse gas emissions
- allows companies, whose marginal costs for pollution prevention exceed the market price of the allowances, to buy these allowances from companies with lower abatement costs, thus reducing their costs for reducing pollution.
- no net effect on the total allowable amount of harmful substances, as it is profitable for the lower-cost company to further reduce its pollution and sell its subsequent allowances on the market.

Kyoto Protocol

From Wikipedia, the free encyclopedia

The **Kyoto Protocol** is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC or FCCC), an international environmental treaty produced at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro, Brazil, from 3–14 June 1992. The treaty is intended to achieve "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."[1] The Kyoto Protocol establishes legally binding commitments for the reduction of four greenhouse gases (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride), and two groups of gases (hydrofluorocarbons and perfluorocarbons) produced by "Annex I" (industrialized) nations, as well as general commitments for all member countries. As of 2008, 183 parties have ratified the protocol, which was initially adopted for use on 11 December 1997 in Kyoto, Japan and which entered into force on 16 February 2005. Under Kyoto, industrialized countries agreed to reduce their collective GHG emissions by 5.2% compared to the year 1990. National limitations range from 8% reductions for the European Union and some

others to 7% for the United States, 6% for Japan, and 0% for Russia. The treaty permitted GHG emission increases of 8% for Australia and 10% for Iceland.
Kyoto includes defined "flexible mechanisms" such as Emissions Trading, the Clean Development Mechanism and Joint Implementation to allow Annex I economies to meet their greenhouse gas (GHG) emission limitations by purchasing GHG emission reductions credits from elsewhere, through financial exchanges, projects that reduce emissions in non-Annex I economies, from other Annex I countries, or from Annex I countries with excess allowances. In practice this means that Non-Annex I economies have no GHG emission restrictions, but have financial incentives to develop GHG emission reduction projects to receive "carbon credits" that can then be sold to Annex I buyers, encouraging sustainable development. In addition, the flexible mechanisms allow Annex I nations with efficient, low GHG-emitting industries, and high prevailing environmental standards to purchase carbon credits on the world market instead of reducing greenhouse gas emissions domestically. Annex I entities typically will want to acquire carbon credits as cheaply as possible, while Non-Annex I entities want to maximize the value of carbon credits generated from their domestic Greenhouse Gas Projects.
Among the Annex I signatories, all nations have established Designated National Authorities to manage their greenhouse gas portfolios; countries including Japan, Canada, Italy, the Netherlands, Germany, France, Spain and others are actively promoting government carbon funds, supporting multilateral carbon funds intent on purchasing Carbon Credits from Non-Annex I countries, and are working closely with their major utility, energy, oil & gas and chemicals conglomerates to acquire Greenhouse Gas Certificates as cheaply as possible. Virtually all of the non-Annex I countries have also established Designated National Authorities to manage the Kyoto process, specifically the "CDM process" that determines which GHG Projects they wish to propose for accreditation by the CDM Executive Board.

Emissions trading

Kyoto is a 'cap and trade' system that imposes national caps on the emissions of Annex I countries. On average, this cap requires countries to reduce their emissions 5.2% below their 1990 baseline over the 2008 to 2012 period. Although these caps are national-level commitments, in practice most countries will devolve their emissions targets to individual industrial entities, such as a power plant or paper factory. One example of a 'cap and trade' system is the 'EU ETS'. Other schemes may follow suit in time. This means that the ultimate buyers of credits are often individual companies that expect their emissions to exceed their quota (their Assigned Allocation Units, AAUs or 'allowances' for short). Typically, they will purchase credits directly from another party with excess allowances, from a broker, from a JI/CDM developer, or on an exchange.

In **1997 Kyoto Protocol** was ratified, mandating that industrial states commit to reduce their 1990 greenhouse gas emissions by 5.2% by 2012, with each state also taking up individual commitments. There are three main instruments (the so-called Flexible Mechanisms) that are intended to help reduce the costs for emission reduction. These include:

- **Clean Development Mechanism** (**CDM)**
  - projects supported by industrialized countries in developing countries, that reduce greenhouse gas emissions.
  - Investors may use the emission reduction achieved in the projects to increase their emission quotas.
  - The emission quotas for the host country that transfers the emission reduction are lowered proportionally.
  - The ways of using CDM include not only technology transfer, but also planting new trees and investment into carbon sinks in general.
  - The utilization of this mechanism is not currently too relevant for the Czech Republic, as CR has enough allowances and will instead act as a “supplier” of emissions allowances.

- **Joint Implementation** (**JI)**
  - analogous to CDM, but the host and the investor countries, which are both industrialised states, exchange emission quotas that affect the total reduction targets.
  - The ME currently lists 134 JI projects; the approved JI projects represent a total emission reduction of 1 million tons of CO2 a year

- **International Emissions Trading** (**IET)**
  - As opposed to the preceding two mechanisms, this mechanism is not tied to any specific project.
  - The commitment is defined in the form of AAU units (Assigned Amount Unit), which will be calculated with the help of national emission inventories. Should a state’s emissions exceed its

allocation of AAU units, it has the option of covering the necessary balance either by buying them from a state that has a "surplus", or possibly by investing into JI or CDM projects that will cover the excessive emissions.

In order to fulfill the commitments ensuing from the Kyoto Protocol, the EU has set up its own **European Union Emissions Trading Scheme (EU ETS)** pursuant to **Directive 2003/87/EC**. As an EU member state, the Czech Republic has transposed the Directive into **Act No. 695/2004 Coll.**

A specific number of emission allowances is allocated to every company in the steel and iron sectors, cement and lime production, pulp and paper production, manufacture of glass and ceramics, and refineries and thermal power plants that are listed in the **National Allocation Plan**.

- If the emissions from a given company exceed the limit (the number of allowances it owns), it must buy allowances from another business that has some to spare.
- The fulfillment of the obligation is monitored for a pre-defined period, the first of which was between 2005 and 2007; the second period is from 2008 to 2012.
- For each period, a **National Allocation Plan** has been developed that distributes the allowances among the installations' operators. In the Czech Republic, **an average of 97.6 million allowances** was distributed in the initial period and **86.8 million allowances** were distributed in the second period.

Tab. A5.1 Emise oxidu uhličitého a dalších přímých skleníkových plynů, 1990, 1995, 2000–2006
The emissions of carbon dioxide and other direct greenhouse gases, 1990, 1995, 2000–2006

Skleníkový plyn *Greenhouse gas*	1990	1995	2000	2001	2002	2003	2004	2005	2006
	Mt $CO_{2ekv.}$								*Mt $CO_{2eq.}$*
CO_2	159,8	123,5	119,3	120,6	117,0	119,9	120,5	119,4	124,4
– z toho CO_2 emise *– of which, CO_2 emissions*	163,9	131,1	126,8	128,3	124,6	125,9	126,6	125,9	127,9
– z toho CO_2 propady v LULUCF[1)] *– of which, CO_2 sinks in LULUC[1)]*	–4,1	–7,6	–7,5	–7,7	–7,6	–5,9	–6,1	–6,5	–3,5
CH_4	18,5	13,7	12,2	12,3	12,1	11,8	11,6	11,7	12,0
N_2O	11,9	8,1	7,7	7,9	7,6	7,2	7,8	7,5	7,4
F-plyny *F gases*	0,1	0,1	0,4	0,6	0,5	0,7	0,7	0,7	1,0
Celkem (včetně LULUCF) *Total (including LULUCF)*	190,3	145,4	139,6	141,4	137,3	139,7	140,6	139,3	144,8
Mezinárodní letecká doprava *International air transport*	0,6	0,5	0,6	0,6	0,7	0,8	1,0	1,1	1,1

[1)] LULUCF – využívání krajiny, změny ve využití krajiny a lesnictví
LULUCF – Land use, land use change and forestry

Note: *The global warming potential values for individual greenhouse gases according to the valid methodology were used to calculate the aggregate emissions (CO2)eq (e.g. CO2 = 1, CH4 = 21, N2O = 310). The inventory also includes emission sinks as a result of land use change and forestry.*

Czech Republic, Japan to sign carbon credits contract on March 30 18.03.2009

ČESKÉ noviny.cz ZPRAVODAJSKÝ SERVER ČTK

Prague - The Czech Republic will sign a contract on carbon credits sale with Japan in Prague on March 30, Deputy PM and Environment Minister Martin Bursik said on return from his trip to Japan and the USA today, adding that the deal would bring 10 billion crowns to the Czechs this year alone. Citing the sensitivity of carbon credits market, Bursik would not specify the total sum the Czechs would gain by selling the credits. The proceeds from the sale will go to the State Fund for the Environment (SFZP) and they will be used to finance thermal insulation of houses and environment-friendly heating methods. Apart from Japan, the Czech Republic also reckons with selling its redundant carbon credits to the World Bank and other countries and companies. Bursik said Prague has managed to agree on a very favorable price with Japan, also because the Czechs provided high guarantees for the effective use of the revenues. The Czech Republic has some redundant "Kyoto" credits thanks to its sharper reduction of greenhouse gas emissions than what the Kyoto Protocol requires. The Czechs pledged to reduce the emissions by 8 percent, but they managed a 25 percent reduction against the situation in 1990, also owing to the country's economic decline in the 1990s.The Czech carbon dioxide emissions have been

about 120 to 150 million tons lower than originally supposed. Japan, to fulfill its Kyoto pledge, has to buy 1.1 billion credits, per one ton each. The redundant credits can be traded in until 2012 when the Kyoto Protocol's validity expires. Besides Japan, the Czech Environment Ministry is negotiating about emission deals with the Netherlands, Spain, Austria and New Zealand.($1=20.470 crowns)

Ukraine will get $560 m from sale of greenhouse gas quotas to Japan

(Interfax, dd/30.03.2009, godz. 19:17)

Ukraine will receive UAH 4.5 billion, or $560 million in the U.S. dollar equivalent, from the sale of greenhouse gas emissions quotas to Japan, Ukrainian Prime-Minister Yulia Tymoshenko said at a press conference on Saturday on her visit to Japan."Contracts have been signed, the first transfers will arrive in April," she said. Tymoshenko said that agreements were simultaneously reached on the comprehensive renovation and modernization by Japanese companies of Ukrainian boiler houses using natural gas, in order to raise the Ukrainian facilities' energy efficiency level. According to previously passed decisions, the funds received from the sale of emissions quotas should be split among companies that offer emissions reducing projects in contests. For Japanese companies "it's extremely advantageous to invest in Ukraine, where energy saving brings additional profit, where the fight with environmental pollution through the reduction in greenhouse gas emissions secures additional profit, and this profit will be received by Japanese companies," she said. Moreover, she said Japanese companies expressed "a unanimous positive decision" to participate in the renovation and modernization of Ukraine's gas transportation system. The point at issue is the participation of Japanese companies in the development of a gas metering system, the supply of gas pumping units, and the creation of a gas cogeneration system (when energy is generated from heat produced by gas processing units). According to other agreements, the premier said, Mitsubishi Heavy Industries will develop a project for the construction of underground railways in Donetsk and Dnipropetrovsk. The Ukrainian government also hopes that Japan will become of the countries that will help finance the deficit of Ukraine's budget."Ukraine will be conducting negotiations on a bilateral basis with other countries (on lending to cover the planned deficit of the budget). You know that we've sent such a request to Japan, and that request, I think will be considered in the near future," she said.In February, Tymoshenko said that $5 billion is needed to finance the deficit of Ukraine's national budget. In November 2008, the government sent out letters to Russia, the United States, Japan, China, Saudi Arabia, and the European Union with the request for a loan. Russia's Foreign Ministry in March 2009 confirmed that Moscow had received Ukraine's request for a $5 billion loan and the request was being considered. During the recent visit of Ukrainian delegates to Tokyo, Ukreximbank and Nippon Export and Investments Insurance (NEXI) signed a memorandum of mutual understanding aimed at supporting and stimulating trade and investment between Ukraine and Japan. As Tymoshenko said, following her visit to Japan, the sides signed 23 memorandums and three protocols. As was reported, Japan is buying quotas for 30 million tonnes of emissions from Ukraine. Tokyo is holding similar talks with the Czech Republic, Hungary, Poland, and Russia in order to buy quotas for up to 100 million tonnes in order to meet its commitments under the Kyoto Protocol.

Benchmark 2007 EU Greenhouse Gas Emissions Data Set To Rock The Carbon Market

Written by Angelique van Engelen ; Published on April 1st, 2008

All participants to the EU Emissions Trading Scheme ought to have submitted crucial data on their 2007 greenhouse gas emissions levels by 31 March. The greenhouse gas data would be sourced by around 10,500 companies involved in carbon trading and is an important factor influencing the market price of traded carbon. But many of the parties failed to meet the deadline, which is why the EU authorities in charge of the information said they will release the data to the public at a later date.

Emissions data is of vital importance for market traders because it shows the level of demand for the instruments they trade. The data is seen as a benchmark number setting the appropriate carbon price. EU rules for energy-intensive industry mandate the submission of one emissions permit for every ton of carbon dioxide emissions. The permits, called EU Allowances (EUAs) can be "offset" by trading them on the exchange. Volumes as well as the prices on the European Climate Exchange have seen a steady rise since the exchange was created in 2005. During March close to 120 million tons EUAs were traded, an average volume of futures and options of 6.3 million. This marked an increase of 61% compared to March 2007. Reuters quotes a Deutsche Bank analyst Mark Lewis who said that he expects 2007 carbon dioxide emissions are likely between 2,180-2,220 million tons. 2007 levels were between 2,100-2,140 million tons. Lewis added that his prognosis was made assuming unchanged economic demand, weather and commodity prices. This is good news for carbon traders, because the 2008 permit supply stands at 2,083 million tons, so there's a shortage of supply. That should drive up EUA prices in the second phase of the carbon trading scheme. Lewis said the price is likely to go up to 35 euros per ton during 2008-12 (the second phase). This is a drastic turnaround from the first phase of the carbon market (2005-2007), which saw an oversupply of permits, causing a carbon price to fall. Last Friday, benchmark EUA contracts for 2008 delivery were trading down 14 cents at 22.12 euros ($34.87). The 27 national governments which together make up the European Union enter the permissions data in a central Community Independent Transaction Log (CITL), which is a real time tool accessible to the public. It lists all the individual participants by name, company name, phone number and email address. The authorities in charge of CITL reported that not enough data had been submitted for them to release it. At least 80% of the data entered for the 2006 emissions needs to have been reported before the numbers will be released. This is so the markets don't trade on false information. CITL announced that it won't "give public access to installation-level verified emissions data today [April 1]." Instead, the data will be released as soon as enough submissions have been registered to make the 80% grade. The UK has independently published estimates of 2007 greenhouse gas emissions levels. Government officials put out provisional figures indicating UK emission levels reached 639.4 million tons. This was 2 percent lower than the 2006 figure of 652.3 million tons.

EU short of CO2 permits in 2008, incomplete data shows

Wed Apr 1, 2009 2:37pm EDT By Nina Chestney and Michael Szabo

LONDON (Reuters) - The European Union's Emissions Trading Scheme was at least 40 million tons short of carbon permits in 2008, analysts said after reviewing preliminary EU data on Wednesday. Carbon market analysts said discounting incomplete data and comparing like-for-like figures between 2007 and 2008 showed companies emitted between 40 and 100 million tons over their allocated quota of emissions permits. The scheme, worth $90 billion last year, is the EU's flagship weapon in its fight against climate change. Wednesday's preliminary data gave a first glance at the EU's industrial emissions for last year.This is also the first time the scheme has registered a shortage of EUAs in its first four years, the preliminary data showed. The EU handed out an excess of permits from 2005-07, undermining the scheme's goal of driving carbon cuts through creating a shortage of permits available to industry. The scheme is supposed to force businesses to trim their contribution to climate change by becoming more energy efficient or switching from carbon-intensive coal to natural gas.The data accounted for 10,417, or 85.3 percent, of the 12,215 industrial installations covered under the scheme, the European Commission said. 1,798 did not report 2008 emissions. Carbon permits, or EU allowances (EUAs), under the EU's emissions trading traded up 63 cents or 5.4 percent at 12.38 euros a metric ton following the data's release. The Commission's data is keenly watched by analysts and traders who are trying to estimate the balance of supply and demand for EUAs in the EU ETS, and therefore the price. "This data is in line with our expectations, a 4.3 percent reduction in emissions year-on-year and a short position of 40 million tons for the year," Barclays Capital analyst Trevor Sikorski said."It hasn't changed the outlook

for the scheme in any way." Analysts said the state of the market in 2008 is the first indication of how carbon prices will fare through a recession which may impact EUA prices for several years.It is likely that, as a result of falling industrial output and carbon emissions, the scheme will once again register an EUA surplus in 2009, analysts say, raising question marks over its effectiveness. U.S. policymakers are watching the EU scheme closely as senators prepare to draft a climate bill, which is expected to be passed in the next two years.

Poland may get CO2 permits from EU mid-April: source
Mon Mar 30, 2009 10:34am EDT
WARSAW (Reuters) - Poland may receive long-awaited permits for its 2008 carbon dioxide emissions around the middle of next month, a source close to the matter said on Monday. Warsaw and Brussels recently reached agreement after months of negotiations on Poland's 2008 European Union allowances (EUAs) to industry. Asked by Reuters when the permits would arrive, the source said: "From what I am hearing, this should happen around mid-April." Up to 10,000 industrial installations around the 27-nation European Union participating in the European Trading Scheme must hand in sufficient carbon permits to cover all their 2008 carbon emissions by an end-April deadline. Poland originally challenged EU's decision to limit its CO2 emissions to 208.5 million tons in 2008-2012, but may find it enough now as an economic slowdown hits energy demand. Poland also has a surplus of 500 million tons under the global Kyoto Protocol accord but cannot sell them until it has agreed a new law though it is in talks with a number of states. Delays in completing the new law have prompted some Polish media to accuse Environment Minister Maciej Nowicki of deliberately stalling the project, a claim he denied on Monday. "Poland is still able to sell its CO2 permits (under Kyoto), but only on condition that the new law is created ...We are ready with international agreements and we hope to sign them once the bill is ready," he said. Nowicki added that he hoped the bill would be approved by the government on Tuesday and that necessary work in parliament would not take longer than 2 months.

EU carbon rises as permits fail to flow from Poland
06/04/2009 - 08:14 LONDON, April 6 (Reuters) European carbon emissions futures rose in early trade on Monday as the flow of allowances expected from Poland failed to materialize and higher oil prices gave some support. Benchmark EU Allowances were up 36 cents or 2.88 percent at 12.88 euros ($17.19) a ton at 0702 GMT, with light volume at 548 lots traded. EUAs hit a high of 13.20 euros in opening trade. "Oil is higher and the fuel complex looks better. And there has not been a flow of allowances from Poland after they allocated to industry on Friday," said an emissions trader. Poland allocated 417 million EUAs for 2008 and 2009 to its industry. Traders said there were some Polish companies with an excess of EUAs, particularly utilities, but other sectors had a shortage which would slow down any rush to sell on the spot market. U.S. crude oil rose over $53 a barrel as weak U.S. jobs data did little to dampen investors' improved appetite for risk and their expectation of a global economy. German Cal '10 base load power on the EEX was up 1.33 euros or 2.55 percent to 53.55 euros per megawatt hour.EUA for delivery in December 2012 were trading at 15.15 euros a ton, with volume at 540 lots."They are trading above the '09 contract. The interest is there which bodes well for further price increases at the front end of the curve," the trader said. Benchmark certified emissions reductions were slow to trade. The EUA-CER spread closed at 1.77 euros. A U.S. Senate vote this week rejected an effort to put climate-change legislation on a fast track, making it harder for Congress to attaching a cap-and-trade bill to the federal budget this year.

Air quality in the Czech Republic in 2007

Evaluation of ambient air quality is based on the **monitoring of levels of pollutants** in the ground-level layer of the atmosphere in a network of measuring stations. Assessment of levels of air pollution is primarily based on comparison of measured levels of air pollution and the pertinent limit values and target values. Limit values, target values, long-term objectives, margins of tolerance and other requirements for the assessment of ambient air quality are set by **Government Order No. 597/2006 Coll.,** concerning the limit values and air monitoring, assessment, evaluation and quality management, as amended, which is an implementing regulation of **Act No. 86/2002 Coll.,** on the protection of air, as amended. This regulation transposes the requirements of all subsidiary directives applicable to the air quality in the EU, i.e. **Directives 99/30/EC, 2000/69/EC, 2002/3/EC** and **2004/107/EC**, and sets the limit values for the following pollutants:

- **Limit values**
    1. sulphur dioxide
    2. suspended particulate matter, PM10
    3. nitrogen dioxide and nitrogen oxides
    4. carbon monoxide
    5. benzene
    6. lead
- **Target values**
    7. ground-level ozone (a long-term objective has also been set)
    8. cadmium
    9. arsenic
    10. nickel
    11. polycyclic aromatic hydrocarbons expressed as benzo(a)pyrene

Smog regulation and warning systems in 2007

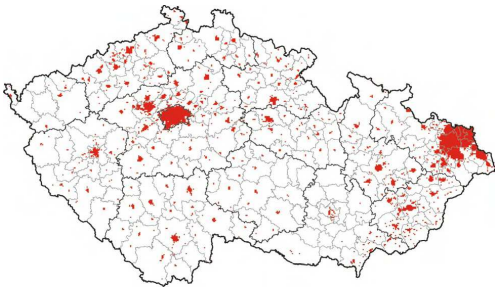
- In connection with the issuing of the new **Clean Air Act**, the Ministry of the Environment **Decree No. 553/2002 Coll.** became effective on 31 August 2002.
- The Decree sets the values of the alert threshold of air limit values, central regulations and means of operation thereof, including a list of stationary sources subject to regulation, principles for the preparation and operation of regional and local regulations and the extent and manner of providing public access to information about the level of air pollution.
- This Decree modifies the functioning of smog warning regulation systems. (the Summary Tabular Survey of Air Pollution and Atmospheric Deposition in Data for 1997 to 2007 available at http://www.chmi.cz/uoco/isko/tab_roc.html.
- Government Order No. 597/2006 Coll., on the Monitoring and Evaluation of Air Quality, specifies, in line with the relevant directives, air pollution and target air pollution limits for the protection of health, ecosystems and vegetation.

Ground-level ozone (tropospheric ozone)

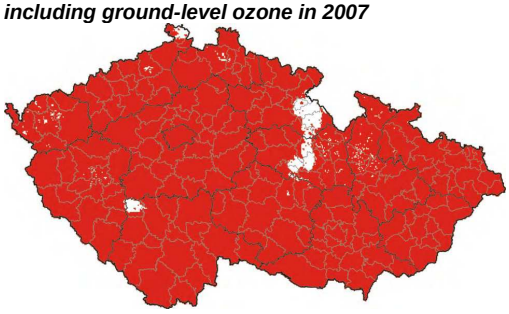
- is formed in the ground-level layers of the atmosphere under the influence of solar radiation through a complicated set of chemical reactions, especially between nitrogen oxides (nitrogen dioxide), volatile organic compounds (especially hydrocarbons) and other components of the atmosphere.
- is considered to be a secondary pollutant because it is not primarily emitted at a significant level from anthropogenic air pollution sources.
- In 2007, ozone was measured at 72 localities, of which the target air pollution limit for human health was exceeded at 47 (63%) over the three-year period from 2005–2007. The highest values were measured in mountainous regions. If we compare 2005–2007 to the previous three-year period of 2004–2006, the relative number of stations where the limits were exceeded slightly increased.

The figures show areas of the Czech Republic where air pollution limits and target air limits were exceeded when considering human health (the areas with deteriorated air quality), together with the margins of tolerance, for some monitored pollutants in 2007. Maps for ozone (AOT40) are given separately since the target limits for ground-level ozone are exceeded nearly throughout the Czech Republic.

Designation of areas with target air pollution limit value exceedances for the protection of human health, not including ground-level ozone in 2007



Designation of areas with target air pollution limit value exceedances for the protection of human health, including ground-level ozone in 2007



In 2007, the average annual concentration was exceeded for (% of total territory of CR)

- PM_{10} air pollution (dust) in 0.7% (the 24-hour PM_{10} concentration in 6.3%)
- NO_2 in 0.08%
- benzene in 0.02%
- at least one of above pollutants in 6.34%
- arsenic in 0.15%
- cadmium in 0.02%
- benzoapyrene in 4.9%
- at least one of above pollutants in 4.92% (with the exception of ground-level ozone).

2. Water

- natural ecosystems endangered by deepening of the channels of rivers, regulation of river courses, drainage, construction of canals, new water routes, construction of water reservoirs, excessive withdrawals of ground water and pollution

The **consumption of surface and ground water** is documented by the water course administration, according to the water balance established by the Ministry of Agriculture's Decree No. 431/2001 Coll., on the content of the water balance, the manner of determining it and on data for the water balance (Article 10).

The consumption of surface and ground water above 500 m^3/month or 6000 m^3/year is followed.

The **release of waste and mining water into surface waters** is documented by the water course administration, according to the water balance established by the Ministry of Agriculture's Decree No. 431/2001 Coll., on the content of the water balance, the manner of determining it and on data for the water balance. The release of waste and mining water into surface water above 500 m^3/month or 6000 m^3/year is followed.

=> Charges

3. Soil

- decrease in the content of organic carbon, compacting, salinisation and contamination by pollutants
- water and wind erosion
- decrease in number and variety of soil organisms

- number of legal regulations regarding soil protection in the Czech Republic.
- Act No. 17/1992 Coll., on the environment, as amended, lists **soil as one of the environmental components.**
- The most significant special regulations include Act No. 334/1992 Coll., on **the protection of agricultural land fund,**
- Act No. 289/1995 Coll., on forests, which contains provisions regarding **the protection of land used as forest.**
- The above acts provide for direct protection for **the two most significant types of land** from the environmental and production point of view. This affects approximately 85% of the Czech Republic.

Geological environment

"Excessive or imprudent use of mineral resources is contrary to the principles of sustainable development" "Mining lead ti a decrease in the potential for future use…" (State Environmental Policy of CR)

Mining activities significantly impact the landscape and environment on the local and frequently also on the regional scale. **The Raw Material Policy of the Czech Republic**, adopted by the Government, mandates **sustainable development** and provides for adequate protection of the domestic raw material base.

- After 1989, significant **structural changes** occurred in the economic development of the state.
- As a consequence, the mining of minerals decreased by more than 38% from 1990–1998 in both physical and financial terms.
- The market economy led to the termination of extraction of deposits by mining that had previously been possible only with high state subsidies.
    - mining of baryte and fluorite ores was terminated.
    - a significant cut-back in the mining of uranium deposits
    - mining was stopped in a number of coal mining areas.
- The environmental burden connected with these activities decreased proportionately.
- From the standpoint of the seriousness of the consequences of mining, the treatment of minerals and construction impact on the stability of the geological environment, the individual activities can be listed in the following order:
    1. the mining and processing of mineral fuels (coal and uranium),
    2. landslide and undermined areas, old mine workings with methane escape,
    3. the extraction of building materials and industrial minerals,
    4. extraction in protected landscape areas.

Tab. B3.1.4 Spotřeba průmyslových hnojiv NPK, 1980–2007
The consumption of NPK industrial fertilizers, 1980–2007

Rok *Year*	N	P_2O_5	K_2O	Celkem *Total*
	kg.ha^{-1} zemědělské půdy			*kg.ha^{-1} agriculture land*
∅ 1986–90	95,0	65,1	63,8	223,8
1995	55,4	14,6	12,8	82,8
2000	58,9	10,8	6,2	75,9
2005	73,2	11,7	7,7	92,6
2006	77,4	11,7	9,4	98,5
2007	83,8	15,3	9,9	109,1

Zdroj: MZe
Source: MZe CZ

Tab. B3.1.5 Spotřeba vápenatých hnojiv v tunách zboží celkem, 2003–2007
The consumption of lime fertilizers in tonnes of products, 2003–2007

	2003	2004	2005	2006	2007	
			t			
Zemědělská půda	171 000	141 000	93 110	102 526	229 754	Agricultural land
Lesní půda	.	.	.	12 000	7 200	Forest land

Pozn.: Vzhledem k poklesu v používání vápenných hmot roste podíl zemědělských půd se zvýšenou aciditou. Výpadek ve vápnění lesů byl způsoben problémy při výběrovém řízení na leteckou společnost a také klimatickými podmínkami. U zemědělských půd je nárůst pravděpodobně způsoben lepšími finančními možnostmi zemědělců a osvětou.
Note: Due to the decrease in the use of lime materials the share of agricultural land with elevated acidity has increased. The discontinuation of forest liming was caused by problems related to the tender for an airline and by climatic conditions. The increase in agricultural land is most likely due to better financial opportunites of farmers and increased awareness.

NPK= nitrogen + phosphorus + potassium

4. Forests

- defoliation of trees
- damage by fires
- damage by insects, rodents, animals
- decrease in biological diversity and ecological stability due intensification of agricultural production, but at the same time abandoning of agricultural areas, urbanization, fragmentation of the landscape by transport infrastructure => extinction of species of fauna and flora

By law, **the state compensates**

- for public interest water reclamation and flood control measures carried out in forests
- the cost of forest management activities,
- the costs associated with developing forest management guidelines
- some costs associated with planting, soil improving and strengthening tree species.
- regenerating damaged air pollution stands,
- regenerating, providing and tending to forest stands,
- maintaining an association of small sized forest owners,
- ecological and nature-specific technologies,
- selected hunting management activities,
- compensation for costs associated with preparing digital forest management plans,
- activities aimed at preserving and reproducing forest tree gene sources,
- the breeding and training of national hunting dogs and birds of prey.

The state provides to forest owners services like

- aerial liming
- fertilization
- fire service.

Support for farmland afforestation from the state budget and co-financed from the EU

5. General protection of fauna and flora

All species of fauna and flora are protected against destruction, harm, collection or capture, which might endanger their existence or cause their degeneration, disrupt the reproductive ability of the species, and bring about the species' population extinction or the ecosystem destruction in which they are part. The most important instruments for general species protection include the protection of wild birds and the protection of species of trees growing
outside forests.

⇨ **Natura 2000**

- Upon its accession to the EU on 1 May 2004, the Czech Republic adopted commitments in the area of territorial nature protection, i.e. to create a network of protected areas of European importance that corresponded to areas similar throughout the EU called Natura 2000.
- This network has existed in the EU since 1981 pursuant to two directives – Bird Directive 79/409/EEC and Habitat Directive 92/43/EEC.
- These directives were transposed into the Czech law through Act No. 218/2004 Coll., amending the Act on the Protection of Nature and the Landscape (Act No. 114/1992 Coll., as amended).
- The Natura 2000 network consists of two types of sites
    - the **Special Protection Areas** – Bird Areas (SPA-BA)
    - **Sites of Community Importance** (SCI).
- The Directives specify the lists of the species and the European habitat types. In order to fall under protection the EU Member States must propose and officially declare SPA-BAs and SCIs. The species and types of habitats in the Czech Republic are listed in Decree No. 166/2005 Coll. and in Government Regulation No. 51/2005 Coll.

6. Radiation situation

- peaceful utilization of nuclear energy and ionising radiation
- monitoring of the radiation situation
    - the State Office for Nuclear Safety
    - National Radiation Monitoring Network

The Radiation Monitoring Network (RMN)

- a system of monitoring points and a system of the facilities scientifically, technically and personally equipped, which are organizationally interconnected, ensures the monitoring of the radiation situation
  within the territory of the Czech Republic including the data transfer and information system management, for the purpose of:
    - evaluating the radiation situation for monitoring and assessing the state of exposure,
    - making decisions on the countermeasures necessary to reduce or avert exposure in the case of a radiation accident,
    - international exchange of information and data about a radiation incident
    - public release and promotion of data and information about the radiation situation
    - the monitoring network operates in two modes: in the normal mode of operation (normal radiation situation) and in an emergency mode of operation (extraordinary radiation situation)
    - Concerning the environment and food-chains, artificial radionuclides, which create an important part of contamination in case of a radiological accident and which occur in measurable amounts, are monitored. This means:
        - in the atmosphere 137Cs, 90Sr, 239+240Pu, 85Kr, 3H, 14C,
        - in foodstuff 137Cs, 90Sr, 3H,
        - in human bodies 137Cs.

7. Radon risk

- exposure of the population to radon and its decay products in buildings in the Czech Republic
- the long-term annual mean of radon concentration in the indoor environment is being evaluated
- a survey of radon levels in dwellings has shown that the Czech Republic, with its mean value of radon concentration, has one of the highest exposure rates of its population to radon and its decay products in the world.
- the Radon Program:
    - surveys of homes with an elevated radon risk
    - provision of a state contribution for remediation in residences, school facilities, and the public water system.
- The scope of the search programs and the remediation rank the Radon Programme of the Czech Republic among the world's most developed ones.

8. Noise

- about 85% is caused by transportation
- transport is one of the most rapidly developing fields of human activity
- environmental impacts of transport are increasing in CR
- other negative impacts of transport on:
    - Health
        - Directly: emissions, noise, accidents
        - Indirectly: contribution to obesity and "civilizing diseases"
    - Buildings

- support alternatives: railway - cleaner but still noise and vibrations; bikes – bike-and-ride systems, limited access of moto vehicles (car free zones) – park-and-ride systems,
- tolls, taxes (e.g. for riding in the center), subsidies (to cleaner cars e.g.), limits and norms

9. <u>Non-ionizing electromagnetic radiation and electrical and magnetic fields</u>

the protection of health against nonionizing radiation, which sets the limits for exposure to non-ionizing radiation. The limits are adopted from the guidelines published by International Commission on Non-Ionizing
Radiation Protection and cover electromagnetic fields in the frequency range from 0 Hz (static electric and static magnetic fields) up to electromagnetic radiation with frequencies of 1.7 . 1015 Hz (the short wave edge of ultraviolet radiation). Electric and magnetic fields higher than the set reference values or basic limit values
can be found, for example, near the antennas of high power transmitters and near special devices with conductors carrying strong low frequency currents, e.g. induction ovens or some types of welding machines.
Nevertheless, even in places where the specified limits are not exceeded, fields and radiation may sometimes have an unfavorable impact on the environment. For example, at night, when the eyes are accustomed to darkness, some technical light sources with high levels of brightness may cause an unpleasant feeling to humans and may have negative influence on life of nocturnal animals, including birds, bats and insects. Low frequency and slowly varying magnetic fields generated by currents flowing through underground power cables disturb the picture on vacuum ray tubes used in TV sets and PC monitors, thus worsening well-being and working conditions.

FINANCIAL INSTRUMENTS TO SUPPORT THE PROTECTION OF NATURE AND THE LANDSCAPE

The protection of nature and the landscape in the Czech Republic uses, above all, the following economic instruments:

- positively stimulating (positive non-market instruments)
    - financial subsidies => national subsidy programs + European subsidy programs
    - grants,
    - loans
- negatively stimulating (negative non-market instruments)
    - entry fees for cars in national parks
    - charges for cutting down trees.
- compensatory instruments
    - financial compensation for losses resulting from the declaration of a provisionally protected area,
    - compensation for aggravating conditions for farming and forestry
    - compensation for some damages caused by selected specially protected animals.

ECONOMIC INSTRUMENTS OF ENVIRONMENTAL POLICY

The system of environmental protection, created in the Czech Republic after 1990, utilizes a wide range of economic instruments for the implementation of environmental policy. Some of these instruments were used in the previous period (e.g. charges for air pollution, payments for water, and some others). However, the new conditions of the emerging market economy created the necessary conditions for a rational application of economic instruments.

1) Trade in greenhouse gas emission allowances (Kyoto protocol, see above)

2) **"The polluter pays principle"** (State environmental policy of CR): "Damage caused by an activity and borne by a third party is designated as externalities. These third parties can be owners whose property is damaged by emissions from production, inhabitants, whose health is negatively affected by pollution, or society, whose common values are damaged or destroyed by manufacturers or consumers. In a free (unregulated) market, these externalities are not included in the prices of

products and the third parties are not fully compensated for their loss. The "polluter pays principle" means inclusion of negative externalities in the costs of the polluter." => fees, taxes, etc. that should include all important externalities….

Effluent Charges:

- A long tradition in some centrally-planned economies (CZ since 1967 air emission charges, water charges)
- Not always regulatory effect, often revenue generating mechanism
  - Small rates (usually less than 1% of costs), lower than costs of removing of emissions – that is why not always regulatory effect,
  - Many exceptions for industry
- Some of them high administrative costs in comparison with revenues
- Revenues to specialized funds (CZ: the State Environmental Fund, for environmental protection projects), general budget or local government budget
  - CO emissions (Estonia, Lithuania, Poland, Russia, Slovakia, CZ)
  - SO2 emissions (Bulgaria, CZ, Estonia, Hungary, Lithuania, Poland, Russia, Slovakia)
  - NOx emissions (Bulgaria, CZ, Estonia, Hungary, Lithuania, Poland, Russia, Slovakia)
  - PM emissions (Bulgaria, Estonia, Lithuania, Poland)
  - Combined industrial water emissions (Latvia, Slovakia, CZ)
  - Landfill, incinerator or hazardous waste (Estonia, Latvia, Poland, CZ (landfill))

    A waste generator pays a fee when depositing waste in a landfill. The fee consists of two components, the basic and risk parts. The rates for the basic component of the fee apply to all categories of waste (and are differentiated into two levels, one for municipal and other waste and the other for hazardous waste). The risk component of the fee is paid only for hazardous waste. The operator of the landfill transfers collected charges to their recipients, i.e. the corresponding municipality, (basic component) and SEF (risk component).

- In CR
  - Charges for withdrawal of underground water (for all consumers)
    Revenues 50% to the Czech Environmental Fund, 50% to 'counties'
  - Charges for drawing off sewerage water to underground water
    Revenues to the local municipality
  - Charges for withdrawal of surface water (for all consumers)
    Revenues to the Czech Environmental Fund
  - Charges for drawing off surface water to underground water
  - Pollution charge – settled limits of pollution concentration; charge from the volume of pollutants
  - Quite effective – the quality of water in rivers better

D1.1 Poplatky za znečišťování životního prostředí
Charges for environmental pollution

OVZDUŠÍ – *AIR*

Tab. D1.1.1 Úhrn poplatků za znečišťování ovzduší, předepsaných k zaplacení provozovatelům zvláště velkých a velkých zdrojů znečišťování ovzduší podle jednotlivých látek a tříd znečištění na základě emisí, 2003–2007
Total charges for air pollution imposed on operators of large and exceptionally large air pollution sources according to individual pollutants and class of pollutants on the basis of emissions, 2003–2007

Látka *Pollutant*	Rok *Year*	Počet zdrojů[1] *Number of polluters*	Tuny *Tonnes*	Nominální poplatky v tis. Kč *Nominal charges in thous. CZK*
Tuhé emise *Particulate matter*	2003	1 931	11 434	33 331
	2004	.	17 460	85 983
	2005	.	25 722	36 588
	2006	.	19 614	28 508
	2007	.	16 867	37 091
Oxid siřičitý *Sulfur dioxide*	2003	1 262	174 563	171 028
	2004	.	181 681	113 197
	2005	.	219 400	216 681
	2006	.	197 961	193 260
	2007	.	191 366	184 274
Oxidy dusíku *Nitrogen oxides*	2003	1 415	132 000	102 801
	2004	.	141 150	83 196
	2005	.	188 930	167 124
	2006	.	143 665	143 581
	2007	.	144 095	124 853
Oxid uhelnatý *Carbon monoxide*	2003	1 374	151 452	68 287
	2004	.	150 526	86 850
	2005	.	59 520	30 513
	2006	.	113 692	74 522
	2007	.	194 933	114 032
Těkavé organické látky *Volatile organic compounds*	2003	498	8 047	11 217
	2004	.	8 882	13 663
	2005	.	18 907	17 764
	2006	.	15 966	20 119
	2007	.	18 052	22 753
Těžké kovy, jejich sloučeniny *Heavy metals and their compounds*	2003	60	6	77
	2004	.	12	111
	2005	.	2,732	56,8
	2006	.	130	824
	2007	.	137	1 039
Amoniak *Ammonia*	2003	75	3 265	400
	2004	.	2 572	107
	2005	.	5 605	249
	2006	.	10 365	6 529
	2007	.	4 158	748
Metan *Methane*	2003	11	8 168	0
	2004	.	5,68	0
	2005	.	142	15,3
	2006	.	217	0
	2007	.	273	0
Polycyklické aromatické uhlovodíky *Polycyclic aromatic hydrocarbons*	2003	3	1	6
	2004	.	2	34
	2005	.	2	35
	2006	.	4	69
	2007	.	2	42
Škodliviny 1. třídy *Class I Pollutants*	2003	10	61	1 004
	2004	.	2	43
	2005	.	5	284
	2006	.	21	379
	2007	.	5	92
Škodliviny 2. třídy *Class II Pollutants*	2003	98	2 014	18 351
	2004	.	2 103	2 182
	2005	.	2 716	24 188
	2006	.	2 508	6 608
	2007	.	9 927	23 050
Celkem *Total*	2003	5 447	491 276	406 514
	2004	5 179	493 050	454 296
	2005	5 574	509 474	468 252
	2006	7 129	504 143	474 400
	2007	8 521	579 815	507 974

[1] Počet znečišťovatelů v r. 2003 je uveden pouze za kraje Karlovarský, Ústecký, Liberecký, Zlínský a u prvních pěti škodlivin též za Moravskoslezský kraj. V r. 2004 je za kraje hl. m. Praha, Liberecký a Ústecký uveden pouze celkový počet znečišťovatelů ovzduší. V r. 2005 je za Liberecký kraj uveden pouze celkový počet znečišťovatelů ovzduší.
The number of polluters in 2003 includes only the Karlovarský, Ústecký, Liberecký, Zlínský regions and, for the first five pollutants, also the Moravskoslezský region. In 2004, only the total amount of atmospheric contaminants are given for the Prague, Liberecký and Ústecký Regions. In 2005, only the total amount of atmospheric contaminants is given for the Liberecký Region.

Zdroj: MŽP
Source: ME CZ

VODA – *WATER*

Tab. D1.1.5 Poplatky za vypouštění odpadních vod do vod povrchových, snížené o odklady, 2003–2007
Charges for discharge of waste water into surface waters reduced by charge deferrals, 2003–2007

Povodí *Water course*	2003	2004	2005	2006	2007
	tis. Kč				*thous. CZK*
Celkem/*Total*[1]	410 195	392 389	370 300	301 700	355 216

[1] částka vyinkasovaná SFŽP
The amount was charged by SEF.

Zdroj: MŽP – Výkaz vod 1-01, jednotlivé kraje
Source: ME CZ – Report of waters 1-01, single regions

These charges are similar to charges for pollution and include a fee for pollution and a fee for the volume of water discharged. Revenue from charges is income for SFŽP.

ODPADY – *WASTE*

Tab. D1.1.9 Poplatky za uložení odpadů podle kategorie odpadu v r. 2007
Charges for depositing of wastes by the types of waste in 2007

	Měrná jednotka *Unit*	Celkem *Total*	z toho *including* nebezpečný *hazardous*	komunální *municipal*	ostatní *other*	
ZÁKLADNÍ POPLATEK						*BASIC CHARGE*
Množství uložených odpadů	tuny *tons*	6 507 658	163 767	3 510 685	2 833 207	Amount of deposited wastes
Počet plátců	počet *amount*	100 262	2 594	55 952	34 736	Number of payers
Množství zpoplatněných odpadů	tuny *tonnes*	4 483 476	49 009	3 144 735	1 289 733	Amount of charged wastes
Poplatky	tis. Kč *thous. CZK*	1 831 260	57 046	1 258 087	516 125	Payments
Uhrazené poplatky	počet *amount*	1 717 325	53 535	1 163 043	500 745	Paid payments
RIZIKOVÝ POPLATEK						*RISK CHARGE*
Množství uložených odpadů	tuny *tons*	156 734	156 734	x	x	Amount of deposited wastes
Počet plátců	počet *amount*	1 847	1 847	x	x	Number of payers
Množství zpoplatněných odpadů	tuny *tons*	37 410	37 410	x	x	Amount of charged wastes
Poplatky	tis. Kč *thous. CZK*	121 854	121 854	x	x	Payments
Uhrazené poplatky celkem	tis. Kč *thous. CZK*	114 447	114 447	x	x	Total payments

Zdroj: MŽP
Source: ME CZ

Charges for exploitation of natural resources

- Charges for mineral extraction from reserve deposits or reserve minerals
- Charges for use of mining space area and for extracted minerals from reserve deposits or reserve minerals
- Charges for removal of land from the agricultural land fund
- Charges for reclassification of property designated to fulfill the function of a forest

Deposit-refund systems

- A deposit paid by consumers combined with a refund payable when goods are turned in for (a) recycling or (b) further disposal
- Specified glass containers (Austria, Belgium, Canada, Denmark, Finland, Island, Netherlands, Norway, Portugal, Sweden, Germany, Switzerland, CZ some glass bottles e.g.)

User charges

- Landfill charge
  - Paid by waste producers
  - Revenues for municipalities to compensate costs of providing a landfill
- Hazardous waste (revenues for the Czech Environmental Fund)
- No incinerator charge in CZ (3 incineration plants in CZ)
- Costs of landfill are substantially lower than costs of recycling
- The local government decides about the municipal waste charge for households (communal waste)
- Very often not motivating to eliminate municipal waste (small rates or even for free, rates often not depending on the quantity)

Sales taxes

- Different taxes on products (including VAT) to reach environmental effects
- Taxes on motor fuels differentiated for leaded and unleaded gasoline, diesel etc. in all EU27 countries (EU Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity)
- Taxes on chlorofluorocarbon (CFC) (causing ozone hole)
  - Montreal protocol on Substances That Deplete the Ozone Layer
  - the ozone layer is expected to recover by 2050
- Agricultural inputs (fertilizers and pesticides)
- Product taxes (registration fees on new cars, cameras, light bulbs, plastic bags, etc…

3) Fines for infringement of environmental laws

4) The tax relief for reasons of environmental protection

5) Expenditures for environmental protection

The monitoring of environmental protection expenditures is performed by the Czech Statistical Office (expenditures for capital assets for environmental protection, non-capital expenditures for environmental protection and the economic benefits of environmental protection activities) and the Ministry of Finance (environmental protection expenditures from public budgets).

Environmental protection projects include:

Protection of the air and the climate which encompasses, e.g., modification of technical processes to prevent the generation of pollution (for protection of the air, climate and ozone layer),removal of waste gases and ventilation air, entrapment and removal of solid and gaseous emissions, and air quality monitoring equipment.

Management of waste waters which encompasses, e.g., modification of technical processes to prevent the generation of pollution, construction of waste water treatment plants, construction of sewer networks with the provision for connection to waste water treatment plants, management of cooling waters, and water quality monitoring equipment.

Waste management which encompasses, e.g. modification of technical processes to prevent the generation of pollution, installations and equipment for collection, accumulation, transport, separation and treatment of wastes, construction of incinerators, recycling plants, establishing of landfills, composting facilities, decontamination of old landfills, and waste monitoring equipment.

Protection and decontamination of the soil and ground and surface waters which encompasses, e.g., the prevention of the depositing of solid substances into the soil, incl. subsequent infiltration into waters, prevention of contamination and degradation of the soil by chemical effects and subsequent decontamination, protection of the soil against erosion, slope movements and other degradation caused by physical phenomena, including costs for dealing with landslides, and costs for geological studies intended to protect the soil and ground and surface waters.

Abatement of noise and vibrations (except for the protection of the workplace) which encompasses, e.g., the prevention of the generation of noise and vibrations through modification of technology, and structures, implementation of installations to reduce noise and vibrations in highway, railway and air transport and industry, and measuring equipment.

Protection of the landscape and biodiversity (species diversity) which encompasses, e.g., the protection and renewal of habitats and species, protection of natural and semi-natural types of landscape, protection and renewal of the elements of ecological stability, recovery of the hydrological network, and expenditures to meet obligations on the protection and use of mineral wealth.

Protection against radiation which encompasses, e.g., anti-radon measures, geological work connected with the aspect of locating deep storage sites for nuclear waste, measuring equipment, and transport and management of highly radioactive waste.

Research and development which encompasses research and development concerned with the protection of the air, climate and ozone layer, water protection, waste management, protection of the soil and ground water, reduction of noise and vibrations, protection of biodiversity and the landscape, and protection against radiation and other research on the environment.

Other activities in protection of the environment which include, e.g., the acquisition of long-term tangible property for prevention against floods, education in the area of protection of the environment, and training and instruction.

The most significant central financing source, i.e. with respect to the amount of financial resources for environmental protection activities, is the state budget. Aid provided from the state budget includes subsidies, interest free loans (returnable financial aid) and guarantees for commercial loans. Another public central source of environmental expenditures is environmental protection expenditures by state funds. The sources of this state fund's revenues include revenues from charges for polluting the environment and for using natural resources, as well as some of the revenues from fines. The third central source is the no-longer existent National Property Fund of the Czech Republic (NPF CR). Even though it was not a state fund, it is included in public budgets. It was abolished as of 1 January 2006. Both its competencies and the resources used to rehabilitate of old ecological burdens are now administered by the Ministry of Finance. In addition to central sources, regional budgets represent another significant source of public environmental protection expenditures. Regional budgets include the budgets of regions of municipalities.

VOLUNTARY INSTRUMENTS

Voluntary environmental policy instruments can be briefly defined as formalized resources that a subject (a business, for example) can take advantage of in its environmental strategy while being under no obligation from any legislative provisions to do so.

The best-known voluntary instruments, for which a National Programme was established in the Czech Republic, include:

- the labelling of Environmentally Friendly Products and Services,
- the Environmental Self-Declaration and EPD Environmental Management Systems,
- Cleaner Production

The National Program for Labelling Products with an Environmentally Friendly Product/Service Trademark and the European Programme for Labelling Products and Services with the EU Eco-label

The labelling of environmentally friendly products and services is one of the indirect and voluntary policy instruments with the aim of caring for the environment. It is an important element building on the principle of the voluntary entrance and cooperation of producers during the tender and the decision making processes, resulting in the bestowal of a prestigious product or service award by the Minister of the Environment.

The program of eco-labelling includes both products and services. The program assures consumers that the labelled products have a minimum impact on the environment and damage the environment considerably less than other comparable products. Even before the accession of the Czech Republic to the EU, it was decided that the Czech program for labelling environmentally friendly products would continue and the “Environmentally Friendly Product” or “Environmentally Friendly Service“ eco-label would be awarded concurrently with the EUeco-label “The Flower”. Through the simultaneous implementation of both programs and the harmonization of criteria and methods, more advantageous conditions have been created for the submission of applications and financial conditions for the payment of fees.

Businesses are increasingly adopting a responsible attitude towards the environment in order to draw attention to their alternative approaches to activities such as production or the very operation of their businesses.

The condition and results of eco-labelling programs in the Czech Republic in 2007

The National Program for Labelling Environmentally Friendly Products and Services:
- Technical guidelines were specified for 50 product groups and 3 Service Category.
- There were 197 valid licenses authorized to use of the Czech eco-label.
- The Czech eco-label was used by 89 businesses.

The European Program for Labelling Environmentally Friendly Products and Services with the EU eco-label “The Flower”:
- Environmentally friendly criteria were established for 23 product groups and 2 categories of services
- Eight valid licenses authorizing the use of the EUeco-label were granted
- 8 companies were EU eco-label holders.

The educational program entitled “Whatever Is in the Home Counts!” continued to be promoted. This set of games and activities, which can be incorporated into lessons in both elementary and secondary schools, was used by nearly 550 trained teachers throughout the entire Czech Republic in 2007.

Environmental Management Systems: EMAS, ISO 14 001, Cleaner Production
- In 2007, the number of registered companies increased to 28 organizations.
- Over 18 450 employees work in organizations with a management system in place.
- An increase in the number of registrations was reported in construction.
- EMAS further expanded into “new” areas of activities:
    - manufacturing industries – the wood processing industry
    - the waste recycling and management

Cleaner Production
- methodical publications

- Cleaner Production web pages at http://www.cenia.cz/cp
- The "Partnership for Sustainable Consumption and Production" Project
- Seminars and presentations
- publication of promotion and information materials

ENVIRONMENTAL IMPACT ASSESSMENT – EIA/SEA AND INTEGRATED POLLUTION PREVENTION AND CONTROL – IPPC

Environmental Impact Assessment – EIA/SEA

- incorporated into the Czech Republic's legal system on 1 July 1992
- an important element in the system of preventive environmental protection instruments
- a significant component of environmental policy
- systematic examination and assessment of the potential environmental impact

Integrated Pollution Prevention and Control – IPPC

- incorporated into the legal system of the Czech Republic on 1 January 2003
- integrated pollution prevention and control, concerning the integrated pollution register
- to improve the quality of the environment and to attain a higher level of environmental protection as a whole
- The fundamental principles of integrated prevention are:
    - Assessing industrial and agricultural activities from the perspective of environmental protection as a whole.
    - Supporting the preventive approach in reducing emissions (Waste production is reduced through the choice of a suitable technology. Produced waste is recycled and used for energy and material recovery to the greatest possible extent)
    - Specifying facilities' operating conditions based on the best available techniques
    - Regularly reviewing issued integrated permits and modifying them according to technological and legislative developments, which creates a constant pressure on the technological innovation of facilities.
    - Informing the public and public participation in the permitting procedure
    - Integrating partial permits into one and ensuring that the permit is issued by only one authority.
- Emphasis is placed on achieving environmental standards.

Integrated pollution register– IPR

- publicly accessible electronic database listing pollutant releases and transfers of off-site pollutants.
- part of the integrated pollutant release and transfer register for the European Communities
- to facilitate public access to information, to support participation in decisions about the environment and to contribute to the prevention and reduction of environmental pollution.
- information on normal and accidental emissions of registered pollutants into the air, water and soil, as well as information about the off-site transfer of these substances and/or their compounds in wastes and waste waters treated outside the boundaries of a facility.
- http://www.centralniohlasovna.cz
- for 2006, 1080 organizations submitted a report, which is 206 more than 2004. 501 of the organizations (46%) run at least one IPPC facility (i.e. a facility governed by the Integrated Prevention Act). At the national level, agricultural businesses that reported almost exclusively ammonia discharges represent the largest share of reporting subjects (54%), followed by the electricity, water and gas production and distribution sectors (12%), the production of basic metals, metallurgical and fabricated metal products (6%) and the production of other non-metal mineral products on par with the category of other public, social and personal services (5%) where sewage disposal plants are prominent. Out of the 72 observed substances, discharges or transfers of 61 of them were reported for 2006. Similarly to other years, most reports featured ammonia (582) and the largest quantity was reported for carbon dioxide (over 82 million tonnes a year). The most frequently reported discharges of substances into the air concerned ammonia, nitrogen oxides, sulphur oxides and carbon dioxide. Mercury and other heavy metals and total nitrogen stand out in discharges into water. Lead, zinc and copper dominate in transfers into sewage, and total nitrogen, phosphor, heavy metals and phenols for sewage waters. No discharges into the soil were reported similarly to previous years.
- It is essential to point out that the set of data reported to the IPR may be biased; imprecision may arise from an insufficient quality of acquired data and from the failure to identify all facilities that have a reporting obligation. 2006 was the third year of reporting to the IPR.
- The Czech Environmental Inspectorate (ČIŽP) plays an important role in the supervision of whether the reporting obligation is fulfilled. According to ČIŽP statistics for 2007 and 2008, 239 inspections were performed by the Inspectorate, 18 administrative procedures were announced, 7 administrative procedures were initiated and 6 fines totaling CZK 79 000 were imposed.

INTERNATIONAL CONTEXT and COOPERATION

1999-2003 in preparation of the EU membership, the existing EC legislation was transposed into the national legislation

Multilateral agreements
An overview of international agreements is available on the Ministry of the Environment website at http://www.env.cz.
International development cooperation of the Czech Republic
Pursuant to Government Resolution No. 686 of 7 June 2006, concerning international development cooperation in 2007 and its medium-term financing outlook to 2009, CZK 750 million has been allocated for the preparation of IDC in 2007. Within the environmental sector, 34 IDC projects were implemented in 2007, i.e. 23 continuing and 11 new projects, totalling CZK 111 856 million.

ENVIRONMENTAL EDUCATION, ENLIGHTENMENT AND PUBLIC AWARENESS

Promote dissemination of information, environmental education and public awareness:

- assumptions and principles of sustainable development
- sound behavior towards nature and natural resources
- environmentally sound agriculture
- environmentally sound tourism
- hazardous substances and sources of pollution
- contents of hazardous substances in consumer products, incl. food
- renewable energy sources and energy savings
- waste management (recycling)

Axelrod, R. (2004), Nuclear Power and EU Enlargement: The Case of Temelín. Environmental Politics, 13, 153-172.

Issue of the nuclear power and its future in Europe

"The controversy over the Temelín nuclear power plant (TNPP) in the Czech Republic was transformed from a domestic issue to an international one by the year 2001. Besides providing an opportunity to examine domestic politics and administrative practices in the Czech Republic, the Temelín case raised questions about the future of nuclear power in Central and Eastern European (CEE) countries – and the rest of Europe. What began as a bureaucratic decision in the 1980s by the communist government of Czechoslovakia to build a nuclear power plant became by the late 1990s a major controversy affecting the enlargement of the EU and a nightmare for the foreign relations of the Czech Republic. "

"The dynamics of energy and environmental policymaking in the case of Temelín provides a unique lens for examining the relationship between candidate states and the EU, as well as issues pertaining to the future of nuclear power in Europe."

- origins and development of the TNPP.
- Temelín and the anti-nuclear movement in Europe,
- the process of enlargement of the European Union (EU),
- the integration of environment and energy policy (EU's 6th Environmental Action Programme)
- bilateral relations between the Czech Republic and its neighbors.

Historical background

- 1986 Chernobyl disaster => issue of the safety of nuclear power facilities
- 1992, the G-7 countries (Canada, France, Germany, Italy, Japan, the UK and the US) agreed that Russian-designed nuclear power plants should be closed owing to safety concerns, and that financial assistance would be given to replace nuclear power with renewable and alternative energy sources.

- CEE governments and their nuclear industries wanted to keep plants open to prevent them from losing their investments. => plants upgrades => extended lifetime, rise of the nuclear industry in CEE(equipment, instrumentation and control systems (I&C), nuclear waste storage facilities)
- Western Europe (particularly France and Belgium) had excess electricity to sell and the nuclear industry was anxious to find new markets, particularly in CEE countries and Asia, the policy to upgrade Russian-designed plants established a vast new market benefiting suppliers of nuclear technology, particularly US and European nuclear engineering companies => the ability of Western European and North American governments to achieve closure of Soviet/Russian-designed nuclear power plants across CEE and former Soviet regions proved quite limited, though

The Origins of Temelín

Communist era in Czechoslovakia
⇨ high energy intensity, low energy prices, and inefficient energy production and electricity transmission
⇨ Czech heavy industry and chemical production required a reliable supply of electricity
⇨ nuclear power seemed to be a viable alternative

1978 - the decision for construction was approved (Temelín is located in the southern part of the Czech Republic, cca 80 km from the Austrian border)
1986 - construction began
- after the Chernobyl accident => a review of Temelín's design a halt in construction
1992 - new government to decide about construction => completion of the TNPP.2 (no adequate information on electric supply and demand, absence of public debate
- studies by the International Atomic Energy Agency (IAEA) found flaws in the design of Temelín, and recommended replacement of the I&C systems. There were also questions regarding the use of Russian fuel as well as the fuel cycle itself, contributing to higher levels of radioactive waste than Western designs.
1993 - after a controversial and questionable bidding process, Westinghouse was awarded a contract to graft Western technology on to the Russian-designed reactors.

The Austrian position - Temelín is influenced by its proximity to the plant and the fact that it is a non-nuclear state.

early 1990s - when the contract with Westinghouse to upgrade Temelín was being considered => lobbying against the TNPP in the US Congress (similarly, Austria later opposed the completion of the Slovakian Mohovice nuclear power plant in 1998).
By 2000 - the Austrian position was complicated because of the nature of its coalition government, difficult to reach a political agreement => widening the scope of conflict to other European states and international NGOs => a campaign against nuclear power in Eastern and Western Europe
September 2000 - the Austrian Parliament approved a resolution to block Czech entry into the EU because of Temelín. The problem here was that there exists no EU competency for nuclear power plant regulation, probably because a number of the nuclear states, including France and the United Kingdom (UK), are wary of opening a Pandora's box of regulatory debates. In fact, **EU member states (and publics) remain quite divided on nuclear power issues.** Seven of the 15 member states have nuclear power plants, and eight of the 12 candidate states are nuclear. On the other hand, countries such as Austria have totally banned nuclear power while Sweden and Germany are officially engaged in phasing out their nuclear power facilities => lack of agreement
October 2000 - nuclear fuel was activated in the first Temelín reactor and Austria moved to widen the controversy to Brussels. In the autumn of 2000, anti-Temelín forces set up blockades on the borders between the Czech Republic and Austria to increase public attention on the issue. Austria soon changed its strategy from demanding the closure of Temelín, to blocking the closing of the Czech energy chapter in the accession negotiations. This move could have jeopardized the entire accession process, since a veto of any of the 31 chapters by even a single EU member state would prevent accession to the EU. When Czech officials decided to go ahead with the completion of Temelín, they never thought the issue would rise to the level of potentially blocking Czech accession to the EU. The veto of one state could do so, which is what Austrian officials were threatening.

⇨ the EU became an important player mediating between two states with unequal status – a member state and a candidate state

⇨ At the request of the Czech foreign minister, Jan Kavan, the Commission offered to act as mediator at the end of 2000. Both Austria and the Czech Republic agreed to the mediation. The result was **the Melk Agreement**, the result of many hours of tedious negotiation.

- The Czech Republic agreed to an Environmental Impact Assessment with EU participation (The Commission later concluded that the environmental impacts were considered to be insignificant and acceptable)
- Austria said it would cease threatening to block the closing of the energy and environmental chapters and to protect the borders from further blockades.
- As an early warning system for extraordinary events, a hotline was established from Temelín to the Austrian Federal Atom Centre at the Interior Ministry to supply updated studies on breakdowns and uncontrolled release of radioactivity.

⇨ Between February 2001 and July 2001, in a parallel process, there were ongoing discussions (not smooth) between the EU, Czech nuclear experts and Austria.

⇨ Surprisingly, EU Enlargement Commissioner Gunter Verheugen suggested at some point that Temelín would 'probably be the safest nuclear plant in Europe' (*Prague Post*, 29 November 2000).

⇨ The European Parliament, a strong supporter of environmental issues, passed a draft resolution in July 2001, recommending the phasing out of Temelín and hosting an international conference on the issue. It tried to convince the European Commission that Temelín was a failed investment. At the September 2001 plenary session of the Parliament, it was suggested that the EU finance the closure and dismantling costs of Temelín. The non-binding resolution was passed on 5 October 2001, recommending that as problems continue to come to light in the nuclear and non-nuclear section of the plant, the 'zero option' should be considered. Resolution supporters hoped that the Commission would consider the Parliament's position seriously. This was the first time an EU institution tied Temelín to accession.

⇨ **German approach:** The German Environment Minister questioned the economic sustainability of Temelín and reiterated his position that Temelín would not meet German standards, or be viable in Germany. In July 2001, the German government formally asked the Czech government to revise its decision to operationalise Temelín. E.ON, a German power company, said it would cancel contracts with CEZ to import electricity. Meanwhile, Bavarian border towns launched a campaign to stop Temelín with petitions, in February 2002, Bavaria asked the Czech Republic to close Temelín. A difficulty with the boycott strategy was the inability to distinguish between sources of electricity. Other German companies kept the CEZ (Czech energy producer) contracts and purchased electricity indirectly through ENRON. Germany never threatened to block Czech accession over Temelín, although it is committed to close its own nuclear plants within 20 years. The Czechs were very aware of the anti-nuclear feeling in the Bundestag and tried to be responsive to inquiries. A study by the German Society for the Safety of Nuclear Facilities and Reactors said Temelín met international safety standards except for problems that could result from a break in the feeding water pipes.

⇨ Difficult role of the EU: Since there are no EU standards, which national standards should apply? German, French and British standards are not the same. Czechs officials argued that the EU could not apply pressure to candidate states about nuclear power because it lacked the competency to do so with existing members. However, the EU position was that it could force an EIA on non-members even though it was not called for in EU legislation.

⇨ The conclusions of the Melk Process issued on 29 November 2001, defined a follow-up process. The agreement between the Czech Republic, Austria and the EU was 130 pages long. Each state recognised the sovereign right to its own energy policy, but there would be joint monitoring and cooperation to increase energy efficiency.

⇨ In late November 2001, Chancellor Schussel changed his position regarding closing the Czech energy chapter. The Austrian Parliament passed a resolution giving it the right to reopen it in the future. This, however, would be highly unusual requiring the support of the Commission, which was supporting the Czech position.

⇨ Why did Austria finally abandon a veto of Czech accession? First, Austria lacked support in the EU Council. Second, Chancellor Schussel risked jeopardizing the strength of his coalition in a long, difficult and unpleasant fight. There was, in fact, no legal basis for stopping Temelín.

⇨ At the December 2002 Copenhagen Summit, at which the CEE states were invited to join the EU, Austrian officials wanted to embed a protocol to the accession treaty with the Czech Republic making the Melk Protocol subject to international law and subject to enforcement by the European Court of Justice. Lacking an EU nuclear energy policy and given the influence of the nuclear states, the attempt failed. Nuclear member states may have feared that such a move might put other nuclear power plants under European Court jurisdiction with possible lawsuits initiated by antinuclear groups. The Melk Agreement remains a bilateral agreement and not subject to international law. However, Austrians may turn to other strategies such as the International Court Justice, petitions or a national plebiscite.

⇨ **Role of Czech NGOs:** Generally, Czech NGOs were never really successful in challenging the government position favoring Temelín, it was the intervention of foreign NGOs and green political parties which forced the public hearings and EIA within the context of the EU accession process.

Temelín's Technical Problems

- most of the shutdowns and delays at Temelín were due to technical problems in the non-nuclear system
- Western European Nuclear Regulators Association (the EU's nuclear safety advisory body) reported some safety concerns on the basis of the different safety concepts in Eastern and Western technology, which did, and would, continue to cause technical problems and delays
- through 2001 and 2002, there was number of closures of the plant's operations
- in mid-January 2002, technical malfunctions caused the plant to discontinue testing at 100 % capacity.
- A two-month shutdown occurred prior to June 2002.
- problems continued into 2003 as Unit 1 experienced additional shutdowns
- after Unit 2 was launched in May 2002, it too had technical problems
- although both units have been connected to the grid, by early 2003 they were still not contributing a continuous and reliable energy supply

The Czech Perspective on Privatisation of CEZ

While Temelín was portrayed as an opportunity to retire coal-fired plants, in fact, not much progress has been made. There is no plan for reducing coal mining or retiring old coal plants. In 2001, government officials stated that when the CEZ utility is privatized, the new owner must guarantee the purchase of 28 million tons of coal from Czech miners over 15 years. It also stipulated a level of output from coal-fired plants to be maintained to meet anticipated growth in electric demand, along with nuclear power. This will hurt the development of environmentally benign energy sources and conservation. The Czech Republic now exports electricity without Temelín online. The surplus when Temelín comes online will be even greater, making the plant a revenue producer. Temelín is critical to the privatization of CEZ, which has a monopoly of production and distribution. CEZ needs Temelín operational and in good condition if the government is to receive a good price.

Energy Policy in the Czech Republic

⇨ The Czech Republic has been trying to move closer to EU policy in the energy sector. Over 75% of electricity is generated from fossil fuels, 3% from hydro, 20% from nuclear, and an insignificant amount from renewable resources. Given the pressure to reduce air pollution from coal mining and coal burning, coal is not projected to have a long-term future unless environmental regulations are modified. In the 1990s, the government encouraged the public to switch from coal to electricity by subsidizing the price of electricity. This increased demand was used as a justification for completing Temelín.

⇨ The Czech government has also stated that any new plants built after 2015 will have to use primary sources other than coal. With nuclear power cast as a strategy to comply with the UN Framework Convention on reduction of greenhouse gases, it appears that a nuclear future is part of the country's long-term energy policy. In spring 2003, the Minister of Industry and Trade proposed a draft plan that would double the size of Temelín. It was met with criticism.

⇨ The Environment Ministry projects that renewable energy, which accounts for 2% of the energy sector, will increase to 4–6% by 2010. The development of this sector is one of the objectives of the 6th Environmental Action Programme of the Commission. The stated goal of the government is, 'creating a well-functioning, non-discriminating, transparent and motivating system of support and power savings, effective use of renewable energy sources, and co-generation of electricity and heat'.

⇨ While there are references to sustainable development and its significance in EU policy, the government admits there has been no improvement in the business, or public, approach to energy savings or renewable energy sources.

⇨ The mining of uranium has supported the nuclear power industry. Run by the state company Diamo, it employs about 1,000 workers.

⇨ There are plans for energy savings programs by the State Energy Agency. Because they estimate that more funds will be needed than are available, they are looking to the EU and World Bank for support.

⇨ There is also government support for energy audits, efficiency standards, labeling of appliances, and co-generation

Conclusion

- The Temelín case illustrates the limits of existing environmental policy not only in the Czech Republic, but among the member states of the EU where the long-term impact of nuclear energy has not been considered fully.
- Similarly, the World Bank has also met with mixed results in its attempts to close Soviet-designed nuclear power plants in Slovakia and Ukraine.
- EU approval of Temelín, while keeping the issue separate from Czech accession, overlooked difficult issues concerning nuclear safety and the desirability of an enhanced nuclear future.
- EU funds for nuclear power compete with commitments to support renewable energy.
- need for an EU-wide debate about the appropriate energy mix necessary for meeting sustainable environmental goals.
    - Bulgaria is considering building a new nuclear plant to compensate for the loss of its Kozloduy plant
    - Finland is considering new nuclear power,
    - Sweden is rethinking closing its plants
    - Germany may be dragging its feet in closing its nuclear power plants.
- Yet, some attempts to set EU-wide minimum safety standards based on those from the International Atomic Energy Association are moving forward, partially as a result of the enlargement process.
- Temelín became an international issue when Austria and NGOs challenged its completion. Austrians, and later Germans with memories of Chernobyl, tried to stop construction of the plant and continued to oppose its operationalisation, supporting the sovereign right of a state (such as Austria) to protect its citizens from potential harm
- The intense bilateral negotiations over Temelín between the Czech Republic and Austria coincided with, or could be considered to be, the result of the Czech accession process. The Czech position was that if the plant was deemed unsafe by EU standards it could be closed. The Czechs argue that their plant has been scrutinised more than any Western European one. The problem was that there was no guidance from the EU because it could not agree on a nuclear policy. Standards for high nuclear safety are also lacking. The Austrians threatened to veto both the environment and energy chapters unless a new and comprehensive assessment was made of Temelín. The goal was to close Temelín or delay Czech accession. This was interpreted as extreme pressure or blackmail by most Czechs. Austrian opposition to Temelín was also perceived as outside interference threatening sovereignty
- The Austrians hoped this would be an opportunity for the EU to take a position on the future of nuclear power. Austria's aim was to raise questions, such as, is nuclear power consistent with sustainable development? What of long-term waste disposal and decommissioning? Austria also raised the issue of cross-border environmental impact and sovereignty to public attention. Is a state free to decide how it will produce electricity? Is the answer yes for current member states and no for candidate states?
- On the other hand, EU bodies (when unanimity has existed and when funds for closure were promised and provided) have forced candidate states such as Bulgaria and Lithuania to accelerate the closure of a small number of nuclear power plants deemed quite dangerous. The EU made termination of an unsafe nuclear power plant in Bulgaria a condition to begin EU accession negotiations. Without the spectre of EU membership it would have been much more difficult to close unsafe plants. Even so, Bulgarian officials and nuclear power interests continue to discuss the scheduling closing of a number of reactors in Bulgaria. These debates continue, at least in part, because Bulgaria has electricity export opportunities. The EU could use the accession process to increase transparency in candidate states and support NGO pressure on their governments for information on environmental impacts of energy.

Jehlicka , P., Sarre, P., Podoba, J. (2005), The Czech Environmental Movement's Knowledge Interests in the 1990s: Compatibility of Western Influences with pre-1989 Perspectives, Environmental Politics, 14(1), 64-82.

- interviewing the Czech environmental movement intellectuals about their knowledge interests
- trying to discover common links as well as the key differences from western movements
- trying to identify the major drivers of the differences
- pioneering work on this topic
- provide a nice discussion of the social and political background of the formation of the Czech environmental movement

Motivation

- A number of scholars, especially political scientists, who have analyzed the development of Central and Eastern European (CEE) environmental movements in the post-1989 period have identified a trend towards 'westernisation':

The environmental movement in CEE has undergone profound transformation: the movement has shifted from being a mobilizing agent for populist protest against the totality of the Communist regime and in its place has emerged pragmatic, goal-oriented professional organizations. Western aid agencies and environmental peer groups have had a strong influence on this transformation. The transformation has brought advantages to environmental NGOs. However, it has also resulted in a loss of the local perspective, with its distinct modus operandi and bottom-up input, and this has impoverished political discourse in the transition states. [Jancar-Webster, 1998: 69;]

- existing literature contains little insight into the worldviews, values, ideas and long-term goals of the environmental movement in CEE in the late 1990s;
- little is said about the underlying beliefs and worldviews of the Czech environmental movement.
- Jehlicka et al want to fill this gap: *"Our experience of events in CEE and our geographical understanding of the way in which local differences have persisted under globalization suggest that such an enquiry needs to be guided by a broad sensitivity to cultural differences and an ability to link values and beliefs to political strategy and tactics."*
- social movements should be studied in historical and comparative context and with a focus on 'cognitive praxis' – ideas as manifested in action that is part of experimental or emergent countercultures engaged with, and trying to change, the dominant cultures (Eyerman and Jamison, 1991)

Western European environmentalism

- tendency towards ecological modernization
- radical countercurrents of more oppositional groups such as the anti-road protest
- depending on the ability of the environmental movement to argue for more critical viewpoints
- a higher proportion of environmental experts are likely to be incorporated into business and the state

In CEE

- the transition was influenced by strong international pressures to move towards sustainable development and the new international norm characterized by Bernstein (2000) as 'liberal environmentalism'.

Date Sources

a) Local periodicals:

Although many Czech environmental groups have published their own periodicals at some point in their existence, these have often been irregular. The only periodical that systematically discussed, and deliberately sought to shape, knowledge interests was Hnuti DUHA's (Rainbow Movement) monthly "Sedma generace" (Seventh Generation). While our research was informed by this and by other existing printed and electronic materials, such as the magazines "Veronica" and Hnuti Brontosaurus's (the Brontosaurus Movement) "Ekolist," in our quest to identify the contours of the Czech environmental movement's knowledge interests we had to rely primarily on interviews with movement intellectuals.

b) Personal Interviews:

21 in-depth interviews with leading movement intellectuals were conducted in the winter of 1998/9.

selection upon

- personal saliency within the movement
- to capture the breadth of the Czech environmental movement in the late 1990s

people from

- 13 different environmental groups
- all important centres of Czech environmental activism (Brno, Ceske Budejovice, Liberec, Olomouc, Plzen, Prague and Ustı nad Labem).

Sample characteristics:

- 14 men and 7 women.
- 12 respondents were fulltime employees of their environmental organisations.
- The majority turned to be veteran activists who had joined the movement in the pre-1989 period
- The average age of the respondents was 33
- 15 respondents were past members of one or both of the two conservationist groups that existed legally in the 1970s and 1980s: CSOP and Brontosaurus
- The importance of pre-1989 formative experience was suggested by the finding that 9 out of 21 respondents completed their full-time education (including university education) prior to 1989. As Kundrata (1992) pointed out at the beginning of the 1990s, 'one has to take into consideration the fact that since the 1950s, at least 90 per cent of university graduates has received a highly specialized education not based on a holistic or global approach.'

- 19 respondents held or studied for a university degree: 7 in scientific disciplines (4 biologist/ecologists); 7 in polytechnics or agricultural universities; 2 lawyers, 2 in linguistics, and 1 in sociology.
- Only 2 respondents with science or agricultural degree felt that they needed to extend their education beyond scientific ecological expertise and were thus completing a second degree in social and political sciences:

RESULTS

- What they call "The Czech environmental movement knowledge interests" represents a collection of features shared by the majority of respondents rather than an exhaustive list of elements to which all respondents would subscribe. Or, in other words, it represents "the dominant knowledge interests of the Czech environmental movement"

Cosmological dimension (consisting of worldview assumptions and attitudes towards nature, society and their interrelationships)**:**

- Environmental degradation is usually seen as arising from business activities that are supported by local or national politicians
- Nature is perceived through a clearly anthropocentric perspective in which it is subordinated to human well-being.
- One of the main perceived reasons why it is important to fight for better environmental protection is the potential of health risks to current and future human generations arising from industrial pollution or other types of environmental degradation ("*The most important thing for us is that we want to make sure that the generation of our children and our grandchildren can live here."*)
- Nature is seen robust within limits: the environment will tolerate a certain degree of damage.
- Scientific evidence and expert knowledge are considered the main criteria for resolving the environmental disputes
- Liberal democracy and the market economy are taken to be the preconditions for effective solutions to environmental problems.
- It is assumed that conversion at the individual level will trigger social change
- A striking feature of the Czech environmental movement's cosmology is that it almost completely ignores social, political and economic structures more nuanced than 'state' and 'market'. Systemic change as a precondition for the resolution of environmental problems is often explicitly rejected (*"We do not see the solution in the change of the social system because other systems would also cause [environmental] problems."*).

Technological dimension (referring to specific technological issues around which a movement develops, including the articulation of specific concerns in its practical activity.)**:**

- Czech environmental movement intellectuals do not demonize technology (with the partial exception of nuclear power), but rather see it as a means by which problems can be either created or solved – thus it is up to people to choose how they will use technology.
- Technology can be a partial solution to current problems, along with the employment of market-based and flexible instruments of environmental policy.
- small-scale technology is preferred.
- Technology can help to shift towards increased efficiency through the use of renewable resources ("Cars consuming less petrol, better insulation of houses – it's not a solution in itself, but it's a partial solution.")

Organisational dimension (concerning the movement's organizational paradigm: its modes of organizing the production and dissemination of knowledge)**:**

- Apart from 'civil society', very few collective actors are recognized; The central components are environmental activist groups
- The role desired for environmental groups is that of a mediator between individual citizens, or (preferably) locally-based informal groups of citizens, and the central state authorities. Environmental groups should, it is thought, be consulted by central authorities and treated as partners.
- the end product of environmental groups' activities at the local level is an individual who, through a conscious value-based lifestyle change, helps to create a more harmonious relationship between society and the environment:
- According to the emphasis placed on the market economy and the individual, an important role is ascribed to green consumerism guided by self-interest (*"We definitely aim to influence individuals. For instance, by disseminating information . . . Consumers should demand washing powder without phosphate."*)
- the state should guarantee that individuals have a choice between environmentally harmful and environmentally friendly consumption. The latter is seen as being economically more beneficial (*"Ecofriendly behavior is also economically sound. It's been proved many times that people respond to economic stimuli very quickly. "*)

Summing-up:

"Overall, the positive view of the market and the emphasis on individual behavior among movement intellectuals fits well with what Bernstein (2000) calls 'liberal environmentalism'. In our view, Czech environmental movement intellectuals are

less prone to radical critique of capitalist society than is the case among Western European environmentalists. There were a small number of individuals, who had more interest in changing social structures; but they seemed less radical than their Western counterparts. Some of our respondents indicated that they had beliefs of this kind for decades. These influences, persisting from a relatively distant past, prompted us to look at the earlier experiences of our respondents."

Historical background:

- the Czech environmental movement is still largely led by people who rose to prominence in the movement around 1989. The movement, inevitably, grew out of a much narrower range of influences and inspirations than its Western counterparts.
- before 1989, environmentalism was not allowed to develop as a social and political critique of, or as a visionary alternative to, the existing social order.
- The most visionary perspective was probably that of a strong emphasis on value and lifestyle conversions at the individual level as a precondition of a more harmonious relationship between the environment and society (Vavrousek); other sources, such as the women's rights, radical participatory, anti-nuclear and animal rights movements were not part of the Czech environmental movement's experience.
- **Surprising finding:** When asked to identify key influences (other than education and family) on their environmental views, 5 of our interviewees mentioned their '**tramping' experienc**e and 4 their membership in the **boy scout movement**. 4 interviewees mentioned as their childhood formative experience romantic books by authors such as Karl May (a nineteenth-century German writer of books about the US Wild West), Ernst Thompson Seton and Jaroslav Foglar (a Czech writer of books on boy-scouting).
    - ⇨ the pre-1989 Czech environmental movement developed in **virtual intellectual isolation from the Western environmentalist thought of the 1960s, 1970s and 1980s**.

⇨ During the Communist period, no communication with Western environmentalists, no Western environmentalist literature available. The 1990s brought only a marginal improvement in this area.

- very few classic books of Western environmentalism were published in Czech
- strong representation of philosophy and psychology reflects the perceived role of individual consciousness

- relatively little happened within the movement during the 1990s to compensate for those traditions and influences that shaped Western environmentalism in the past and that were missing in the Czech case.
- It was quite revealing that many respondents regarded with great suspicion, sometimes bordering on outright rejection, the ideas of Hnuti DUHA, the only major Czech environmentalist group that explicitly links environmental issues with the social and political dimension.
- The current attitudes of the majority of our respondents seem strongly linked to ideas from the 1980s =>

Tramps, Brontosauri and Pollution Monitoring: Czech Environmental Knowledge Interests in the late 1980s

The pre-1989 traditions of the current Czech environmental movement are mainly related to the activities of 3 officially recognized organizations

- CSOP
- Hnutı Brontosaurus
- Ecological Section of the Biological Society of the Czechoslovak Academy of Sciences

\+ tramping (an unofficial movement tolerated by the Communist authorities)

Tramping

- a loose movement whose origin dates back to the period after the First World War.
- origin is linked to the spread of American values and culture as communicated through literature and films about the nineteenth century American West.
- In the 1920s and 1930s it was a moderate protest movement and an alternative lifestyle to bourgeois society.
- During the Communism, tramping enabled people to find refuge from oppressive everyday reality with a group of like-minded friends in their log cabins or camp sites.
- modest lifestyle with very limited means (for several summer days or weeks)
- with a specific cultural dimension: music, jargon and romantic literature
- nurturing positive attitudes towards nature; nature as a refuge from society and thus in oppositional contrast to it (separating the social from the environmental).
- estimates are that up to 50,000 people were part of the movement in the 1980s.

Brontosaurus

- started in 1973 as a programme of the Socialist Union of Youth,
- aimed at ecological education;
- organizing summer camps in which volunteers were engaged in practical conservation work.

CSOP

- established in 1979
- a similar range of activities to Brontosaurus.

The majority of members were engaged in non-political 'small ecology' activities that included cleaning streams of rubbish, looking after protected areas, disseminating knowledge on the functioning of ecosystems and educating young people in the scientific basis of ecology.

"Ekologicka sekce"

The only legal environmental organization that perceived and discussed 'big ecology' issues (decisions on strategic and politically charged issues) was

- elitist expert organization
- 400 members at its peak in 1989
- evolved from a group of friends and colleagues, most of whom held jobs in various institutes of the Academy of Sciences, with privileged access to environmental data, mostly treated by the regime as secret information
- Scientific expertise, access to data and the links of some of the Section's members to the dissident Charta '778 made it the most influential and respected group in the Czech environmentalist movement prior to 1989.
- Ekologicka´ sekce's interpretation of environmental issues was, by and large, confined to domestic issues: the local industrial pollution that was deemed to have a detrimental effect on human health.
- The international dimension of environmental problems was recognised only in the form of the transboundary effects of air and water pollution, while the global dimension was almost absent.

- The key feature of the pre-1989 environmental debate was that 'environmental problems were primarily viewed through the twin lenses of science and technology'
- The key battle was then to gain access to the data that would enable the environmental movement to mount more effective scientific arguments in communication with the authorities.
- the only causes of environmental problems that could be voiced were temporary and asystemic failures of Communist economic management.
- The solution to environmental problems relied (according to this view) on better scientific understanding and required better monitoring and application of a less damaging technology. This line of argument was supposed eventually to persuade the authorities to enforce the already existing regulations based on the emissions reduction principle, and to install end-of-pipe devices. In the understanding of many Czech environmentalists, this was an approach that had resolved problems of environmental pollution in Western European countries in the 1970s and early 1980s.
- from a Western environmentalist viewpoint it represented a politically and socially conservative shade of environmentalism.

⇨ Vanek (2002: 250) concludes, ***"Fears of repression and dislike for leftwing views gave rise to a particular type of the Czech environmentalist: a cautious person with the ideal of tolerance and democracy and of mild and placid nature."*** he continues: "*ecological damage in Czechoslovakia was perceived as a consequence of the centrally planned socialist system. Czech environmentalists saw the capitalist system and market economy as their hope."*

- Not surprisingly, therefore, a number of movement intellectuals found it initially difficult to comprehend that the arrival of the market and liberal democracy did not automatically lead to the reversal of detrimental approaches to the environment.

  "I was really taken by surprise when after the revolution, politicians and economists were attacking the ecological movement, in particular Vaclav Klaus in 1992 and 1993. It became a sort of dichotomy, in fact economic arguments were used against the nature protectionists. (Interview 11/2/99)"

  "In 1990, we did nothing against Temelın. We thought: There is a new government, the government of our heart, democratic, and they will certainly close Temelın down. But a year passed and nothing happened, so we got a bit angry and decided to do something against it. (Interview 20/1/99)"

The Continuity of Czech Environmental Knowledge Interests

- the movement under state socialism has a shorter tradition (Herrschel and Forsyth, 2001)
- it developed under constraints that were not experienced by its Western counterparts.

- as a consequence, important pre-1990s influences informing the environmental movement's knowledge interests in the West were not part of the Czech movement's experience.
- Jehlicka et al argue that the interaction of the Czech environmental movement with Western agencies during the 1990s had relatively little effect in terms of compensating for these missing formative experiences.
- Moreover, as opposed to the changes at the practical organisational level (professionalisation and fundraising techniques), the changes at the deeper cognitive level were relatively minor. As a consequence, the Czech environmental movement has retained many features of the pre-1989 'Czech local perspective'.

⇨ 2 arguments:

a) The Nature of Western Involvement

- The demise of the Communist system in CEE broadly coincided with the culmination of the most significant shift in Western environmental governance over the last 30 years -> a convergence towards 'liberal environmentalism' (Bernstein, 2000)
- the 1992 Earth Summit institutionalized these norms into the concept of **sustainable development** (-> environmental protection, the promotion and maintenance of the liberal economic order)
- This approach that Western agencies started to promote in CEE following the initial meeting of the 'Environment for Europe' process in June 1991.
- this concept further strengthened later on by the harmonisation of policies and laws in the countries applying for membership of the European Union (EU).
- Since the beginning, Western management of transitions in the environmental field (Slocock, 1999: 155) and Western environmental assistance have relied for their implementation on the involvement of environmental NGOs (strengthening the environmental protection and democracy through the development of the prime actor of civil society.
- democracy was, however, not perceived by external assistance actors as an outcome so much as a means of achieving economic development. (Pearce 1998)
- It was the Eastern European revolutions that gave the concept of civil society a greater respectability and pitched it against the authoritarian and interventionist state. Civil society became a concept that linked the strategy of marketization with political liberalization. The attractiveness of this concept lies in the notion that it mirrors in the political realm the principles of self-regulation understood to be the source of economic well-being and growth (Pearce, 1998: 184). Civil society is supposed to be a means of reconciling problems arising from the introduction of the market economy. In this context, the role of environmental NGOs as actors of civil society is to mediate in conflicts arising from the impact of economic development on the environment.
- in CEE, the emphasis of Western assistance was initially placed on providing training programs for environmental activists with the objective of transferring knowledge and practice from the West to CEE. As Lipschutz (1996: 156–7) found in the Hungarian case, the training programs of US agencies, did not primarily aim to teach environmental groups about ecology, but rather concentrated on transferring the organizational culture of US civil society and the US environmental community in particular.
- Later, the focus of foreign assistance shifted to the grant funding of NGOs' projects. Partly as a result of foreign assistance, the Czech environmental movement failed to develop its own membership base and became almost fully dependent on external funding. Funders – whether private foundations, Western governments or various EU intermediaries – wanted to see tangible results from their assistance. Thus they typically funded:
    - public ecological libraries and their networking;
    - ecological advice for the public;
    - participation of environmentalist groups in environmental decision-making processes, in particular the EIA process;
    - strengthening the co-operation of environmental groups with state authorities and local governments;
    - collecting information (e.g. mapping installations of renewable energy in a region);
    - publication of information brochures and leaflets (rarely publication of books);
    - drafting policy proposals;
    - nature conservation projects.

  In short these are activities that can be best described, in the terms used by Waller (1998: 41–2), as 'integrative' and 'issue-raising' rather than as broadening the movement's worldview, substantive knowledge or analytical skills.
- Many concepts promoted in the Czech Republic by Western agencies in the 1990s conformed to practices to which the Czech environmental movement had become accustomed in its pre-1989 experience.
    - The importance of scientific competence and expertise, for which the availability of data was crucial
    - The consultative, moderate and rational behavior of the movement in cooperation with other agencies
    - the belief in education,
    - the dissemination of information and consequent changes in lifestyle as the most effective means of achieving a more harmonious relationship between society and nature.

- The view that positive change can be achieved through changes at the individual level, without the need for a major structural change,
- ⇨ The belief that replacing Communism with liberal capitalism was a precondition for the improvement of the environment was not based on a deep structural analysis of the two social systems, but on the perception of the former as 'unnatural' and the latter as 'natural'.

b) The Transitional Political Context

After the short phase of revolutionary 'movement politics' in 1990–1991, the major Czech political parties started to pursue the goal of the 'stabilisation' of democracy.

- ⇨ The attempt to close the political system to small political parties.
- ⇨ "problems" with environmental groups –
  - threat to the doctrine of unfettered economic growth stimulated by the introduction of the free market and privatization, despite their positive views on market economy and role of individual
  - attempts of some groups to open the environmental policy-making sector to civil society, though still mostly based on scientific and rational argument, at odds with the tendency to make the sector technical and the domain of experts.
  - another problem the association of their activities and arguments with 'emotions' and with the 'unnatural'; in Czech conceptualization, the word 'emotion' connotes an unsuitable or inappropriate expression of feelings, being in opposition with 'reason', particularly with reference to political rhetoric (Holy 1996); their goals and arguments were still questioning the dominant social paradigm of the transitional period: development, economic growth and catching up with Western countries in terms of levels of consumption. Thus they were seen as questioning the 'natural'.

This experience strengthened the **apolitical character** of most Czech environmental movement intellectuals, and their **increased use of scientific rationality and technical expertise**. Czech environmental groups were making a considerable effort to present themselves as not only being independent of political parties, but also as consciously avoiding any possible association with any vested political, economic and ideological interests.

Conclusion

- there exists a great deal of affinity between the knowledge interests of Czech environmental movement intellectuals and those of 1990s liberal environmentalism
- it is not solely due to Western influences shaping the thought of the Czech movement intellectuals
- rather than the Western ideational paradigm replacing the local perspective, a more complex combination of domestic and imported ideas has occurred in the course of the 1990s. With its emphasis on civil society, access to information and the role of lifestyle changes, Western knowledge transfer compatible with oppositional Czech environmental discourse before 1989.
- a 'mix of inherited experiences of socialism and Western-inspired aspirations' (Herrschel, 2001); post-Communism is in many respects a unique condition, and the impact of Western ideas was less far-reaching than has been previously thought (e.g. Herrschel and Forsyth, 2001; Pavlı´nek and Pickles, 2000)
- Czech attitudes consistent with liberal environmentalism did not originate in 1990s Western influence, but in predispositions with a much longer history.
- with its sensitivity to local specificities and political styles, the Czech movement displays the tension identified by Jamison (2000) between a dominant positivist instrumental rationality and a weaker cultural and hermeneutic rationality – suggests that they, like us, need to pay more attention to oppositional voices if environmentalism is not to become merely the voice of green business.