INDUSTRIAL DEVELOPMENT IN CZECH REPUBLIC
IN LIGHT OF SUSTAINABLE DEVELOPMENT

Prepared for the United Nations Industrial Development Organization

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<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BAT</td>
<td>Best Available Technique</td>
</tr>
<tr>
<td>BREF</td>
<td>BAT Reference Documents</td>
</tr>
<tr>
<td>CEMC</td>
<td>Czech Environmental Management Centre</td>
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<td>CEU</td>
<td>Czech Environmental Institute</td>
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<tr>
<td>CHMI</td>
<td>Czech Hydrometeorological Institute</td>
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<tr>
<td>CPC</td>
<td>Czech Cleaner Production Centre</td>
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<tr>
<td>CSN</td>
<td>Czech State Standard</td>
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<tr>
<td>CZSO</td>
<td>Czech Statistical Office</td>
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<tr>
<td>DCPES</td>
<td>Domestic Consumption of Primary Energy Sources</td>
</tr>
<tr>
<td>EEC</td>
<td>European Economic Community</td>
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<tr>
<td>EMAS</td>
<td>Eco-Management and Audit Scheme</td>
</tr>
<tr>
<td>EMS</td>
<td>Environmental Management Systems</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>CHMI</td>
<td>Czech Hydrometeorological Institute</td>
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<td>IISD</td>
<td>International Institute for Sustainable Development</td>
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<tr>
<td>IPPC</td>
<td>Integrated Pollution Prevention and Control</td>
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<td>ISO</td>
<td>International Standards Organisation</td>
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<td>IUCN</td>
<td>World Conservation Union</td>
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<td>MA</td>
<td>Ministry of Agriculture of the Czech Republic</td>
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<tr>
<td>ME – SD</td>
<td>Ministry of the Environment – Strategy Department</td>
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<td>ME</td>
<td>Ministry of the Environment of the Czech Republic</td>
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<td>MF</td>
<td>Ministry of Finance of the Czech Republic</td>
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<td>MIT</td>
<td>Ministry of Industry and Trade of the Czech Republic</td>
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<td>MLSA</td>
<td>Ministry of Labour and Social Affairs of the Czech Republic</td>
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<td>MRD</td>
<td>Ministry for Regional Development of the Czech Republic</td>
</tr>
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<td>MTC</td>
<td>Ministry of Transport and Communications of the Czech Republic</td>
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<tr>
<td>MVA</td>
<td>Manufacturing Value Added</td>
</tr>
<tr>
<td>NDP</td>
<td>National Development Plan of the Czech Republic</td>
</tr>
<tr>
<td>NUTS</td>
<td>Nomenclature of Territorial Units for Statistics</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>ODA</td>
<td>Official Development Assistance</td>
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<td>PES</td>
<td>Primary Energy Sources</td>
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<tr>
<td>PM\textsubscript{10}</td>
<td>Particulate Matter with a Diameter less than 10 μm</td>
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<tr>
<td>POPs</td>
<td>Persistent Organic Pollutants</td>
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<tr>
<td>SEP</td>
<td>State Environmental Policy</td>
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<td>SME</td>
<td>Small and Medium Enterprises</td>
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<td>TGM WMRI</td>
<td>T.G. Masaryk Management Water Research Institute</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Program</td>
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<td>VOC</td>
<td>Volatile Organic Compounds</td>
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<td>WRI</td>
<td>World Resource Institute</td>
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<td>WSSD</td>
<td>World Summit on Sustainable Development</td>
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1. INTRODUCTION

In November 1989, the “Velvet Revolution” in Czechoslovakia overthrew the Communist system. The former Czechoslovakia started a deep transition process towards democracy and free market economy.

The centrally planned economy of the Communist Czechoslovakia prior to 1989 had several features more or less shared with other Central and Eastern European countries of the Soviet Block. However, some of the characteristics were more prominent here than, for example, in the neighbouring Hungary or Poland. These were:

- Large extent of the heavy industry, especially iron and steel production. Czechoslovakia produced almost 1000 kg of steel per capita per year what was close to the world’s record figures.
- The chemical industry, especially heavy chemistry, also held a very prominent position.
- These (and other) industries were technologically backward, seriously polluting and energy inefficient.
- The energy base of the economy was heavily dependent on local solid fuel, mainly lignite with low energy content and high content of pollutants, above all sulphur.
- In the Czech Republic, there were several “hot spots” areas where the polluting industries were concentrated, namely Prague, the Ostrava region and North-Western Bohemia. In the latter, enormous coal open works together with heavy air pollution mainly from local power plants killing forests created a barely habitable “moonscape”.

The transition process proved to be a difficult and painful one, accompanied by a sharp drop in economic output which created hardships for large segments of the population. The gross domestic product decreased by about 12% in 1991 followed by a further 0.5% decline in 1992.

The 1993 year was marked by the division of Czechoslovakia into the Czech Republic and the Slovak Republic. This brought an additional negative economic impact. In contrast, the GDP remained at the same level. The decrease of industrial production was greater. The 1993 volume was only 63% of the 1990 level. The 1994 year was the first one with modest economic growth. In 1995, the GDP increased by 5.3%. This growth continued in 1996, but it was replaced by decrease in 1997-1999. In 2000, the GDP grew again but it didn’t still reached the level of 1990 (Chart 1).

Chart 1 – GDP, 1990=100 (1995 constant prices)

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</thead>
<tbody>
<tr>
<td>bil. CZK</td>
<td>1 449.4</td>
<td>1 281.0</td>
<td>1 274.5</td>
<td>1 275.3</td>
<td>1 303.7</td>
<td>1 381.0</td>
<td>1 447.7</td>
<td>1 432.8</td>
<td>1 401.3</td>
<td>1 397.9</td>
<td>1 448.1</td>
</tr>
<tr>
<td>Index</td>
<td>100</td>
<td>88.4</td>
<td>87.9</td>
<td>88.0</td>
<td>90.0</td>
<td>95.3</td>
<td>99.9</td>
<td>98.9</td>
<td>96.7</td>
<td>96.5</td>
<td>99.9</td>
</tr>
</tbody>
</table>

*Preliminary
Source: CZSO, MF

The sharp decrease in industrial production was not only inevitable but mostly even beneficial. It was partly caused by a sharp reduction of the heavy industry. Because the industrial sector is the main culprit of environmental pollution in the Czech Republic, the impact of its reduction on the environmental situation was markedly positive. Surprisingly enough, it was not accompanied by high social tensions.
Environmental improvement had a high priority among citizens of Czechoslovakia (the same applies to other Central and Eastern European countries) before and after the fall of Communism. There had been a deep concern in health and other impact of environmental pollution. The pressure from environmentalists and concerned citizens substantially helped to break down the Communist system. After establishing the democratic government, there was wide public support for radical environmental improvement (Klarer 1997)

In the period from 1990 to 1992 the main reason for the observed drop of pollution was the general decrease in industrial production and other economic activities. At the same time, newly established environmental institutions began to work effectively. Basic environmental legislation smoothly passed through the Parliament, creating environmental standards and procedures similar to European norms, and in some cases more stringent. Effective public participation was also made a key element of some laws. The new institutions and legislation were effectively supported by high expenditures for environmental protection. All of these things were made possible by broad public support (Moldan 2000).

2. INDUSTRIAL DEVELOPMENT AND ACHIEVEMENTS IN VARIOUS DIMENSIONS OF SUSTAINABLE DEVELOPMENT

2.1. Economic Situation of Manufacturing Industry

The necessity of facing the consequences of the command economy from the period 1948 to 1989 led to inevitable restructuring of the whole economy after 1989 (The Velvet Revolution) with strong decrease of gross MVA. It decreased significantly after 1990 and after the division of the former Czechoslovakia in 1993. Later it started growing and it reached higher levels in 1996 and 1997 compared with 1990. This growth was interrupted in 1998 and 1999 and in spite of the growth in 2000 the gross MVA did not reach the 1990 level in 2000 (Chart 2, Chart 3).

Chart 2 – Gross MVA (1995 constant prices)

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</thead>
<tbody>
<tr>
<td>mil. CZK</td>
<td>379 092</td>
<td>289 346</td>
<td>305 223</td>
<td>267 968</td>
<td>299 763</td>
<td>335 616</td>
<td>381 767</td>
<td>405 517</td>
<td>371 533</td>
<td>358 525</td>
<td>378 476</td>
</tr>
</tbody>
</table>

Source: CZSO

Chart 3 – Gross MVA Index, 1990=100 (1995 constant prices)

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</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>100.0</td>
<td>76.3</td>
<td>85.8</td>
<td>70.7</td>
<td>79.1</td>
<td>88.5</td>
<td>100.7</td>
<td>107.0</td>
<td>98.0</td>
<td>94.6</td>
<td>99.8</td>
</tr>
</tbody>
</table>

Source: CZSO

The number of inhabitants of the Czech Republic remained nearly at the same level during the 90’s and that’s why the development of the gross MVA per capita copied the development of

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1 Citations in the text are consistent with short statements in brackets after individual citation in the list of references.
the total gross MVA (Chart 4). The changes of the gross MVA per GDP were rather small (Chart 5).

Chart 4 – Gross MVA per capita (1995 constant prices)

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<tbody>
<tr>
<td>CZK</td>
<td>36 581</td>
<td>28 067</td>
<td>31 520</td>
<td>25 938</td>
<td>29 002</td>
<td>32 486</td>
<td>37 011</td>
<td>39 355</td>
<td>36 089</td>
<td>34 866</td>
</tr>
</tbody>
</table>

Source: CZSO

Chart 5 – Gross MVA per GDP (1995 constant prices)

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</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>26.2</td>
<td>22.6</td>
<td>25.5</td>
<td>21.0</td>
<td>23.0</td>
<td>24.3</td>
<td>26.4</td>
<td>28.3</td>
<td>26.5</td>
<td>25.6</td>
</tr>
</tbody>
</table>

Source: CZSO

Work productivity lagged behind the productivity in the developed countries: in 1998, in metallurgy it was 28% of the EU member countries average only, in pulp industry 16% of Austrian productivity, the industry value added per employee was 20.5% of the EU member countries average in 1997. Should the Czech Republic attain the EU work productivity without increasing the production, the number of employees for example in the chemical and pulp industry should decrease to 1/3 of the present state (CEMC – IWSD).

2.2. Manufacturing Industry Structure

The branch structure of the manufacturing industry in the Czech Republic is gradually approaching the average structure in the EU. The largest changes were especially in metallurgy, electrotechnical industry, transport, engineering and textile industry. New production capacities appeared producing new and competitive assortment of components for transport and electrotechnical industries. A large array of production capacities was developed on basis of direct foreign investments. At present nearly 800 companies with foreign equity participation operate in the Czech Republic and employ approximately 255 thousand employees (MIT 2000c).

The main indicators of development in 1994-1999 as regards the above mentioned industrial branches are presented in Chart 6.


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</thead>
<tbody>
<tr>
<td>NACE 17</td>
<td>43 252.9</td>
<td>40 949.3</td>
<td>38 573.4</td>
<td>39 907.8</td>
<td>40 017.0</td>
<td>40 061.5</td>
<td>44 672.3</td>
</tr>
<tr>
<td>NACE 27</td>
<td>92 780.9</td>
<td>109 080.8</td>
<td>104 428.1</td>
<td>121 903.2</td>
<td>116 326.5</td>
<td>105 690.7</td>
<td>109 621.9</td>
</tr>
<tr>
<td>NACE 31</td>
<td>38 763.4</td>
<td>48 708.6</td>
<td>53 430.2</td>
<td>59 538.8</td>
<td>63 174.1</td>
<td>65 438.9</td>
<td>81 855.9</td>
</tr>
<tr>
<td>NACE 34</td>
<td>51 196.1</td>
<td>68 398.7</td>
<td>85 208.5</td>
<td>121 508.9</td>
<td>137 908.0</td>
<td>152 665.1</td>
<td>188 785.5</td>
</tr>
<tr>
<td>(mill.CZK)</td>
<td>Revenues for sale of own products and services</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>NACE 17</td>
<td>45 238.0</td>
<td>42 968.0</td>
<td>39 673.9</td>
<td>40 818.8</td>
<td>41 062.2</td>
<td>40 559.6</td>
<td>45 545.9</td>
</tr>
<tr>
<td>NACE 27</td>
<td>103 526.2</td>
<td>120 900.1</td>
<td>111 447.0</td>
<td>130 734.4</td>
<td>126 368.1</td>
<td>107 968.8</td>
<td>114 031.6</td>
</tr>
<tr>
<td>NACE 31</td>
<td>41 197.0</td>
<td>51 449.5</td>
<td>54 805.8</td>
<td>62 883.6</td>
<td>65 500.3</td>
<td>66 469.0</td>
<td>83 863.2</td>
</tr>
<tr>
<td>NACE 34</td>
<td>52 721.1</td>
<td>70 027.3</td>
<td>87 617.6</td>
<td>126 058.0</td>
<td>142 939.9</td>
<td>155 394.6</td>
<td>191 494.9</td>
</tr>
<tr>
<td>(mill.CZK)</td>
<td>Output</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>NACE 17</td>
<td>12 950.0</td>
<td>14 402.0</td>
<td>12 288.3</td>
<td>13 274.4</td>
<td>13 127.7</td>
<td>12 602.2</td>
<td>14 620.9</td>
</tr>
<tr>
<td>NACE 27</td>
<td>105 526.2</td>
<td>120 900.1</td>
<td>111 447.0</td>
<td>130 734.4</td>
<td>126 368.1</td>
<td>107 968.8</td>
<td>114 031.6</td>
</tr>
<tr>
<td>NACE 31</td>
<td>41 197.0</td>
<td>51 449.5</td>
<td>54 805.8</td>
<td>62 883.6</td>
<td>65 500.3</td>
<td>66 469.0</td>
<td>83 863.2</td>
</tr>
<tr>
<td>NACE 34</td>
<td>52 721.1</td>
<td>70 027.3</td>
<td>87 617.6</td>
<td>126 058.0</td>
<td>142 939.9</td>
<td>155 394.6</td>
<td>191 494.9</td>
</tr>
<tr>
<td>(mill.CZK)</td>
<td>Value added</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>NACE 17</td>
<td>12 950.0</td>
<td>14 402.0</td>
<td>12 288.3</td>
<td>13 274.4</td>
<td>13 127.7</td>
<td>12 602.2</td>
<td>14 620.9</td>
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</tbody>
</table>
As evident from Chart 6, a labour productivity increase appeared in all mentioned industrial branches as consequence of the restructuring process. Growth of production indicators is considerable especially in the cases of the transport and electrotechnical industries.

2.3. Size and Locations of Enterprises

The number of industrial enterprises has been decreasing during the last decade. This was connected with restructuring the Czech economy after 1989. While 238 109 industrial enterprises were registered in 1993, in 1999 this number dropped to 151 195 industrial enterprises.

The structure of the manufacturing production base according to the size of enterprises in 1999 is shown in Chart 7. The highest share in the analysed main production indicators is held by organisations with more than 1000 employees. In 1999 these organisations participated in total revenues for products and services, in value added and in number of employees with 38.9%, with 35.5% and with at 27.5%, respectively. Their added value generated per employee equalled to CZK 394 thou., the best result of all the product groups. Since 1994, the ratio of the value added per employee has grown in all product groups. Workforce reduction has been apparent mainly in organisations over 1000 employees, whose share in the total number of employees decreased from 30.9% in 1994 to 24.5% in 2000 as a result of restructuring and cost cutting. In contrast, the share of organisations with 50 –249 workers increased from 21.2% in 1994 to almost 25% in 2000.
In 1999 the shares of small and medium enterprises (up to 250 employees) in revenues for products and manufacturing services, in value added and in number of employees were 36.9%, 37.3% and 47.2%, respectively. These companies record lower work productivity than large enterprises employing more than 250 workers. As compared with the EU countries, the number of small and medium enterprises (SME) is relatively low in the Czech Republic. SMEs play a key role in the EU in ensuring economic growth, competitiveness and employment. In the EU small and medium enterprises employ 66% of workforce in the private sector and generate 56.2% of the total revenue.

Industrial enterprises are historically concentrated mainly in Prague and the Central Bohemia region, regions of Brno, Ostrava, Ústí nad Labem and Plzeň. The minimum share of MVA in the total MVA can be observed in the Karlovy Vary region. This arrangement of the production base was comparatively stable during the 90’s. The production base structure in 1999 in the 14 regional administrative units is shown in Graph 1 (MIT 2001).

Graph I – Share of regions on MVA in 1999
2.4. Environmental Dimension

The priority of the new democratic Government after November 1989 was quick and substantial improvement of the state of the environment; as regards this, there was a wide consensus among the political representation, public and industry.

As a consequence of the industrial production decrease after 1990 and thanks to wide implementation of the end of pipe cleaning technologies the amount of pollution released by industry decreased significantly.

In most of the industry branches, there was a decrease in air pollution by the main pollutants during the 90’s, and this decrease reached up to 90% in some cases. During the same period there was also a sharp decrease in the volume of waste water discharged by industry into surface water.


![Emissions of main air pollutants in Czech Republic](image)

Source: CHMI

Waste generation has been systematically recorded since 1994 only. Data until 1997, however, have been monitored with a high degree of uncertainty due to subsequent introduction of changed legislation defining various waste categories in a different way. According to OECD in 1999 the Czech Republic was the largest producer among the OECD countries with 345 kg of industrial waste per 1000 USD of GDP, followed by Luxembourg with 149 kg/1000 USD. The average of OECD countries is 81 kg/1000 USD.

Recycling and utilization of waste as a secondary raw material has improved during the last years, but still remains low. Of the whole volume of generated waste in 1999 only 3% were recycled (without the ”sorting“ category) and 26% were utilised as a secondary raw material. Metal waste was used above all, metal-containing waste to a lesser degree and waste plastics, glass and used paper even less.

Chart 8 gives indicators characterizing consumption of fuel and energy. It follows from it that trends in the consumption of primary energy sources in the monitored period were favourable as regards the environment protection. DCPES decreased over this period by about 26% and the share of solid fuels in DCPES decreased in favour of cleaner fuels, e.g. natural gas. The share of solid fuels of solid fuels amounted to about 65% and 51% of DCPES in 1990 and in
1999, respectively. The liquid fuels share increased by 3% in this period and the gaseous fuels share increased by 10%. Over the same period the energy intensity of the national economy decreased by about 30% and the electrical energy intensity decreased by about 11%. However, in 1999 energy efficiency was still rather low: by 22% and by 3.8% lower than in the EU and OECD countries in 1997, respectively.

Chart 8 – Indicators characterizing consumption of fuel and energy (GDP in 1994 constant prices)

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<tbody>
<tr>
<td>DCPES (PJ)</td>
<td>2 070</td>
<td>1 899</td>
<td>1 788</td>
<td>1 748</td>
<td>1 687</td>
<td>1 749</td>
<td>1 823</td>
<td>1 745</td>
<td>1 659</td>
<td>1 548</td>
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<tr>
<td>Share of fuel in PES consumption (%)</td>
<td></td>
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<tr>
<td>-solid</td>
<td>65</td>
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<td>-liquid</td>
<td>17</td>
<td>16</td>
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<td>19</td>
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<tr>
<td>-gas</td>
<td>11</td>
<td>13</td>
<td>14</td>
<td>14</td>
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<td>16</td>
<td>17</td>
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<td>19</td>
<td>21</td>
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<tr>
<td>DCPES.GDP−1 (PJ.mil.CZK−1)</td>
<td>1.60</td>
<td>1.66</td>
<td>1.62</td>
<td>1.57</td>
<td>1.47</td>
<td>1.43</td>
<td>1.44</td>
<td>1.36</td>
<td>1.18</td>
<td>1.12</td>
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<tr>
<td>Electrical energy intensity (kWh.CZK−1)</td>
<td>40.99</td>
<td>42.99</td>
<td>43.81</td>
<td>43.11</td>
<td>43.10</td>
<td>42.86</td>
<td>42.70</td>
<td>41.57</td>
<td>37.44</td>
<td>36.63</td>
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Source: ME

Simultaneously, there has been also a decrease in energy intensity of the manufacturing industry (Chart 9).

Chart 9 – Energy intensity of the manufacturing industry, index 1995=100 (GDP in 1995 constant prices)

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<tr>
<td>GJ/thou. CZK of GDP</td>
<td>1.5</td>
<td>1.49</td>
<td>1.3</td>
<td>1.18</td>
<td>1.10</td>
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Source: KONEKO marketing Co. Ltd

The ratio of the environmental expenditures to the overall output of the economy, i.e. to the GDP is a very important indicator. It follows from this figure that there was a rapid increase in environmental investments after 1990 (from 1.1% in 1990 to 2.5% in 1994); between 1994 and 1997 the share remained practically constant (2.4% in 1995 and 1996 and 2.5% in 1997). In 1998 there was a decrease in environmental expenditures in the GDP to 2.0% which continued in 1999. In the 1990 - 1992 period, the share of expenditures within the public budgets increased (from 0.9% in 1990 to 1.5% in 1992) and in the subsequent years this figure decreased to 0.5% in 1998 (ME 2000b).

In 1997 and 1999 the Ministry of the Environment performed surveys of selected significant enterprises, all based on voluntary agreements, on investment and non-investment activities in the field of environmental protection in 1996, 1997 and 1998. The surveys were performed using a questionnaire, thus by a standardised method. Among 137 surveyed enterprises and companies, which represented about 20 per cent of the industrial production of the Czech Republic, replies were obtained from 112 subjects in 1997. These subjects made in 1996 financial investments of CZK 22.8 billion (1 USD =27.03 CZK in 1996) and non-investment means of CZK 6.0 bill. In the same year construction works with direct or indirect benefit for
the environment amounted to CZK 31.4 bill. From the investigation performed in 1999 (165 contacted enterprises and organisations, 122 subjects responded) follows that in 1997 the questioned subjects used CZK 17.2 bill. for investments and CZK 6.5 bill. for non-investment purposes in total (1 USD = 31.7 CZK in 1997). In 1998 the surveyed subjects used for environmental protection CZK 12.6 bill. In the same year construction works with direct or indirect positive effects on the environment were finished in the total amount CZK 15.5 bill. (ME 2000a).

### 2.5. Social Dimension

In spite of the fact that during the 90’s the unemployment was increasing, this increase was not so dramatic as in the other post-communist countries.

The main reason for the relatively low unemployment rate was slow restructuring of economy. That’s why the unemployment was lower than 4% until 1996 even though in some regions it became a social problem by that time. In 1998, however, the unemployment rate was already 7.48% and in 1999 it was 9.37%. In 2000 the unemployment rate decreased to 8.8% (Chart 10).

During the 90’s the employment in the manufacturing industry decreased from 33.7% in 1991 to 28.5% in 1996. After that it increased to 30 % in 1999 (Chart 11).

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<tr>
<td>%</td>
<td>0.7</td>
<td>4.1</td>
<td>2.6</td>
<td>3.5</td>
<td>3.2</td>
<td>2.9</td>
<td>3.5</td>
<td>5.2</td>
<td>7.5</td>
<td>9.4</td>
<td>8.8</td>
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Source: CZSO

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<tr>
<td>%</td>
<td>32.9</td>
<td>33.7</td>
<td>32.8</td>
<td>31.2</td>
<td>29.2</td>
<td>28.8</td>
<td>28.5</td>
<td>29.2</td>
<td>29.7</td>
<td>30.0</td>
</tr>
</tbody>
</table>

Source: CZSO

### 3. INDUSTRIAL POLICY AFTER 1989

The aim of the Czech industrial policy after 1989 was to carry out restructuring of the old “planned economy” and to start up its growth subsequently. All this had to be done while respecting inherent social and environmental limits and needs. The Czech industry had to:

- build capacities which would help to withstand the pressure of economic competition of EU internal market and world markets;
- decrease impacts of its activity on environment;
- start preliminary works to comply with the EU legislative in general and in the environmental field in particular;
- embark gradually on the path to sustainable development.
The last mentioned objective was not widely accepted by the general public simply because it was not known enough. Nevertheless, several important activities emerged. Inspired by the European Commission's Fifth Action Plan on the Environment: "Towards Sustainability" the "shared responsibility among the Government, industry and public" and the voluntary activity of the Czech industry became to develop in the middle of the 90’s:

- The cooperation in the field of sustainable development among the Czech Confederation of Industry and Transport, the Czech Ministry of the Environment and the Committee for Public Administration, Regional Development and Environment of the Parliament of the Czech Republic. The activities have been improving constantly. In 1999 the Agreement on Cooperation among the Czech Ministry of the Environment, Czech Confederation of Industry and Transport and the Czech Business Council for Sustainable Development was signed and in 2000 the Action Plan for Cooperation followed.
- A considerable progress has been made at the level of the industrial sphere acquaintance with the sustainable development strategy.
- The readiness of industry to inform about its impact on the environment increased significantly. A large array of enterprises had fully complied with the Law on Information on the Environment even before it was accepted and they published their environmental reports.
- In the industry sphere, several voluntary agreements in the field of environment and sustainable development have been signed with various governmental and non-governmental bodies.
- Implementation of Eco-management System and Audit Scheme (EMAS) or ISO 14 000 has been considered to bee more and more important condition for enhancing the competitiveness at the developed countries markets. The number of Czech enterprises having a certification according to ISO 14001 has been increasing nearly in a geometric progression (cf. chapter 4).
- By a voluntary restriction of its dangerous activities the Czech chemical industry proves the expedience of "non-regulatory" approach to protect health and the environment, for example in the framework of the "Responsible Care in Chemical Industry" program. By the 1999 end the logo "Responsible Care in Chemical Industry” was assigned to 18 enterprises of the chemical industry.
- The National Program of Labelling Products with the "Environmentally Friendly Product" label has been applied in the Czech Republic since 1994. By the 1998 end this label was assigned to more than 190 products (cf. chapter 5).

The results of the Czech industry in the 90’s show that the requirements of the Fifth Action Plan have been essentially fulfilled. It can be seen in the points below:

- integration of environmental aspects into industrial management;
- implementation of the new environmental legislation;
- shared responsibility adoption by the Government, industry and the public;
- information openness

(CEMC – IWSD).

After 1989 the following documents concerning industry were adopted:

- In 2000, The Concept of Industrial Policy was adopted by the Resolution of the Government No. 51 in January 2000 as the first one after 1989. It is based on the Government’s non-interventionist and market-oriented concept of the development of the country’s industrial base. The main goal of this Policy is preserving and promoting the existing competitive and effectively producing industrial potential (MIT 2000a).
Concept of Industrial Policy has been followed by The Action Program for Enhancing Competitiveness of the Czech Industry adopted by Government Resolution No. 52 in January, 2000. The objective of this Action Program is to create institutional and financial base for implementation of the Industrial Policy’s initiatives (MIT 2000d).

- In 1992, the Government of the Czech Republic adopted the Energy Policy of the Czech Republic. In 2000, a new Energy Policy was adopted by Czech Government Resolution No. 50. This document is based on the same grounds as the EU energy policy (MIT 2000b).
- In 1999, The Raw Material Policy of the Czech Republic in the Field of Mineral Raw Materials and Their Resources was prepared by the Ministry of Industry and Trade and the Ministry of the Environment as the basic conceptual document. It originates from the requirements of the society and ways of solution of the matter particularly in the EU countries (MIT, ME 1999).
- In 1993, the sector strategic document Transport Policy of the Czech Republic for 1990’s was adopted. It stipulated basic principles, the necessary framework and rules for all transport process participants in the Czech Republic. In 1998, following the assessment of the Czech Republic entry preparations into the EU, the transport sector presented the updated Transport Policy of the Czech Republic for the future period, namely as a part of the pre-access strategy of the entry of the Czech Republic into the EU and one of the program document required for the Czech Republic entry into the EU (MTC 1998).
- In 1999, The Environmental Policy of the Czech Confederation of Industry and Transport was elaborated by the Czech Confederation of Industry and Transport deals with the integration of the main environmental aspects into the industry sector (CCIT 1999).

4. POLICIES DIRECTED AT INDUSTRIAL ENVIRONMENTAL MANAGEMENT

4.1. EMS Application in Czech Republic

Implementation of the environmental management systems (EMS) gradually became a necessary condition for maintaining the competitiveness on the markets of the developed countries. The Czech industry realised very quickly the value of the EMS and that’s why its time delay in comparison with the Western countries is minimal in this field. It is the first tool of the environmental policy that has been voluntarily implemented by the industry at the same time or with a minimal time delay in comparison with the developed countries of the EU and OECD.

EMS is the general title for any management system focused on the protection of the environment. There are basically two most important "standard procedures" for implementation of environmental management and audit schemes in companies. They are as follows:

a) ISO standards of the 14 000 series, represented in particular by primary standards CSN EN ISO 14 001 Environmental Management Systems - Specifications with instructions for use (hereinafter the "Standard") and

b) EMAS, the system introduced by the EU, i.e. Council Regulation (EEC) No. 1836/93 EMAS (hereinafter "Regulation"). The abbreviation EMAS comes from the simplified name
of this Regulation "Eco-Management and Audit Scheme". It is applicable for the companies based in a EU Member State. As many Czech companies are owned by EU companies, there are legally concrete opportunities also for some of the home industry. However, the Czech government introduced its own scheme of the same name and the same contents as specified by the Regulation quoted. It will be replaced by the Regulation at the moment of the Czech Republic accession to the EU.

The State created conditions for EMS implementation by the Government Decision No 466 of July 1., 1998.

As of August, 2001, 135 enterprises had introduced the environmental management system. As of December, 1999, it was only 48 enterprises. The system ISO 14001/EMAS is being implemented in a great array of the industrial sectors including the food industry, especially in the car industry, metallurgy, the machine industry, the chemical industry and the electro-technical industry.

4.2. National Program of Labelling Products with "Environmentally Friendly Product" Ecolabel (Ecolabelling)

This program has been approved by Czech Republic Government Order No. 159/1993 and has been implemented since 1994 when the first Ecolabel was awarded. In its principles, targets and means of evaluation, the program is systematically harmonised with national and supra-national programs in the OECD countries and especially with the EU. The purpose and implementation of the Program were favourably evaluated by the EU in 1999.

Over the six years of implementation of the Program, the "Environmentally Friendly Product” Ecolabel has been generally awarded to more than 250 products in 26 product categories by 43 producers, of which 26 producers are from the Czech Republic and 17 are foreign companies.

The Czech Republic was officially accepted into the international community of countries implementing ecolabelling (GEN - Global Ecolabelling Network) in December 1999. This was an important achievement and it will lead to the improvement of the export opportunities for companies that have products labelled with the "Ecolabel" (ME 2000b).

4.3. Case Studies Concerning the Environmental Management System Implementation

EMS implementation in the rolling mills Nová Hutě, Inc.

Nová Hutě, Inc., is a large metallurgical enterprise which was built at the outskirts of the city of Ostrava. The plant reached its production peak in 1988 and 1989 when over 3.8 mil. tons of steel per year was produced. Due to this high production and due to low level of environmental protection by that time the Nová Hutě caused a considerable deterioration of the environment in Ostrava and its surroundings.

The management of the Nová Hutě, a. s., decided to accept a thoroughly new responsibility for the environment protection after 1989. The public became aware of possible EMS
implementation in 1995. The management of the Nová Huť, Inc., started to implement the EMS that time. Because the Nová Huť, Inc., is a large metallurgical complex which consists of 9 factories and a large array of control divisions, the implementation of the EMS in the whole plant would be very difficult. That’s why the management decided to choose one factory where the EMS would be implemented and according to the experience from this factory the EMS would be implemented in the other parts of the Nová Huť, Inc. Plant 14 – the rolling mills - was chosen as the pilot factory; this was because 4 years ago they had already implemented the quality management system according to the international standard CSN EN ISO 9001 and so the principles of the system management were well-known in this factory. For the implementation of the EMS, the CSN EN ISO 14001 was chosen, because it builds upon the already implemented CSN EN ISO 9001.

Benefits of the EMS implementation in the rolling mills of the Nová Huť, Inc. (year 1997):

- decrease in energy consumption:
  - mixed gas – by 19 MJ/t, i.e. 47,630 GJ/year;
  - power – by 8.4 kWh/t, i.e. 21,076 MWh/year;
- decrease in steel consumption by 2.5 kg/t per 1 t of the rolled goods. This represents material saving of the 6,256 t of steel per year;
- decrease in lubricating oil consumption by 81.3 t per year;
- decrease in emissions from the mixed gas combustion:
  - SO₂ – by 38 %, i.e. by 303 t/year;
  - NOₓ – by 5 %, i.e. by 22 t/year;
  - CO – by 56 %, i.e. by 350 t/year.

The separation for recycling of waste generated within the productive and service process of the rolling mills has improved as it is acknowledged in a waste management audit carried out by the Czech Environmental Inspection.

Water consumption decrease (service and fresh water) was not achieved. In accord with requirements of the EMS implementation this result is being examined in order to accept measures, which would lead to the improvement even in this sector.

As a result of all the improvements achieved, the EMS implementation has saved CZK 47 mil. per year in the sector of energy, material and oil consumption. This positive experience and results from the EMS implementation in the rolling mills of the Nová Huť, Inc., led the management to the decision to implement the EMS in the other factories of the Nová Huť, Inc (EMS Implementation 1998).

### 5. ENVIRONMENTALLY SOUND TECHNOLOGIES

#### 5.1. General Considerations

Decrease of the negative impact of the industry on the environment has been achieved especially due to massive introduction of the expensive end of pipe technologies. A prime example is the construction of desulphurisation scrubbers for essentially all of the large thermal power plants, which cost the industry over USD equivalent 1 billion. By these
measures it is no more possible to achieve further necessary improvements. It is already reasonably clear and widely accepted that fully applied technological innovations result in implementation of the environmentally sound technologies at a much larger scale. They present the solution of the “win-win” type, which means that they strengthen economic parameters and a competitiveness of the enterprises and at the same time bring ecological improvement. In this context the ecological modernisation asserts itself very slowly and insufficiently. The environmentally sound technologies, a result of this ecological modernisation, represent a quickly growing economic sector at the global level.

Despite the fact that in the Czech Republic there is no major effort to systematically support the development and implementation of EST on the part of the Government, it could be generally stated that the pace of its proliferation is rather high. The basic reason is that after November 1989 the Czech industry changes very quickly. The old obsolete technologies have been abandoned and new ones have been introduced, and essentially in every single case the new technology brings not only economic profit but environmental improvement, too.

5.2. Best Available Techniques

The notion of the best available techniques has been introduced by the European Council Directive 96/61 EC – Integrated Prevention and Pollution Control (IPPC). According to the Directive, the plants have been asked to comply with the emission and other environmental limits established specifically for each plant. The responsibility for the implementation of the law will be with the Czech Ministry of the Environment in cooperation with the Ministry of Industry and Trade.

An important part of the IPPC Directive (and the respective Czech Act) is the application of the best available technique (BAT). According to this concept, the emission and other limits shall not be achieved through the end-of-pipe abatement measures even though these might be sufficiently effective. The enterprises are asked to apply EST at the highest attainable level considering the economic situation of the company, local conditions, the social situation and other factors. The BAT concept regards not only the technology itself but also the whole setting of the production including transport arrangement, waste management techniques and use of space, energy and all the raw materials including water. The guidance for selection of the appropriate technologies have been given in the so-called BREFs (BAT Reference Documents). These documents are being elaborated and commissioned by the EU and serve as the benchmarks for the state-of-the-art technologies in respective industrial sectors (e.g. paper and pulp industry, steel industry etc.). The technologies described in BREFs are in no sense binding but serve as a reference and a source of information for both the enterprises and the regulators. The full application of the IPPC Act will be from 2007 (according to the date stated in the Directive) for existing plants and 2003 for new plants. Its implementation represents an important incentive for further development of EST. In the Czech Republic the Act will be applicable to about 1000 industrial enterprises of all sectors. They represent the most important part of the Czech industrial and economic base creating about 20% of GDP.

5.3. Export Policies and Transfer of Technology

The Czech Republic has had a long-time tradition in export of machinery and equipment. This export goes in the developed countries as well as in the developing ones. As regards transfer
of sophisticated EST to the other countries, it is low, but it is necessary to have in mind that even the “common” new machinery and equipment is more environmentally friendly than the old ones.

Besides others, the Official Development Assistance (ODA) provided the EST and new machinery and equipment introduction in developing countries. In 1996-2000, the amount of ODA ranged from CZK 262 to 361 million per year. It especially went to these regions: East Europe, Balkans, Near East, East Asia, Middle Asia (Caucasus), South Asia, Africa, Latin America (MFA).

5.4. Cleaner Production

The cleaner production has played an important role during the implementation of the EST in the 90’s. Plans related to cleaner production are basically identical with plans to implement better production procedures, because the cleaner production:

- eliminates the origin of waste generation at the source through preventive measures that form an intrinsic part of the production technology;
- equates waste with production loss;
- more effectively utilises raw materials and energy entering the process more effectively;
- includes the principle of continual improvement which, through repeated verification of the potential for prevention, leads to a constant decrease in the detrimental environmental impacts of the enterprise activities;
- monitors the production technology as a whole, without isolated assessment of the impact on the individual components of the environment.

By signing the International Declaration on Cleaner Production in 1999, the Czech Republic endorsed the global program of cleaner production. Government Resolution No 165 of February 9, 2000 that acknowledged the National Cleaner Production Programme created the framework for meeting this commitment.

The Czech Cleaner Production Centre has been a very active institution promoting the cleaner production. It was established in 1995 as an independent, non-profit organisation within a framework of a three-years capacity building programme (1992 - 1995) financed by the Government of Norway. CPC provides services mainly to industrial companies and to the central and local governments. Other stakeholders include e.g. the general public, universities, industrial associations, financial organisations and consultancy firms belong among other beneficiaries.

CPC focuses particularly on the domestic activities but it provides services also abroad. We are giving a shortlist of the projects carried out abroad:

- Capacity building in Moldova;
- Strengthening of Capacity Building in CP in Macedonia (FYRM);
- Capacity building projects in Croatia;
- Capacity building in Uzbekistan;
- Capacity building in Russian Federation, 1999;
- Activities for national CP centre creation in Armenia (CPC).
6. INTEGRATED POLICIES AND PROGRAMS

6.1. State Environmental Policy

Some of the political documents focused on the environment protection are guided by the principles of sustainable development. They are dealing also with the economic dimension: industry, energetics, mining etc. The Rainbow Program of the Czech Ministry of the Environment from 1990 considered the sustainable development principle to be the basic one. The State Environmental Policy from 1995 did not mention this concept explicitly, but it endorsed the basic requirements of the inter-generation equity and spelled out some of the principles for the economic policy. In January 2001, the Government approved the last version of the State Environmental Policy that considered the sustainable development as its basic starting point. This policy contains also a large array of environmental requirements for the industrial policy (ME 2001).

6.2. National Development Plan of Czech Republic

The National Development Plan of the Czech Republic (NDP), 2001 drawn up in connection with the Czech accession into the EU tries to overcome the narrow branch approach of the present policies. This document is an in-depth explanation of reasons for the support from the EU structural funds needs and its main objective is the analysis of the problems in individual sectors relevant to the Structural Funds and problems of regions at the NUTS II level, including comparison with the EU countries. The National Development Plan also includes an overview of measures that have already been taken by the Government to improve the situation. In addition, it must include development priorities and strategies to achieve them, specify the organisations which will take part in implementing these strategies and outline financial requirements. The necessary part of the NDP is assessment of the predicted environmental impact of the proposed strategy (MDR 2001).


The Government Council for Social and Economic Strategy was established by the Czech Republic Government Decision No.421 of May 5, 1999. It is an advisory, initiative and coordinating body of the Government. The Council has focused on improvement of coordination of particular strategic materials by initiating a long-term vision of Czech social development (GCSES).

The Governmental Council for Social and Economic Strategy could involve the environmental aspects in future and then it would be renamed the Governmental Council for Sustainable Development. Adding the environmental dimension to the already covered economic and social pillars would create a body dealing with sustainable development in its entirety at a sufficiently high Government level.
6.4. National Strategy for Sustainable Development

The Governmental Council on Economic and Social Strategies discusses the National Strategy for Sustainable Development. This document was prepared by the Environmental Centre of the Charles University as the final product of the broad project “Towards Sustainable Development of the Czech Republic: Building National Capacity”. The Strategy seeks to present a brief but comprehensive text that should be accepted by the Government and should contribute to the transformation of the economic and social development of the Czech Republic in a substantial way. It focuses on the main problems within and between sectors and shows ways forward. It sets a strategic framework that applies internationally accepted document and presents proposals specific for the Czech Republic.

Elaboration of this material is also a contribution of the Czech Republic to the international effort to attain the sustainable development. It is hoped that it will be used in the connection with the ongoing activities of the OECD, the accession to the European Union and the preparation of the World Summit on Sustainable Development in Johannesburg, September 2002. Submission of this Strategy to the international community could be considered as the accomplishment of the commitment from the Nineteenth Special Session of the United Nations General Assembly held in New York in 1997 (Earth Summit + 5), where the Czech Republic explicitly committed itself to elaborate the National Strategy for Sustainable Development until 2002.

At the time of finalisation of this document (UNIDO Report) in October 2001, the National Strategy is still in stage of the finalisation and approval procedure. Past, current and envisaged steps are as follows:

- The first draft was ready in May 2001. It has been based upon a very substantive amount of material produced during the 3-year UNDP-sponsored project "Sustainable Development of the Czech Republic: Capacity Building". The project consisted of about 40 "Modules" dealing various aspects of the sustainable development.
- After consultations with experts from the Academy of Sciences, research institutes, local authorities and NGOs including several workshops, the second draft was prepared in August 2001.
- This draft was submitted to the Government Council on Economic and Social Strategy. The Council organised a special seminar in September 2001. The seminar thoroughly discussed the National Strategy, approved the document in principle and brought forward a number of comments.
- In October 2001 the final draft was submitted to the Ministry of the Environment.
- It is envisaged that the Ministry will ensure an approval of the Strategy by the Government that could serve as a comprehensive strategic document to shape the further direction of the development of the Czech Republic.

It is also envisaged that the Government will approve the document for the submission to the WSSD in Johannesburg in September, 2002.
7. MULTILATERAL AND BILATERAL PROGRAMS

7.1. Phare Program

The Phare program represents one of the channels of financial and technical cooperation and help of the EU member countries to the states of the Middle and the East Europe during their preparations for the EU membership. The Phare program appeared in 1990 and it was designed only for Poland and Hungary. Later it involved other seven countries and now it comprises 13 countries (Albania, Bosnia and Herzegovina, Bulgaria, the Czech Republic, Estonia, Lithuania, Latvia, Hungary, Macedonia, Poland, Romania, Slovakia, Slovenia).

Projects of the Phare program in the environmental sector which concern industry:

**BUSINESS ENVIRONMENTAL PROGRAMME – BEP (CZ 9602)**
Contractor: IPB a.s., Hydroprojekt a.s., Carl Bro
Beneficiary: Ministry of the Environment, small and medium enterprises
Realisation: 3/98 – 6/00

**SUPPORT TO THE INTRODUCTION OF ENVIRONMENTAL MANAGEMENT AND AUDITING SYSTEM – EMAS**
Type of project: Technical Assistance
Contractor: PricewaterhouseCoopers, KWI Architects Engineers and Consultants
Beneficiary: Ministry of the Environment
Realisation: 09/99-12/00

**INDICATORS OF THE BEST AVAILABLE TECHNOLOGY – BAT**
Type of project: Technical Assistance
Contractor: Carl Bro International, a.s.
Beneficiary: Ministry of the Environment
Realisation: 08/00-11/00

**ESTIMATE OF THE ECONOMIC COSTS FOR REDUCTION OF GREENHOUSE GAS EMISSIONS**
Type of project: Technical Assistance
Contractor: Contractor: Carl Bro International, a.s.
Beneficiary: Ministry of the Environment
Realisation: 01/00-07/00

**IMPLEMENTATION OF THE WATER FRAMEWORK DIRECTIVE (CZ01.06.02)**
Type of project: Twinning
Twinning partner: consortium Great Britain, Austria and France
Pre-Accession Advisor: Mr. James Hunt
Beneficiary: Ministry of the Environment
Realisation: under preparation
7.2. Examples of other programs

Project Silesia
Project Silesia was an international project with regional features, initiated based on conclusions and recommendations of a comprehensive Study of the State of the Environment in the Czech and Slovak Federal Republic (Czech and Slovak Federal Republic Joint Environmental Study) that was conducted for the World Bank by a group of prominent experts (both in the environment and economics) in March 1991 with participation of governments of the Czech and Slovak Federal Republic, the Czech Republic, the Slovak Republic, the United States and also of the European Community. Project Silesia began in 1991 and was terminated by finishing of the US-AID mission in the Czech Republic (September, 1997).

In the Czech Republic the Project was realized in a form of five demonstration projects:
- Air quality management;
- Reduction of risk caused by coke oven plant’s emissions;
- Reduction of risk from contamination of abandoned industrial sites – Karolina site;
- Reduction of risk resulting from surface water pollution – Biocel, Paskov;
- Reduction of risk from food contamination.

And two support activities:
- A model of solving the environmental conflicts by means of negotiation, illustrated in the OSTRAMO Vlček and comp., Ltd. example and in coke production problems in the Ostrava city area;
- Information Centre of the Silesia Project (Project Silesia 1997).

Projects of the Czech Cleaner Production Centre:
A large array of Cleaner production projects has been held during the last five years. These projects have been already mentioned in Chapter 6.5. They are as follows:
- Capacity building in Moldova;
- Strengthening of Capacity Building in CP in Macedonia;
- Capacity building projects in Croatia;
- Capacity building in Uzbekistan;
- Capacity building in Russian Federation, 1999;
- Activities for national CP centre creation in Armenia.

These projects have built up capacities for cleaner production, carried out demonstration projects and established CP Centres. They were held especially in cooperation with the United Nations Industrial Development Organisation which provided the necessary background of the International Institution. The project Strengthening of Capacity Building in CP in Macedonia implementation has been enabled through support of the United Nations Development Programme through its project MCD 99-001 executed by the United Nations Office for Project Services (CPC).

Global Environment Facility (GEF)
Projects in the framework of this program have focused on chosen spheres of protection of the environment. The program has been governed by the World Bank, the United Nations Development Programme and the United Nations Environmental Programme. The Global
Environmental Trust Fund has been raised for financing GEF projects. In 1994 the Czech Republic received a grant of USD 2.3 million on the project *Ozone Depleting Substances Phase-out* (The World Bank).

### 8. PERSPECTIVES OF TRANSFORMATION TOWARDS SUSTAINABLE DEVELOPMENT IN CZECH REPUBLIC

#### 8.1. Major Constraints and Obstacles, in particular Concerning Industry

There are several major obstacles for broad acceptance and implementation of the idea of sustainable development in the Czech Republic. Probably the most important problem is that the concept itself still did not made its way into the basic common knowledge. Better education focused on various aspects of sustainability is the first prerequisite for active participation of the public. The transformation towards sustainable development is impossible without broad support by the majority of the society.

As regards industry, we can identify several actual issues:

- An essential requirement is the integration of environmental concerns with the overall development strategies. This request has been repeatedly stressed by important intergovernmental bodies, particularly OECD. The European Union in the Amsterdam Treaty on the European Union (1997, de facto on May 1, 1999) states: The environmental protection requirements must be integrated into the definition and implementation of the Community policies and activities referred to in Article 3, in particular with the view to promote sustainable development.
- The economic climate conducive for successful implementation of the approaches guided by eco-effectiveness which consists in systematic introduction of several economic instruments has not been established yet. In this way, the feasibility of win-win solutions is reduced.
- This leads to insufficient support for progressive environmentally sound technologies resulting in lower environmental pressure.
- Large companies, particularly big transnational corporations have enough resources and knowledge to embrace various aspects of the sustainability concept effectively. In contrast, small and medium enterprises lack both resources and knowledge and their situation is much worse.
- One of the prerequisites for introduction of successful economic instruments is a development of an economic theory leading to sustainable development implementation. One of the obstacles is insufficient evaluation of goods and services provided by ecosystems. The result of their undervaluation is that their market prices do not correspond to their real values.
- Another obstacle is the insufficient definition of property rights in various goods and services provided by nature.
- A very important obstacle is insufficient internalisation of environmental costs by industrial production. The Polluter Pays Principle has not been fully applied yet.
• The impact of environmental legislation is not fully understood and the necessity to maintain coherence between protection of the environment and strengthening the industrial competitiveness is not fully observed.

• In general, economic instruments of the environmental policy are being used insufficiently. Among them, fiscal instruments like taxes and many others have not been fully developed and utilized yet.

• The opposite is true, environmentally harmful subsidies are still used.

8.2. Future Direction of Industry in Czech Republic

The underestimation of the social and environmental dimension of sustainable development was one of features of the industrial development during the last ten years. The policy of sustainable development in the Czech industry should be based upon the acknowledgement of this fact and should follow the principles expressed in the National Strategy for Sustainable Development.

In the framework of the UNDP project “Towards Sustainable Development of the Czech Republic: Building National Capacities” the proposal of policy of sustainable development of the Czech industry was elaborated with these specific goals:

• long-term prosperity of all groups of citizens;
• high level of employment;
• minimum, reasonably grounded negative impacts on human health and the environment, with consideration of the social and economic aspects;
• strengthening the competitiveness of the Czech industry at the united internal market of the EU and at the global market, to achieve gradually the competitiveness level of the EU most developed countries;
• the priority is using eco-effective solutions:
  o decrease in material intensity;
  o decrease in energy inputs;
  o limiting toxic substances emissions;
  o increase in recycling rate;
  o maximum sustainable utilization of renewable energy sources;
  o extension of product durability;
  o increased use value of products and services.

The administrative tools were effective in the course of solution the essential problems which we had inherited from the era of the command economy. The most relevant task for the forthcoming years is the transition to eco-effective, preventive and partnership approaches which would lead to waste minimization, saving in energy and materials with concurrent increase in employment and competitiveness (CEMC – IWSD).
List of References


Czech Cleaner Production Centre: http://www.cpc.cz/ (CPC).


National Cleaner Production Programme, 2000.


Note: Abbreviations in brackets after individual citations are consistent with citations in the text.