

## **SUMMARY**

Since the Velvet Revolution and the fall of communism in 1989, the Czech waste management sector has undergone a complete transformation, culminating in Czech Republic EU entry. Starting May 1, 2004, the Czech Republic is a full member of EU, and its policies in environmental sector must harmonize with EU requirements. EU requirements have been so far one of the main drivers in waste management sector in the Czech republic.

U.S. companies will face entrenched local and European competition. However, U.S. technologies are generally superior to local and European, and U.S. firms are often able to supply niche technologies where local and European alternatives are not available. Finding a good local partner is crucial to success in this market. U.S. companies able to assist in developing financing schemes for major projects will have a marked advantage.

## **MARKET OVERVIEW**

In 2003, the estimated overall production of waste reached 29,198 thousand tons. About 10% of total waste production was municipal waste. One citizen produces approximately 330 kg of waste a year, a number below EU average. On the other hand, the Czech republic still lags behind original EU-15 countries in the amount of recycled waste.

This report covers the following pollution control equipment:

- Industrial or laboratory furnaces and ovens, including incinerators, non-electric, and parts (HS 8417);
- Machinery for cleaning or drying bottles or other containers (HS 8422.20);
- Machinery for making pulp of fibrous cellulosic material (HS 8439.10);
- Other machinery for making of paper pulp, paper or paperboard, including cutting machines of all kinds (HS 8441);
- Sorting, screening, separating or washing machines (HS 8474.10);
- Crushing/grinding machines (HS 8474.20);
- Mixing or kneading machines (HS 8474.39);
- Special purpose motor vehicles, other than those principally designed for the transport of persons or goods (for example, wreckers, mobile cranes, fire fighting vehicles, concrete mixers, road sweepers, spraying vehicles, mobile workshops, mobile radiological units) (HS 8705).

In 1991, the first Act on Waste in the territory of the Czech Republic entered into effect, imposing on waste generators the duty to draw up waste management programs. During the 90's, the legislative change continued. The Act on Waste and the Act on Packaging Waste came into force in January 2002. On July 1, 2003, Government Regulation No. 197/2003 Coll., on the Waste Management Plan of the Czech Republic entered into effect, facilitating the process leading to sustainable waste management.

The total volume of waste has been decreasing, although the waste generation remains relatively high. The greatest portion of this amount consists of waste from energy production, industry and agriculture. Hazardous wastes made up 6.4% of total waste production in 2002.

Table 1: Waste production in the Czech Republic from the viewpoint of origin

Group of wastes	Production (thou. tons p.a.)				
	1999	2000	2001	2002	2003 (est.)
Waste from agriculture and forestry	7,175	7,499	5,935	5,783	1,275
Waste from mining activities	2,351	2,566	2,285	597	670
Industrial waste	8,867	7,778	9,040	9,601	8,876
Waste from energy production (excluding radioactive waste)	4,941	9,704	8,891	6,382	5,243
Municipal waste	4,200	4,258	4,243	4,747	3,189
Other waste <sup>2)</sup>	7,935	8,805	8,300	11,533	8,789
Total	35,469	40,610	38,694	38,643	29,198

Source: Waste Management Information System (hereinafter "WMIS")

Common solid waste management practices in the Czech republic are:

**I. Collection:** Municipal solid waste is mostly collected from the households using metallic and plastic bins and containers. Typical sizes are from 70 L to 1.100 L (used especially in large cities). The most common colors are gray and black.

**II. Transport:** Collection and transport of solid waste, by law, is the responsibility of the municipalities. Operators are companies in which the city often owns shares. Operators are paid from tax revenues.

Table 2: Wastes by selected ways of Management in 2003 (in tons)

Recycling, recovery of components	2,782,789
Landfill	7,371,839
Incineration	779,098
Total	29,198,912

### III. Disposal:

**Landfilling** is the most extensively used method of waste disposal in the Czech Republic so far. The overall capacity of municipal waste and communal waste landfills should be sufficient for the future. The state has decided not to subsidize building of new landfills. A majority of landfills have been created in the vicinity of major enterprises, which caused a relatively unbalanced distribution over the territory of the Czech republic. 371 landfills operated in the Czech Republic in 2002- 2003.

**Incinerators** have been created usually near major factories (especially chemical industry). This has led to unbalanced distribution. In 2001, there were 3 incinerators of municipal waste and 67 incinerators of hazardous waste. In addition to incineration of waste in special incinerators, waste was also incinerated in 2002 in 4 cement factories. The number of incinerators of hazardous waste has been decreasing and is expected to further decrease. At the beginning of 2003, only 45 incinerators of hazardous waste remain in operation. Operational costs of incinerators of municipal and hazardous waste are relatively high when compared to other techniques.

### **Solid Waste Recovery and Recycling**

A system of separation of packaging waste has been introduced over 90% of the territory of CR and thus encompassing 9.2 million inhabitants. 57% of the population participates in waste separation. (This includes even the commercial counselor who carefully separates his plastic bottles, glass bottles, and paper waste and hauls them around the corner to the large, usually overflowing, bins.) The total level of recycling packaged waste reached 31% in 2002. (Later figures were not obtainable at this writing.)

### **Separate Collection of Household Packaging Waste**



Household waste is in average made up of 22% paper, 13% plastic, 9% glass, 3% hazardous waste, 18% bio-waste, and 35% other waste. Separate/Curbside collection of the recyclable materials was been introduced in the Czech republic in the 90's. Programs supporting household separation of wastes have encouraged public awareness and participation. (This includes stickers placed on the trash bins of households that don't separate out their recyclables.) Collected waste materials include most regularly plastic, glass and paper collected in special bins, which differ in color - blue bin is for paper, yellow for glass and green for plastic waste. Separate collection of metal and packaging waste is possible through collection places. Hazardous waste is collected at collection places only

since it is necessary to have a responsible personal present. (Source: *Eko-kom*).

### **MARKET TRENDS**

The total investment costs in waste management for the period until 2013 are estimated to be approximately \$1.5 billion (CZK 36 billion). The funding is expected to come as a combination of state budget, State environmental fund and EU funds expenditures in combination with private investments. New requirements on improved waste disposal will undoubtedly arise from the country's regional disposal policies that are being drafted based on the Waste Disposal Policy for the Czech Republic.

Key issues in waste management according to Ministry of Environment are:

- The principles of sustainable development are inadequately reflected in all sectors of economy, leading to detrimental impacts on the entire area of waste management
- Prevention of waste generation is not adequately encouraged. There are no economic incentives and there is insufficient information on the benefits of prevention.
- The hierarchy of waste management is not respected: Disposal of waste prevails over recovery of waste. The competitiveness of products made of waste is not ensured
- Collection of separated wastes is inadequate. There is a low rate of recycling and problems with hazardous and biologically degradable wastes.
- The level of environmental awareness education in public administration, in business, and in the general public is still inadequate

While the Czech Republic is fairly well equipped with waste site facilities, we project good prospects for:

- Modern incinerating plants and components.
- Modern facilities to process the biologically decomposable refuse dumped at waste sites
- Technology to reclaim materials from the refuse prior to burning
- Technology for efficient disposal of used oils, PCB, used batteries and accumulators, fluorescent tubes, and other materials.
- Recycling and recovery equipment

## IMPORT MARKET

CS Prague has compiled some key statistics on the waste treatment market.

Table 3: Pollution Equipment Total Imports (in \$ thousands)

	2002	2003	2004 (estimated)
Industrial or laboratory furnaces and ovens, including incinerators, non-electric, and parts (HS 8417)	16,242	20,226	22,310
Machinery for cleaning or drying bottles or other containers (HS 8422.20)	1,961	2,495	3,710
Machinery for making pulp of fibrous cellulosic material (HS 8439.10)	120	905	724
Other machinery for making of paper pulp, paper or paperboard, including cutting machines of all kinds (HS 8441)	31,408	46,911	51,765
Sorting, screening, separating or washing machines (HS 8474.10)	2,224	4,112	6,835
Crushing/grinding machines (HS 8474.20)	5,126	10,004	10,693
Mixing or kneading machines (HS 8474.39)	2,516	1,713	2,609
Special purpose motor vehicles (HS 8705).	21,842	47,644	40,005
<b>Total</b>	<b>81,439</b>	<b>134,010</b>	<b>138,651</b>

Source: Czech Statistical Office

Table 4: Pollution Equipment Imports from US (in \$, in thousands)

	2002	2003	2004 (estimated)
Industrial or laboratory furnaces and ovens, including incinerators, non-electric, and parts (HS 8417)	163	225	301
Machinery for cleaning or drying bottles or other containers (HS 8422.20)	35	70	6
Machinery for making pulp of fibrous cellulosic material (HS 8439.10)	0	0	0
Other machinery for making of paper pulp, paper or paperboard, including cutting machines of all kinds (HS 8441)	848	4,462	2,059
Sorting, screening, separating or washing machines (HS 8474.10)	0	0	22
Crushing/grinding machines (HS 8474.20)	338	19	762
Mixing or kneading machines (HS 8474.39)	70	54	990
Special purpose motor vehicles (HS 8705).	44	1,018	114
<b>Total</b>	<b>1,498</b>	<b>5,848</b>	<b>4,254</b>

Source: Czech Statistical Office

Table 5: Pollution Equipment Total Exports (in \$, in thousands)

	2002	2003	2004 (estimated)
Industrial or laboratory furnaces and ovens, including incinerators, non-electric, and parts (HS 8417)	33,234	44,167	42,186
Machinery for cleaning or drying bottles or other containers (HS 8422.20)	3,181	3,387	3,121
Machinery for making pulp of fibrous cellulosic material (HS 8439.10)	701	976	0
Other machinery for making of paper pulp, paper or paperboard, including cutting machines of all kinds (HS 8441)	22,987	27,206	33,326
Sorting, screening, separating or washing machines (HS 8474.10)	4,191	3,703	8,824
Crushing/grinding machines (HS 8474.20)	22,635	19,530	17,993
Mixing or kneading machines (HS 8474.39)	732	1,105	787
Special purpose motor vehicles (HS 8705).	18,545	27,755	23,920
<b>Total</b>	<b>106,206</b>	<b>127,827</b>	<b>130,157</b>

Source: Czech Statistical Office

Waste Act No 185/200 prohibits import of waste to the Czech Republic for disposal. Accordingly, waste is imported only for the purpose of further use and processing.

Table 6: Import and export of hazardous waste pursuant to the Basel Convention

Year	Total amounts of wastes	
	Imported to the CR (in tons)	Exported from the CR (in tons)
1998	39	1,370
1999	0	813
2000	656	905
2001	2,686	3,819
2002	86	2,138

Source: VUT T.G.M. – CeHO

Estimated inflation rate: 3% annually  
Exchange rate: 23 Czech crowns per dollar

## COMPETITION

The Czech Republic has a very well established environmental technology base and environmental industry. Most Czech firms are small to medium-sized and privately –owned. However, a number of them are well able to succeed overseas. Nevertheless, Czech industrial capacity for environmental equipment is not large enough to supply the total Czech market; a considerable share of products is imported. European firms often penetrate the market by purchasing or partnering with Czech firms. While U.S. companies have enjoyed some success in this market, they have been far less aggressive than their local counterparts.

## **Leading Czech companies**

**Aquatest** is the leading Czech environmental company with many contracts abroad, especially in the countries of Central and Eastern Europe. It was founded in 1992.

**Geotest**, founded in 1968, is one of the largest companies active in the environmental sector. It also has an international presence.

Other important Czech environmental companies include **Vodni zdroje Holesov**, **Dekonta**, **Ecochem**, **Ecora**, **Ecoaudit**, **Empla**, and **Enviro-Ekoanalytika**

## **U.S. firms**

**Earth Tech CZ** is a daughter company of Earth Tech, Tyco Int. Group. The company was created in 1990 under the name KAP. In 2002, it became part of Earth Tech; and, in 2005, company was renamed Earth Tech CZ. It is environmental consulting company offering a wide range of services.

**CH2M Hill CR**, a US owned company, is an environmental services company active in the Czech market.

## **END USERS**

The principal consumers of recycling equipment are municipalities and the public sector, and industry in general. Municipalities call for bids for the development of urban waste recycling facilities projects. One of their major objectives is to increase the amount of waste recycled in the Czech Republic, thereby reducing the amount of waste that is simply dumped or incinerated.

Government and municipal purchases are based on tenders. The winner is expected to meet the specifications and offer the lowest price. Good connections and references are vital. Assistance of a Czech partner is very helpful in going through the bidding stage with ease.

## **MARKET ACCESS**

The Czech republic is a highly developed open market with liberal policies and intense competition. While imports from the EU are exempt, products from non-EU countries are subject to import duties. Customs duty rates are updated annually and are harmonized within EU countries. In addition, all goods, imported or produced domestically, are subject to a value-added-tax (VAT) of 5 or 19 percent.

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The metric system of weights and measures is standard in the Czech republic. Czech is an official language in the Czech Republic. More than half of company representatives are able to communicate in English or in German.

There are no significant trade barriers or limitations for U.S. products. Price competition is clearly the most important factor, followed by technological advantages, in the battle for market position and sales in the waste industry.

## **MARKET ENTRY**

A recommended strategy for US company interested in penetrating Czech environmental market would be to find a local partner / representative or open an office in the country. Without a local representative and every day contact with customers and government representatives, it is very difficult to succeed in the market.

A U.S. company can stimulate further sales by working with Czech partners on effective marketing campaigns. U.S. firms can spur sales through trade shows and in-country promotions. When bidding on tenders, assistance in proposal development and project financing are crucial. Very often, engagement, strategy and promotion over a long-term are needed.

The U.S. Commercial Service offers a number of ways to help US companies to find business partners in the Czech market. These include setting up meetings with Czech companies interested in partnership, government officials and associations representatives (Gold Key Service), trade missions or receptions for potential clients introducing new product lines (Single Company Promotion).

## **OPPORTUNITIES FOR PROFILE BUILDING**

### **ASSOCIATION OF ORIGINATORS AND SUBJECTS DEALING WITH WASTE**

Pod Snacemi 444/1, 180 77 Praha 8

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Email: [apuso@apuso.cz](mailto:apuso@apuso.cz), [www.apuso.cz](http://www.apuso.cz)

### **CZECH ASSOCIATION OF WASTE**

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## **Magazines**

### **ODPADOVE FORUM / WASTE FORUM**

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### NATIONAL PROPERTY FUND

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Email: [info@fnm.cz](mailto:info@fnm.cz), [www.fnm.cz](http://www.fnm.cz)

## UPCOMING EVENTS

While there are no large waste management-specific trade shows or conferences in the Czech Republic, companies should consider attending several smaller ones. A number of environmental experts from the Czech Republic also visit trade shows in Germany and other European countries.

### ODPADY 21

*May 24-26, 2005 / Ostrava, Czech Republic*  
4<sup>th</sup> International conference on the waste management of Central European countries.  
[www.fitte.cz/odpady](http://www.fitte.cz/odpady)

### ODPADY LUHACOVICE

*September 20-22, 2005 / Luhacovice, Czech Republic*  
9<sup>th</sup> International Congress and trade fair in waste management area.  
[www.jogaluhacovice.cz/cz/kongres2005.php?akce=9](http://www.jogaluhacovice.cz/cz/kongres2005.php?akce=9)

### ENVI BRNO

*April 2006, Brno, Czech Republic*  
Envi Brno is an environmental technologies fair held every two years. It is accompanied by Envikongres conference presenting important issues in environment.  
[www.bvv.cz](http://www.bvv.cz)

## Traditionally visited trade shows abroad:

### IFAT

*April 25-29, 2005 / Munich, Germany*  
The leading international trade fair for waste disposal and environment.

[www.ifat.de](http://www.ifat.de)

ENTSORGA

*October 10-13, 2006 / Cologne, Germany*

Entsorga transformed from a recycling and waste disposal fair to an all-environmental fair in 2003. It is one of the largest environmental shows in Germany attracting a number of visitors from abroad.

[www.entsorga.com](http://www.entsorga.com)