THE EMERGING ENVIRONMENTAL MARKET

A SURVEY IN THE CZECH REPUBLIC, HUNGARY, POLAND AND THE SLOVAK REPUBLIC

THE REGIONAL ENVIRONMENTAL CENTER
for Central and Eastern Europe

The Emerging Environmental Market

A Survey of the Czech Republic,
Hungary, Poland, and the Slovak Republic

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PREFACE

The Emerging Environmental Market: a Survey of the Czech Republic, Hungary, Poland, and the Slovak Republic is the first report by the Regional Environmental Center addressing environmental issues in the business sector. The focus is on the status of the environmental market and the development of the local environmental business sector. The four countries covered, known as the Visegrad countries, were selected because they have the most developed environmental business sectors.

The goals were two-fold: to provide an overview of the factors that affect the development of the "green" business sector in each country; and to provide the results of the REC's survey of the environmental businesses operating in this market. For the purpose of this report, environmental businesses are firms that generate a majority of their income from a wide range of services and products related to environmental protection, including:

- engineering and design
- pollution control equipment and technologies
- training and education
- laboratory analysis
- project management and facility operation
- remediation assessment and cleanup
- environmental business development
- financial services

Before sustained environmental progress can be achieved in Central and Eastern Europe it is necessary to build the capacity of local environmental professionals. They are essential for the practical implementation of environmental policies, regulations and innovative ideas in the industrial setting. As environmental challenges grow and financial resources shrink, these professionals require a greater understanding of the "best available" environmental technologies and management practices as well as assistance in preparing business plans, budgets and financing proposals.

The international community and CEE governments can promote sustainable industrial activities by building the capacity of the local environmental business sector. In Western countries, history has shown how effectively a well-developed environmental business sector can lobby for and succeed in getting tougher environmental standards, more rigorous enforcement and stricter corporate environmental reporting standards. Therefore, an appropriate strategy for assistance programs provides access to information, delivers practical professional training and encourages equitable relationships between local and Western environmental businesses.

This report provides the results of the REC's survey of almost 600 environmental businesses operating in the Visegrad countries, as well as an overview chapter. The four country surveys were conducted using a specific, standardized methodology to maximize the comparability of information. Mary McKinley and Emil Dzuray developed the survey questions, format and concept, while the following leading, local market research companies conducted the country surveys: ARDA Environmental Business and Development (Czech Republic); SZONDA IPSOS Media, Opinion and Market Research Institute (Hungary); Centrum Bandania Opinii Spo&ecznej (CBOS) (Poland); and FOCUS Center for Social and Market Analysis (Slovak Republic).

Emil Dzuray developed the report concept, compiled the four country surveys and wrote the report. Kerry Zobor provided the political and economic overviews for each country. The following REC staff provided valuable content review and editorial support; Winston Bowman, Kerry Zobor, Miroslav Chodák and Ivelin Roussev. Jeff Gailus copy edited the final version. Sylvia Magyar and Cynthia Fedler designed the report layout and graphics.

I would like to thank all the contributors to this report for their dedication and commitment.

Stanislaw Sitnicki
Executive Director

INTRODUCTION

I. Background

As market economies develop in Central and Eastern Europe (CEE), the environmental business sector also continues to grow, with the Czech Republic, Hungary, Poland, and the Slovak Republic leading the way. These emerging environmental markets are developing rapidly with an estimated 2000 companies providing environmental services or products in a market that is expected to exceed USD 2.4 billion in 1995. Arthur D. Little Inc., a leading, international environmental consulting firm, characterizes this market as "embryonic with annual growth rates of 20 - 30 percent." Although funding in this market is severely constrained, environmental businesses that position themselves now can take advantage of substantial growth opportunities lasting well into the next century.

As is typical in emerging markets, CEE countries are undergoing rapid political, economic and environmental change. Economies are recovering, governments are stabilizing, market-oriented institutions are emerging, and local business activity is rapidly increasing and gaining exposure to the West. Although the level of development and pace of change varies substantially throughout the region, one consensus has emerged: the environmental challenges are too great for governments to solve alone. The private sector must take a more active role in optimizing the use of raw materials and energy, reducing emissions and protecting the natural environment.

Unfortunately, the CEE private sector faces two major obstacles in reducing their environmental impacts: the lack of financing and the lack of a well-developed environmental market. Limited financial resources is an obvious problem as many CEE industries experience new competitive pressures that encourage them to "profit now" and cut costs wherever possible. This problem is compounded by the difficulties in identifying environmental investments that are attractive to investors.

The other, less obvious obstacle is the absence of a well-developed base of local environmental businesses that can help solve the environmental challenges facing industry. Even when CEE industries have money for environmental projects, they often find it difficult to locate experienced local providers of environmental services and technologies and must look to more expensive western firms. This is especially a problem for small and medium- sized enterprises (SMEs) since most lack in-house environmental expertise and must rely on outside consultants to assist them in adopting sustainable industrial activities.

The development of an environmental business sector is affected by many factors including; political considerations, economic trends, environmental institutional capacity, environmental spending and regulatory enforcement. Like other sectors, environmental businesses need a thorough understanding of the markets in which they operate to be successful. This report brings together some of these factors and presents the status of this emerging environmental market.

II. Research Methodology

The REC used a combination of survey research, existing resources and informal contacts to collect the information presented in this report. For the survey research, the REC developed a survey and contracted local market survey companies in each of the four countries to translate it into local languages and conduct personal and telephone interviews. The firms were instructed to contact representatives of approximately 150 environmental businesses in each of the four countries. This provided a sample of 30 percent of the approximately 2000 environmental companies operating in the four countries.

In order to obtain an representative sample, the survey was conducted across the widest possible geographic and company (i.e. size and income) spectrums. This, however, proved to be a difficult task because there was no reliable list of environmental companies operating in each country. Interviewers were instructed to contact high ranking company representatives with an understanding of the company's operations and finances, such as the president, vice president, marketing director or technical manager.

The first of the four surveys was conducted in Hungary as a pilot for the others. Before designing a survey instrument, REC personnel met with several private Hungarian environmental business representatives in order to validate some assumptions about their information needs. The survey was drafted in English, reviewed by REC environmental experts and sent to Hungarian environmental professionals for revisions. A Hungarian market research firm was contracted to translate the questionnaire and conduct the survey in face-to-face interviews.

In Poland and the Slovak Republic, professional market research firms were contracted to translate the survey into local languages, conduct face-to-face interviews with 150 companies and perform statistical analysis of the results. In the Czech Republic, an environmental consulting firm collected the data and then sub-contracted a market research firm to perform the statistical functions on the 150 completed surveys.

For the purpose of this study, the term "environmental business" refers to a broad group of market-oriented businesses which provide services or technologies for environmental protection such as pollution control technology manufacturers, testing laboratories, waste transporters and environmental consulting firms. The survey group consisted of companies earning more than half of their annual revenues from environmental activities.

OVERVIEW

I. Current Situation

Political, Economic and Environmental situation

During the transition from central planning to market-based economies, governments in CEE have faced the difficult task of balancing environmental concerns with economic development. Although the initial focus has primarily been on restructuring the economy and restoring private ownership, most governments consider environmental protection essential to successfully completing economic reforms. As a result, they now face a myriad of complex and often conflicting priorities between economic reforms, privatization activities and environmental protection.

Most countries are still struggling with declining economies because of markets lost due to the break up of the Council for Mutual Economic Assistance (CMEA). After this split, former CMEA members had to reorganize economic agreements and identify new markets. Only recently has industrial production recovered in the Visegrad countries. In other CEE countries, the decrease in industrial output has not yet reached bottom.

The number of private companies in industrial, agricultural and service sectors has significantly increased, and most are small and medium in size. Although mass privatization was expected to improve environmental conditions, new commercial enterprises often lack experience in responsible environmental management and face strong competitive pressures to "profit now" and cut costs.

Only very recently have national governments made progress implementing integrated approaches to environmental protection that utilize both regulatory (command and control) and economic (market incentives) mechanisms. This approach is especially evident in the Czech Republic, Hungary, Poland and the Slovak Republic since they have made significant achievements in economic reform.

An important factor shaping the development of the environmental market is the prospect of these countries joining the European Union (EU). All four countries are currently EU associate members and are applying for full membership; to join the EU, they must harmonize their legislative and institutional framework with EU requirements. Although harmonization is an effective catalyst to improve the environmental market, real growth in this sector will come as the Visegrad countries complete their legislative and institutional reform process.

Environmental Investment

In the Visegrad countries, the total environmental spending from both government and private sectors was reported to exceed USD 2.4 billion in 1993, of which about 80 percent was spent in the Polish and Czech markets. Government estimates for 1994 have environmental expenditures in Poland exceeding those in the Czech Republic, making Poland the largest environmental market.

Although commercial enterprises usually invest money only when required by law, these governments have established strategies to direct national environmental investment. These strategies are based on each nation's environmental priorities, with human health-related problems (especially in so-called "hot spots") ranking the highest.

TABLE 1

TOTAL ENVIRONMENTAL SPENDING IN 1993 (MILLIONS USD)

	Total Environmental Spending[1]	as % GDP[2]
Czech Republic	1,100	3.5
Poland	889	1.0
Hungary	253	0.7
Slovak Republic	173	1.7

Source:
1. REC Report, National Environmental Protection Funds in Central and Eastern Europe, November 1994.
2. GDP figures from The Wall Street Journal's Central and Eastern European Economic Review, 1994

The four countries generally have six sources of funds to support environmental investments:

- state budget and regional or municipal budgets
- extra-budgetary funds (National Environmental Protection Funds and other earmarked funds)
- environmental investments of commercial enterprises, both state and privately owned
- commercial credit, both domestic and foreign
- foreign environmental investments
- donations and assistance from abroad (bilateral assistance programs like USAID and PHARE)

Due to the overall economic hardship in most CEE countries, funds for environmental projects are limited. Governments use their funds primarily to cover the cost of environmental administration and to implement high priority projects such as water reservoirs, treatment plants and national parks.

So that environmental projects do not compete directly with other social programs, all four countries have established National Environmental Protection Funds (NEPFs) to provide off-budget funds earmarked for environmental purposes. The Polish NEPF is the largest of the Visegrad four with disbursements exceeding USD 250 million in 1994.

Recipients of earmarked funds are municipalities, industrial enterprises, research and education institutions and NGOs. Noncommercial organizations may receive grants while commercial enterprises may only apply for soft loans. These funds generate revenues mainly from economic instruments for environmental protection such as user fees, disposal charges and noncompliance fines.

Legislation and Enforcement

Each of the Visegrad countries enacted some form of environmental legislation before 1989, but had low levels of enforcement. The Czech Republic and the Slovak Republic enacted new framework acts on the environment after 1989 while Hungary and Poland are now in the process of drafting and enacting amendments to existing framework legislation. These amendments are aimed at modernizing environmental

TABLE 2
KEY CHARACTERISTICS OF NATIONAL ENVIRONMENTAL PROTECTION FUNDS IN THE VISEGRAD COUNTRIES IN 1993 (MILLION USD)

Key Characteristics	Czech Republic	Hungary	Poland	Slovak Republic
Fund Expenditures **Revenues**	107.0 101.0	27.7 36.3	198.59 284.0	34.7 30.8
Major Revenue Sources (% of total value)	water charges (41%) air charges (30%) waste charges (13%) 'land' charges (12%)	fuel tax (44%) traffic transit fee (20%) PHARE support (19%) Pollution Fines (17%)	air emission charges (nd) waste water charges (nd) water use charges (nd) waste charges (nd)	State Budget (37%) waste water charges (30%) air emission charges (25%)
Primary Disbursement Mechanism (% of total value)	grants (71%) loans (29%)	grants (nd) interest free loans (nd)	soft loans (77%) grants (17%) subsidies (6%)	grants (nd)
Major Areas of Spending (% of total value)	water (58%) air (33%)	air (70%) waste (15%) water (11%)	air (47%) water (35%)	water (48%) air (27%) waste (8%)

Source: REC Report, National Environmental Protection Funds in Central and Eastern Europe, November 1994.
nd: no data available

regulations by eliminating gaps and improving consistency. They include such principles as polluter pays, prevention, shared responsibility, free access to environmental information and public participation. Specific legislation is presented in more detail in each country report.

Enforcement is still inconsistent. However, governments are improving direct enforcement mechanisms to implement newly enacted legislation. Enforcement policies rely mainly on monetary penalties, but also include environmental standards, restrictions, permits and compliance schedules. These mechanisms are often implemented by local governments without coordination at the national level. This results in considerable differences in both requirements and levels of enforcement.

These countries have also included market-based incentives and financial instruments in environmental legislation to improve compliance and generate badly needed revenues. They include:

- reducing the use of subsidized prices for resources
- indexing pollution charges, product charges and non-compliance fines to inflation
- adopting tradable permit mechanisms for transboundary pollution issues

Voluntary pollution reduction agreements, environmental codes of conduct and improved environmental management practices have not yet become widespread, but are gaining popularity. There are attempts to introduce labeling of environmentally-friendly products in the Czech Republic and Hungary, and to introduce cleaner production techniques in the Czech Republic and Poland. Polish government agencies have initiated several environmental audits at companies to improve environmental management, maximize use of resources and reduce energy consumption.

ENVIRONMENTAL ADMINISTRATION

The advancement of an environmental market depends on a county's ability to administer environmental programs and enforce legislation. During the transition period, each country experienced major restructuring of administrative bodies responsible for environmental protection. Before the transition process began, different agencies were responsible for administering national environmental protection programs. Ministries of environment were only established in the late eighties and early nineties. Currently, national governments are also decentralizing many environmental activities among regional and local bodies. This ongoing process requires significant investments in staff resources to enhance the qualifications and knowledge of environmental administrators, an effort that has received significant foreign support.

In general, all four countries have established three levels of environmental administration:

- national level ministries with environmental responsibilities, such as the Ministry of Environment, the Ministry of Health, etc.
- regional level (county, provincial) environmental departments of regional authorities, inspection bodies, regional environmental committees or agencies
- municipal level created by local authorities

Each country has different administrative structures for various areas, such as health care, agriculture, forestry, physical planning and transport. Responsibility also varies by media (air, water, soil). Ministries of environment are usually in charge of maintaining pollution monitoring systems, defining environmental protection methodologies, coordinating environmental research, coordinating environmental projects of national importance and maintaining international cooperation.

Institutions subordinate to ministries of environment include:

- data collecting, processing, storage centers, certification laboratories and research institutes.
- inspection bodies at national and regional levels
- EIA coordinating units (Poland and Hungary)
- national institutes for geology, national parks, tourism, radiation, nuclear safety, etc.

Regional environmental administrations are responsible for developing policy, enforcing regulations, issuing permits, imposing penalties, implementing environmental impact assessment (EIA) procedures, developing local standards and collecting environmental charges. Environmental inspectorates conduct site visits to assess compliance.

Free public access to environmental information is guaranteed by law, but is hardly enforceable in practice. Governments collect environmental information, such as records of compliance, ambient monitoring and discharge monitoring, for processing, storage and distribution, but often do not provide timely access to the public. National statistical offices are mainly responsible for processing and disseminating environmental information. Increasingly, authorities release official information through reports on the state of the environment, bulletins and environmental monitoring databases.

Economic Incentives for Environmental Protection

The use of economic instruments, or market-based incentives are becoming more popular in the Visegrad countries as they look for ways to finance badly needed environmental protection activities. Of the four countries, Poland generates the most funds from economic instruments. However, Hungary enacted the most comprehensive set of economic incentives in the summer of 1995. The funds generated from these instruments will continue to grow as economic activity increases and countries improve enforcement mechanisms, thus providing the much needed catalyst for government investment in environmental protection projects.

Although these financial incentives have been implemented on a limited basis, the charges or fines can be suspended if the polluter agrees to take measures to comply with environmental requirements as is the case in the Czech Republic, Poland and the Slovak Republic. Table 3 contains an overview of pollution charges, user fees and taxes in all four countries. Details on how the four countries calculate charges, fees and taxes can be found in *The Use of Economic Instruments for Environmental Protection,* a report published by the Regional Environmental Center for Central and Eastern Europe.

II. Comparative Analysis of the Environmental Business Sectors

The demand for environmental goods and services is growing steadily, with an estimated 2000 small- and medium-sized enterprises (SMEs) currently active in the four countries.

This section compares the results from the REC survey of almost 600 environmental companies operating in the four target countries. The goal is to compare the size and activities of environmental businesses, their information needs, the ways those needs are met and their demand for new information services.

Company Profiles

Age, Ownership Structure and Size

Companies operating in these four countries are, on average, very young SMEs. Most companies were formed after governments reduced the restrictions on forming privately owned companies in the early 1990s. Compared to the economy in general, privatization in the environmental business sector is proceeding steadily: 85 percent of the companies surveyed were not state-owned. The Czech Republic had the highest percentage of private enterprises in the survey (86 percent) while the Slovak Republic (71 percent) had the lowest.

Two-thirds of all the companies surveyed were SMEs with less than 25 full time employees; one-third had less than six full-time employees. Although comprising the greatest percentage of the sector, SMEs are often the most difficult to reach with information about new technologies or products. Table 4 compares the profile of the surveyed companies in each country.

Company Gross Revenues

In the past, government estimates of environmental expenditures varied greatly and often included government and private spending on administrative activities. To obtain an indication of spending on environmental activities, companies in the survey were asked to report their annual income. However, some companies were reluctant to accurately report annual turnovers.

TABLE 3
OVERVIEW OF ECONOMIC INSTRUMENTS FOR ENVIRONMENTAL PROTECTION

Country	Emission Charges			User Charges[2]		Petrol Tax	Product Charges
	Air	Waste Disposal	Water	Municipal Waste	Sewer Use		
Czech Republic	■	■	■	■	■	■	CFCs (p[1])
Hungary	■		■	■	■	■	car batteries, fuel, tires, CFCs packaging materials
Poland	■	■	■		■	■	
Slovak Republic	■	■	■		■	■	CFCs (p)

Note:
1. "p" means the instrument is planned to be introduced
2. In Hungary, municipal waste user charges are in force in some municipalities.

Source: REC Report, Use of Economic Instruments for Environmental Protection, December, 1994

The combined annual turnover of the 568 companies that responded to this question ranged from USD 212 million to USD 366 million[1]. As expected, annual turnovers varied by country in relation to the government estimates of total environmental spending: Polish companies reported the largest annual turnover figures while Slovak companies reported the lowest. Reported gross annual revenues included revenues from environmental, nonenvironmental, local and foreign sources of income. These figures provide an independent representation of the overall activity in the environmental business sector for each country.

Office Equipment

The manner in which the surveyed companies communicate and process information can be related to the level of modern office equipment they use. Telephones, fax machines, photocopiers, personal computers (PCs) and printers are standard equipment in the firms surveyed. Although almost all companies have dedicated phone lines, communication is often time consuming due to the poor condition of the national phone networks. To bypass potential bottle necks, some companies (66 percent of the Hungarian firms) have resorted to using cellular phone equipment.

As the CEE companies move to compete in new market-oriented economies, personal computers and fax machines are becoming essential in the technical workplace with more than 90 percent of companies owning both. A relatively high percentage (26 percent) of companies in all four countries reported having a computer modem for accessing and transmitting information electronically.

Market Opportunities

Revenues Generated by Sector

To obtain an indication of market demand, companies were asked to provide detailed information about the composition of their income. The aim was to determine the activity in a given sector (i.e. media and type of service provided) as represented by the revenues generated or the number of companies active in that area. As to be expected, some companies were either reluctant to provide this information or unable to provide accurate figures. The survey figures allow for comparisons between activities, but should not be used to calculate the exact dollar amount generated by that particular activity.

Across the four countries, environmental companies reportedly generated 44 percent of their total revenues from environmental products and 40 percent from technical services. Technical services include engineering and planning, general consultation, and education and training activities. The environmental product markets in Poland and the Czech Republic were more active than in Hungary and the Slovak Republic, where technical services generated 50 and 45 percent of the revenues, respectively. Analytical testing and monitoring activities represented 11 percent of combined market activity.

When examining revenues by media, companies reportedly generated 41 percent of their income from water-related activities. This is not surprising since less than half of the sewage is currently treated in the four countries. Water-related activities were followed by solid waste-related activities (including soil contamination) and air-related activities, which both generated 19 percent of market activity. These figures also correspond to high priority environmental issues.

Tables 6 and 7 compare the revenues generated by activity and by media in each of the four countries. Since activities are always changing due the dynamic nature of the market, this information only presents a 'snapshot' of business activities in each country.

Demand for Information

The role of the environmental professional is changing as countries adopt market-based economies. In addition to tech-

TABLE 4
TOTAL ANNUAL TURNOVER

Total Annual Turnover [in USD]	Czech Republic (%)	Hungary (%)	Poland (%)	Slovak Republic (%)
< $25,000	4	2	2	11
$25,000 - $50,000	4	6	5	7
$51,000 - $100,000	11	5	12	27
$101,000 - $150,000	5	8	9	19
$151,000 - $250,000	14	9	8	8
$251,000 - $500,000	19	13	11	22
>$500,000	42	57	53	11
Combined Annual Turnover of Surveyed Companies (minimum)	40 million	40 million	110 million	22 million

Profile of Companies	Czech Republic	Hungary	Poland	Slovak Republic
% Private Enterprises	86	78	85	71
% With < 25 full-time employees	66	71	60	66
% Established after 1989	65	60	50	67

1 Calculation of combined annual turnover: Companies reported income in the same ranges provided on the survey form, with the exception of Polish firms. The Polish market research firm provided ranges beyond USD 500,000. The minimum value of total revenues was calculated by multiplying the number of companies marking a given range by the minimum dollar amount in that range. For the first range, USD 10,000 was used in the calculation. The maximum value in the range was calculated using the mean value in the range.

TABLE 5

OFFICE EQUIPMENT AVAILABLE IN CEE ENVIRONMENTAL BUSINESSES

Office Equipment	Czech Republic (%)	Hungary (%)	Poland (%)	Slovak Republic (%)
Telephone	97	99	99	99
Cellular Phone	28	66	25	30
Telex	7	34	41	16
Fax	92	98	86	88
TV W/Teletext	11	35	37	23
Mainframe Computer	9	55	63	19
Personal Computer	93	90	93	92
Printer	91	94	88	90
Photocopier	76	91	67	66
Modem	24	34	22	25

nical considerations, environmental solutions now require an understanding of financial and regulatory constraints.

As in the West, government regulations are shaping the CEE market for environmental services and technologies. Industries affected by new regulations rely on environmental professionals to identify low-cost, innovative technologies to help them comply. Therefore, the top two requests for information were related to environmental technologies and regulatory initiatives. With respect to regulatory initiatives, survey respondents specified the impact of EU harmonization on national environmental regulations as the main topic of interest.

Of course, most respondents were also interested in obtaining more information about project opportunities. The survey revealed that firms obtained information about project tenders primarily through personal contacts since most national and regional governments are still in the process of establishing a transparent bidding process for environmental projects. The information topics are ranked from 1 to 12 in Table 8.

Demand for Professional Training

In the highly technical and dynamic field of environmental protection, professional training is the most effective method to build the capacity of local environmental professionals. As the market for environmental services develops, professionals are relied on to provide regulatory and financial consulting in addition to scientific consulting. Therefore, local companies look for practical, intensive, and up-to-date training on how to comply with regulations, prepare business plans and financing proposals, conduct feasibility studies and market services.

To determine the preferences of CEE environmental professionals, the respondents were asked to rank a list of training topics and suggest other topics. Table 9 presents their ranking of training topics, listed by priority.

Similar to the request for information needs, respondents' number one request for training was related to environmental regulations. This was followed closely by requests for training on financing of environmental investments since environmental professionals are often hired by industrial companies to provide both financial and technical advice. Furthermore, lack of financing is often cited as the number one reason environmental projects fail.

The topics of environmental impact assessment and environmental risk assessment were tied for third place. These topics are essential because environmental professionals are relied

TABLE 6

SOURCE OF REVENUES BY BUSINESS ACTIVITY
(% COMBINED INCOME)

Activity	Czech Republic	Hungary	Poland	Slovak Republic
Technical services	36	50	38	45
Environmental products	44	22	53	40
Testing/ monitoring	12	15	6	11
Other	8	13	3	4
Total	**100**	**100**	**100**	**100**

TABLE 7

SOURCE OF REVENUES BY MEDIA
(% COMBINED INCOME)

Media	Czech Republic	Hungary	Poland	Slovak Republic
Water	39	28	48	34
Solid Waste	24	12	17	29
Air	13	18	22	13
Nature Conservation	4	3	5	7
Noise, Vibration Control	0	2	1	0
Miscellaneous (not media specific activities)	20	36	7	17

TABLE 8

RANKING OF ENVIRONMENTAL INFORMATION TOPICS BY COUNTRY

Information Topics	Czech Republic	Hungary	Poland	Slovak Republic
New Environmental Technologies	5	1	1	1
Environmental Regulations	1	2	3	2
Tenders For New Projects	4	3	4	4
Upcoming Project News	3	4	5	6
Environmental Problems In Region	2	6	6	7
Investor Information	7	8	2	5
Sources Of Project Financing	6	5	8	3
Conference Or Trade Fair Announcements	8	12	7	10
How To Manage Projects Better	10	9	9	9
Where To Find Local Partners	9	10	11	8
How To Control Costs	11	7	10	11
How To Find Foreign Partners	12	11	12	12

Note :
The demand for information was quite high for all the topics. About half of the respondents considered even the lowest ranked topic as being important or essential to conducting business. The top rated information topic was considered essential or important by more than 90 percent of the respondents.

on to evaluate the risk from past practices and the potential risk of current or planned operations. Due to ambiguous environmental liability requirements in most CEE countries and increased public participation, these skills are necessary for property transfer studies and risk assessments (environmental impact assessments) of planned developments.

Over 90 percent of the companies surveyed considered it essential or very important to obtain more advanced training on the topic of environmental regulations. Demand for training was still relatively high for the lower ranked topics, such as environmental management, with 40 percent of the companies reporting to be very interested.

Market Channels: How to Reach Environmental Businesses

Current Sources of Business Information

Essential to any organization trying to reach this market is a knowledge of where environmental professionals turn for business and environmental information. Therefore, respondents were asked to rank their current sources of information. Table 10 presents the results for each country.

Respondents in all four countries rely mainly on interpersonal relationships to learn about new business opportunities. Personal contacts and professional contacts were ranked as the top two most popular sources. Daily newspapers and trade shows were also ranked as important sources of information.

CEE national governments are only now in the process of establishing transparent and uniform bidding processes. The situation is often less transparent at the regional and local levels where business is still conducted on a personal level and the bidding process is often closed. As a result, the respondents do not rely on government sources of information.

Although interpersonal relationships are important, less than one in four respondents indicated they would use the local chamber of commerce as a source of information on business opportunities. Only about half use professional trade associations to identify business opportunities. This may be due to the early stage of development of these associations. When comparing the development of professional and business associations in the four countries, Hungary appears to be the most advanced.

Environmental and Business Publications

Business and environmental trade publications are also gaining popularity in each country as new businesses look to them for information, or as a forum to market their services. On average, two-thirds of the companies regularly read business or environmental publications. In addition, these publications provide environmental firms with a unique venue to present successful case studies and technical information.

Although they are gaining popularity, no environmental publication reaches a majority of the respondents. This reflects the fact that these publications are very specific in nature and do not appeal to all of the professionals across the broad spectrum of environmental specialties.

The situation for business publications is quite different. A few publications reach a large percentage of the respondents in each country and a few reach the respondents in all four countries. Table 11 provides a list of the business and environmental publications most popular among respondents.

Professional and Trade Associations

Although interpersonal relationships are ranked as the most important source of information about business opportunities, only 55 percent of the respondents reported having a membership in a professional, scientific or trade association. Of the respondents belonging to an association, only about half belonged to two or more groups.

There is little regional cooperation as no professional association crossed national boundaries. Most associations, like environmental publications, focus on a very specific scientific specialty or topic. As a result, many organizations were mentioned only once. Table 12 contains a list, in rank order, of the top three associations identified.

TABLE 9

TRAINING TOPICS RANKED BY COUNTRY

Environmental Training Topics	Czech Republic	Hungary	Poland	Slovak Republic
Environmental Regulations	1	1	1	1
Financing Environmental Investment	2	2	2	2
Environmental Impact Assessment	5	3	4	4
Environmental Risk Assessment	3	5	5	3
Project Management	8	4	3	9
Environmental Systems And Sustainability	4	8	6	7
Environmental Auditing	6	6	7	8
Environmental Economic Analysis	7	9	8	6
Environmental Management	9	7	9	5
Other	10	10	10	10

TABLE 10

HOW DO LOCAL COMPANIES FIND OUT ABOUT BUSINESS OPPORTUNITIES

Source of Information	Czech Republic (%)	Hungary (%)	Poland (%)	Slovak Republic (%)
Personal Contacts	96	91	98	94
Professional Contacts	64	92	85	88
Trade Shows/Fairs	72	53	91	73
Daily Newspaper	61	62	84	76
Conference Attendance	58	69	81	69
Business Publications	59	59	77	69
Environmental Publications	55	66	83	51
Mailing Lists	68	34	65	70
Professional Associations	32	84	53	49
Fax	53	23	42	53
Environmental Ministries	34	42	31	51
Local or Regional Governments	6	14	59	47
Academic Associations	17	27	42	31
Chamber of Commerce	11	32	24	34
Industry/Trade Ministries	13	27	17	37
Other Ministries	11	32	nd	nd
Other	10	19	13	17
E-Mail	7	7	7	10

Attending Conferences

Because companies often rely on personal contacts, more than 70 percent of the companies learn about business opportunities from conferences and trade shows. Tables 13 and 14 present the number of conferences environmental professionals attend annually and the purpose of attending the event, respectively.

Except in the Slovak Republic, more than half the companies surveyed send a representative to more than five conferences a year. In The slovak republic, however, almost one-third of the respondents stated that no one from the company attended a conference over the last year. This low attendance figure points to the fact that this market is the least developed of the four countries and does not play host to the same number of conferences and trade shows as the others. In the Czech Republic, Hungary and Poland, there are an increasing number of conferences and trade shows being organized to meet increased market demand for technology and service providers.

When asked about the reason for attending conferences, the importance of personal contacts and networking was stressed: More than 80 percent of the respondents said they attended conferences to meet others in their field. More than three-fourths of the companies stated they often attended con-

TABLE 11

TOP 6 ENVIRONMENTAL OR BUSINESS PUBLICATIONS

Czech Republic (%)	Hungary (%)	Poland (%)	Slovakia (%)
Hospodársky noviny (69)	HVG (52)	Gaz, Woda, Technika Sanitarna (43)	Hospodárske noviny (50)
Ekonom (32)	Környezetvédelmifüzetek (34)	Ochrona Środowiska (23)	Trend (38)
Odpady (22)	Napi Világgazdaság (28)	Aura (20)	Ekonomický a prány poradca (36)
EKO Journal (16)	Cégvezetés (15)	Ekopartner (18)	Profit (19)
Profit (15)	Környezet és fejlôdés (13)	Ochrona Powietrza (13)	Opady (14)
Planeta (14)	Figyelô (10)	Gospodarka Wodna (11)	Životné prostredie (9)
23% do not read any	not available	30% do not read any	44% do not read any

TABLE 12

TOP 3 PROFESSIONAL AND TRADE ASSOCIATIONS

Czech Republic (%)	Hungary (%)	Poland (%)	Slovak Republic (%)
none (49)	none (61)	none (53)	none (55)
Ăsociace čzistírenských expertu čr (7)	Hidrológiai Társaság (23) *Hydrology Society*	Polskie Zrzeszenie Inzynierów I Techników Budowlanych (21) *Polish Sanitary Engineers and Technicians Association*	Slovenská obchodná a priemyselná komora (18) *Slovak Chamber of Commerce and Industry*
Hospodářská komorah (3)	Metesz (12)	NOT-Naczelna Organizacja Techniczna (11) *Chief Technical Organization* Simp-Stowarzyszenie Inzynierów	ASPEK (14) *Association of Industrial Ecology in Slovakia* Sväz stavebných podnikatelov
Svaz autorizovan˘ych inZenýru (3)	Mérnöki Kamara (10) *Association of Chemists*	Mechaników Polskich (9) *Association of Polish Mechanical Engineers*	Slovenska (3) *Union of Engineering Entrepreneurs of Slovakia*

ferences to find potential partners for joint projects. This was followed closely by learning about new project information.

Most companies, except in the Czech Republic, attended conferences with the intention of marketing their capabilities. Training was considered the least popular reason for attending conferences. This again points to the preference to network, not to receive training.

Delivery Options for Reaching Environmental Businesses

In marketing services to any target group, it is important to consider the most effective means to reach the group. Therefore, the REC surveyed local environmental professionals to rank their preference for delivery options for information about business services. The delivery options listed in Table 15 are ranked in order of preference.

The number one selected delivery option was a regular environmental newsletter that included information about project opportunities. Professional workshops and partnering workshops ranked next. Professional workshops bring together environmental professionals interested in a particular topic to share and solve problems. Partnering workshops bring together local environmental businesses and potential Western partners and investors.

Respondents gave all delivery options relatively high marks, with approximately 75 percent preferring a newsletter and 40 percent preferring a telephone question and answer service.

TABLE 13

NUMBER OF ENVIRONMENTAL CONFERENCES ATTENDED ANNUALLY

Environmental Conferences (past 12 months)	Czech Republic %	Hungary %	Poland %	Slovak Republic %
none	8	12	10	30
1-2	28	25	23	30
3-5	35	36	35	25
>5	28	27	33	15

Cooperation with Western Firms

One of the best ways to promote growth in this sector is to encourage equitable relationships between local and Western businesses. Local firms benefit from these relationships by obtaining access to information on new environmental technologies and successful environmental management practices. Western firms benefit from relationships by accessing a local network to sell their products or services.

The nature of relationships will change as the local environmental business sector develops in these countries. Countries with weak or underdeveloped environmental business sectors tend to import environmental services and products. As the local environmental business sector develops, countries will be better able meet local needs with in-country resources.

TABLE 14

PURPOSE OF ATTENDING CONFERENCES (% RESPONSES)

Purpose of Attending	Czech Republic	Hungary	Poland	Slovak Republic
Meet Others In My Field	81	92	90	66
Find Potential Partners	74	90	82	64
Learn About New Projects	71	80	93	65
Market My Company	24	65	82	61
Participate as Speaker	41	18	77	39
Receive Training	28	51	61	31

Also, CEE countries will be able to capitalize on their inexpensive labor markets by exporting certain services or products.

Joint ventures

Since both local and Western companies can benefit from improved East-West business relationships, it is important to evaluate these experiences so far. The survey asked companies about their experiences with Western firms in joint ventures and as collaborators on joint projects.

For the purpose of this survey, a joint venture is defined as investment from a foreign company or individual, and a joint project is defined as a foreign and local company working together on a contractual basis. The results in Table 16 show that the percentage of companies that operate as joint ventures varies from a low of seven percent in Poland to a high of 25 percent in Hungary. These percentages represent the number of joint ventures, not the value of the investment. Most venture partners were Western European.

Experience on Joint Projects

A relatively high percentage of the surveyed companies have had common projects with Western companies and most were generally positive or neutral in their evaluation. As expected, the percentages of joint projects were higher if the local company had a foreign partner. Hungary had the most companies (78 percent) participating with foreign partners on joint projects as compared with 62 percent of the whole sample.

Table 17 presents the responses to a variety of questions evaluating their experiences with Western firms. Local companies usually had high ratings of Western companies' project management skills. However, they believe Western companies did not understand local business conditions.

Surprisingly, language barriers did not rate very high as a problem with joint projects except in the Czech Republic where 52 percent of the companies agreed that language barriers made the joint relationship more difficult. To determine language skills, companies were asked to list the languages that at least one person in the company spoke and wrote fluently. Table 18 lists the language skills for the companies in each of the four countries. The top three most common foreign languages spoken are German, English and Russian.

Most companies did not offer suggestions on how to improve partnerships in the future. Of the companies that did respond, suggestions on how to improve joint projects in the future included:

- Improve the flow of information between companies
- Recognize local companies professional capabilities
- Understand local business practices
- Reduce wage differences between partners

Income from Foreign Sources

Although the labor rates are much lower in these four countries than in Western Europe or North America, very few companies were actively exporting environmental services or products. More than 75 percent of the compa-

TABLE 15

RANKING OF DELIVERY OPTIONS FOR ENVIRONMENTAL INFORMATION SERVICES

Information Service Delivery Options	Czech Republic	Hungary	Poland	Slovak Republic
Regular Newsletter Including Project Opportunities	1	1	1	2
Professional Workshops	3	2	3	1
Partnering Conferences	4	3	2	3
Broadcast Fax Services Providing Wide Range of Information Services	2	6	6	4
Regional Directory of Environmental Businesses	7	4	4	5
Computer Database Accessible by Modem	5	5	5	6
Telephone Query and Answer Service	6	7	7	7

TABLE 16

JOINT VENTURES AND TOP 3 COUNTRIES OF VENTURE PARTNER

	Czech Republic	Hungary	Poland	Slovak Republic
% Companies with Joint Ventures	15%	25%	7%	14%
Partner's country[1]	Germany USA Austria	Austria Germany USA	Denmark Germany UK	Czech Republic France Germany

[1]Note: The countries listed are the home base of the venture partner and are listed by number of responses, not by total value of investment.

TABLE 17

EVALUATION OF EAST - WEST PARTNERSHIPS (% POSITIVE RESPONSES)

Evaluation Criteria	Czech Republic (%)	Hungary (%)	Poland (%)	Slovak Republic (%)
Western Firms Understood Local Business Practices	50	44	66	32
Western Firms Understood Our Capabilities	61	68	70	43
Western Firms Had Good Project Management Skills	61	67	71	47
Language Differences Made Working Together Difficult	52	22	30	13
Number that worked on joint project with western firm:	86	90	75	86

TABLE 18

TOP 3 LANGUAGE SKILLS IN COMPANY

Foreign Languages Skills	Czech Republic (%)	Hungary (%)	Poland (%)	Slovak Republic (%)
(One staff member reads, speaks and writes fluently)	German English Russian	German English Russian	English Russian German	Russian English German

TABLE 19.

PERCENTAGE OF INCOME FROM FOREIGN SOURCES

Percentage of Income from Foreign Sources (in the past two years}	Czech Republic (%)	Hungary (%)	Poland (%)	Slovak Republic (%)
0%	34	55	70	52
0%> and< 50%	55	41	22	35
>50%	7	4	7	9

nies in the survey reported that they earned less than 10 percent of their revenues from foreign sources. Only 7 percent reported that they earn more than 50 percent of their revenues from foreign sources.

Firms with foreign partners reported a higher percentage of income from work on projects abroad. This supports the assumption that partnering activities can increase local firms access to international markets or projects.

When comparing the four countries, Czech companies were most active in foreign markets while Polish companies were least active. Table 19 compares the percentage of income companies reportedly earned from foreign sources.

III. SUMMARY AND CONCLUSIONS

The market for environmental businesses is developing rapidly in the Visegrad countries, spurred on by favorable political, institutional, and economic conditions. The total environmental spending from both government and private sector sources is expected to be greater than USD 2.4 billion in 1996, with about 80 percent being spent in the Polish and Czech Markets.

Recent government estimates have environmental expenditures in Poland increasing to more than USD 1 billion in 1994, surpassing spending in the Czech Republic to become the largest Visegrad environmental market. Hungary follows with environmental expenditures of more than USD 250 million. The Slovak Republic has the smallest market in the Visegrad four with expenditures of more than USD 150 million. These figures are estimated to grow between 10 percent and 20 percent annually as economies continue to grow and governments improve enforcement actions while implementing new financial incentives.

The size of the environmental marketplace and the status of companies is different in each country. However, the market is relatively young in all four countries, with most of the companies established in or after 1990, and there is a correlation between the pace of privatization and the total environmental spending per country. The percentage of privatized companies was greatest in the Czech Republic (86 percent), followed by Poland (85 percent), Hungary (78 percent) and the Slovak Republic (71 percent).

The survey of almost 600 environmental companies provided another picture of relative environmental spending in each country. Similar to government estimates, environmental companies in the Polish and Czech markets reported the highest combined annual incomes.

When looking at revenues by media, water-related projects, both industrial and municipal, generated the most revenues for the surveyed companies (> 41 percent), followed by solid waste projects and soil contamination (> 19 percent) and air pollution projects (>19 percent). The remaining activities included projects related to nature conservation, industrial hygiene and safety and energy conservation.

Across the four countries, the sale of environmental products generated the most revenues (44 percent), followed closely by technical services (40 percent). Polish firms earned the highest percentage of their revenues (53 percent) from environmental products while Hungarian firms reported the highest percentage of their income from technical services.

As in the West, government regulations drive the growth in this CEE industry. Therefore, the top request for information and training from environmental companies was related to the impact EU harmonization would have on environmental regulations. This topic was followed closely by requests for information and training on new environmental technologies. Also high on the list was information on how to finance investments for environmental projects.

Since most governments are still in the process of establishing transparent bidding processes for environmental projects, companies relied on interpersonal relationships to learn about new business opportunities. They did not consider government sources very reliable.

Local firms are gaining more exposure to western firms. More than half worked with Western firms on a joint project and considered it a successful venture. Recommendations for improving East-West ventures include: better communications, more equitable terms for local firms, a better understanding of local business practices by Western firms, and more clarity in contractual relationships and government regulations.

KEY FACTS

AREA **78,900** SQ KM
POPULATION **10.5** MILLION
POPULATION DENSITY **131** PERSONS/SQ KM
OFFICIAL LANGUAGE **CZECH**
TYPE OF GOVERNMENT **PARLIAMENTARY DEMOCRACY**

CZECH REPUBLIC

Current Situation

POLITICAL SITUATION

The Czech Republic, established peacefully at the beginning of 1993 following the split with the Slovak Republic, is a parliamentary democracy. President Vaclav Havel, the head of state, enjoys a world-renowned reputation as a playwright and human rights advocate. The Czech Republic's coalition government is led by the Civic Democratic Party (ODS), a conservative, secular, pro-business party which is headed by Prime Minister Vaclav Klaus, generally regarded as the architect of the country's economic reform. The ODS has enjoyed popularity despite its implementation of tough economic reforms, many of which are near completion.

ECONOMIC SITUATION[1]

The Czech Republic is experiencing a steady expansion, and GDP is expected to expand by 4.4 -5.8 percent in 1996. The Czech inflation rate has been running higher than that of Western Europe but is expected to remain under 10 percent in the coming years. Industrial output should also grow by about 3 percent per year in real terms over the next two years.

The Czech economy continues to rely on three factors which have helped its economic recovery in the past: tourism, higher wages financed by capital inflows and exports of cheap goods to Western Europe. Exports to Western Europe are a priority of the Czech economy and have benefited from wage costs which are only around 10 percent of the German level. The ruling Civic Democratic Party (ODS) has been very successful with privatization, especially in telecommunications, health care and railways.

ENVIRONMENTAL EXPENDITURES

New environmental legislation has proven effective in inducing considerable environmental investment, especially from the private sector. Since 1992, the government estimates that total annual environmental expenditure has been higher than 2 percent of GDP and it is expected to increase in the coming years. If this trend continues, expenditures on environmental projects will exceed USD 1 billion in 1995, making the Czech market second largest behind only the Polish market. Table 20 presents the breakdown of environmental expenditures from 1992 to 1993.

ENVIRONMENTAL PRIORITIES[2]

Recently, the interest of the average Czech citizen in environmental issues has declined. According to opinion polls "to live in a healthy environment" was "very important" for 83 percent of citizens in 1990, for 76 percent in 1991 and for 67 percent in 1992. Issues such as the economic situation of families, increasing crime and Czech-Slovak relations have replaced environmental problems as top priorities of Czech citizens. People still consider environmental problems to be very urgent (50 to 60 percent of respondents) or reasonably urgent (30 to 40 percent of respondents). According to more recent polls, the environment ranked sixth, after problems in safety and crime, social insurance and family living standards. Thus, the perception of environmental problems in society is still quite strong.

TABLE 20
ENVIRONMENTAL EXPENDITURES (IN MILLION USD)

Source of Funds	Amount 1992	1993	1994(est)
State Budget	400	320	400
Private Sector/Municipalities	172	673	386
National Environmental Fund	56	107	135
TOTAL	628	1100	921
as % GDP	2.0	3.5	n.d.

Source: REC Report, National Environmental Protection Funds in Central and Eastern Europe, November 1994

During the years 1990-1993, the decline in environmental quality was either stopped or slowed down, and in some cases improved. For example, sulphur dioxide, nitrogen oxide and dust emissions were reduced by 24 percent, 23 percent and 30 percent, respectively. Greenhouse gases emissions decreased considerably. Surface water quality also improved as the Czech government built new waste water treatment plants and incorporated advanced technologies. In the Elbe River basin alone, new treatment plants serve about three million users.

The Czech government base their environmental policy on five basic principles:

- Principle of Sustainable Development
- Precautionary Principle
- "Polluter pays" Principle
- Best Available Technology Principle
- Principle of Acceptable Level of Environmental Risks

The strategic goals of the policy are:

- to ensure the quality of the environment is comparable with OECD states average levels that were established in 1990 - 1991, by 2005.
- to ensure the quality of the environment is comparable with the current average level of the OECD states, by 2015 - 2020.

As an EU associate country, the Czech Republic has promised to meet European Union environmental standards by 1998. This will increase the demand for pollution control technology and equipment that meets EU standards. Specifically, the priority environmental targets in the Czech Republic are as follows:

1. Air quality

- 60 percent reduction of 1990 dust emissions, by 2000
- 60 percent reduction of 1980 sulphur dioxide emissions, by 2000

1 Source: Economist Intelligence Unit Country Reports, Eastern Europe, 1993 - May 1995, Silver Platter International, N.V.

2 REC Report, *Status of National Environmental Action Programs in Central and Eastern Europe, May 1995.*

- stabilization of 1985 nitrogen oxide emissions by 2000
- reduction of 1987 volatile organic compound emissions, by 2000
- stabilization of the 1990 carbon dioxide emissions, by 2000
- ban on 'hard CFCs' production, import and export, by 1996

2. Water quality

- reduction of the 1990 BOD (biological oxygen demand) discharge by 50 percent for point sources and by 20 percent for diffused sources, by 2005
- 20 percent improvement of the quality of major water courses with 1990 as a baseline, by 2005
- biological sewage treatment in all cities with more than 10,000 inhabitants, by 2005

3. Energy

- increase in energy efficiency
- support energy savings
- support the use of renewable sources
- support the introduction of energy efficient, low-waste and low-emission technologies
- support the production of environment-friendly products
- introduction of the life-cycle assessment procedures

4. Agriculture

- support environment-friendly agriculture
- reduction of fertilizer consumption

5. Transport

- reduction of car emissions
- support railway and combined transport

6. Environmental education and public awareness

- common availability of relevant information
- change production and consumption patterns

Regulatory and Enforcement Environment

The Czech Republic has many laws for environmental protection that include both command and control mechanisms and market-based incentives. However, enforcement of these regulations is still weak and enforcement audits are infrequently conducted. Therefore, most industrial institutions are not upgrading equipment due to environmental laws.

The current system of policy instruments is being completed, optimized and improved to increase its effectiveness. The following regulatory priorities have been set:

1. Environmental laws

- new acts on chemical safety
- new act on genetically treated organisms management
- new act on the regulation of trade in endangered and protected species
- new act on the phase-out of ozone depleting substances
- new act on waste water charges
- amending the Waste Management Act

2. Economic instruments

- revising waste disposal, air and water pollution charges
- introducing tradable emission rights

3. Information instruments

- completing an integrated environment monitoring and information system
- enforcing the National Eco-labeling Program
- introducing a new environmental statistics and accounting system

Key Actors in Environmental Protection at the National Level

The key actors in the Czech environmental protection debate include the government, NGOs and businesses. Considerable media attention is given to NGO activists, who use "direct action" and similar methods to promote environmental protection: Greenpeace, Children of the Earth and The Rainbow Movement. Other NGOs trying to propose less radical solutions and alternatives have very restricted space in the media, and politicians seem to pay less attention to them. These NGOs are often specialized and their members are often very qualified experts in specific environmental issues. Some concentrate on energy efficiency issues (SEVEN - Center for Effective Energy Use, EkoWATT, League of Energy Alternatives), while others concentrate on waste management, environmental legislation, environmental advocacy (Institute for Environmental Policy, Union for Environmental Rights), nature protection (Czech Union of Nature Conservation, Brontosaurus), and environmental education (VITA, EVA).

The business community has recently increased its interest in environmental policy, which has both positive and negative effects. The development of "green businesses," especially in the area of waste management, is clearly a positive result of this process. Environment-friendly businesses bring new technologies, good ideas and imported know-how, and often promote long-term goals over short-term ones.

Status of the Czech Environmental Business Sector

The Czech environmental market is developing steadily with an estimated 600 companies providing environmental products or services. The 150 companies surveyed reported a combined annual turnover exceeding USD 40 million, making this market the second most attractive behind Poland.

Most environmental companies operate as private enterprises and more than 90 percent were created within the last five years. The sector is comprised of mainly small companies with more than half of the companies reporting less than 20 full-time employees. The high percentage of small firms resulted in low turnover figures as approximately one-third of the companies surveyed reported annual turnovers of less than USD 150,000.

The market is oriented towards the production of environment-related products, with this activity capturing 44 percent of total company revenues. The greatest market existed for environmental products related to the treatment of municipal and industrial waste water.

The second highest revenue generating activity was technical services (35 percent). The highest demand was for engineering and planning activities related to municipal water treatment. For general consulting activities, industrial solid waste management topped the list. Laboratory activities (testing and monitoring) were third, capturing about 12 percent of

TABLE 21
SOURCE OF REVENUES FOR CZECH ENVIRONMENTAL COMPANIES
(% COMBINED ANNUAL REVENUES OF SURVEYED COMPANIES BY ACTIVITY AND MEDIA)

	ACTIVITIES						
	General Consulting	Research Education	Engineering Design	Env. Products	Testing/ Monitor	Project Management	Total
WATER	**3.2**	**0.4**	**7.8**	**21.2**	**4.6**	**2.4**	**39.1**
Municipal Water	0.5	0.1	3.5	7.3	0.4	0.8	12.5
Surface Water	0.9	0.1	1.4	4.6	1.3	0.2	8.4
Industrial Water	0.7	0.1	1.4	6.5	0.9	0.7	10.1
Ground Water	1.1	0.1	1.5	2.8	2.0	0.7	8.1
SOLID WASTE	**1.8**	**0.7**	**2.7**	**11.6**	**3.0**	**2.8**	**22.5**
Industrial Solid Waste	1.2	0.5	1.6	5.6	0.9	1.8	11.4
Municipal Solid Waste	0.6	0.2	0.8	5.3	0.7	0.6	8.3
Soil	0.0	0.0	0.3	0.7	1.4	0.4	2.8
AIR	**1.0**	**0.2**	**3.0**	**6.2**	**1.9**	**0.4**	**12.7**
Air Protection	0.7	0.1	1.7	4.7	1.1	0.2	8.5
Gaseous Emissions	0.3	0.1	1.3	1.5	0.8	0.2	4.2
NATURE PROTECTION	**0.6**	**0.1**	**1.2**	**1.3**	**0.6**	**0.2**	**4.0**
Nature Conservation	0.3	0.1	0.3	1.2	0.3	0.1	2.3
Landscape	0.3	0.0	0.9	0.1	0.3	0.1	1.7
OTHER	**4.0**	**0.1**	**0.5**	**3.8**	**1.4**	**1.2**	**11.0**
Noise,Vibration Control	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Other Environmental	4.0	0.1	0.5	3.7	1.4	1.2	10.9
Total[1]	**10.6**	**1.5**	**15.0**	**43.8**	**11.4**	**7.0**	**89**

Note: Since companies provided estimates for their percentage of revenues for each activity, the total percentages may not sum to 100 percent.

company revenues. Project management and research and teaching activities generated relatively low incomes.

When looking at media specific areas, water related activities generated the most revenues for Czech companies at 39 percent. This area was followed by solid waste-related activities at 21 percent and then air-related activities at 13 percent. Table 21 contains a matrix presenting the percentage of combined revenues generated by Czech environmental companies in the survey for each activity and related media.

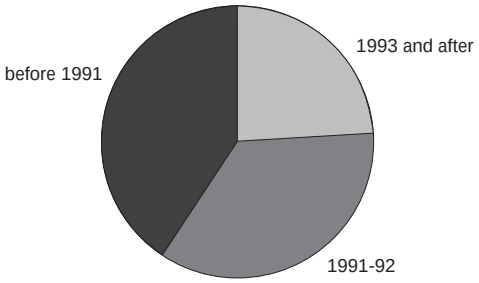
Czech companies were the most active in international markets as 7 out of 10 reported earning income from abroad. Furthermore, 60 percent of companies reportedly worked with foreign partners on joint projects and 15 percent were engaged in joint ventures with foreign partners.

The impact of the dynamic changes in this market was reflected in the high demand from Czech companies for environmental information and advanced professional training. The most requested topics included information on environmental regulations, financing environmental projects and new environmental technologies.

The following section presents the responses and selected correlations from the REC's survey of 150 Czech Environmental companies.

SURVEY RESULTS: **CZECH REPUBLIC**

1. Date company founded?



2. Company share structure

Private	86%
State-owned	2%
Limited Company (Ltd)	5%
Other	7%

3. Joint venture?

No	85%
Yes	15%

4. Nationality of foreign shareholders in the joint ventures

Germany	29%
United Sates	14%
Austria	14%
Sweden	10%
Finland	5%
Canada	5%
France	5%
Belgium	5%
Denmark	5%

5. Number of full-time employees

# employees	% companies
0-5	28
6-10	19
11-20	19
21-60	15
61+	18

6. Number of part-time employees

# employees	% companies
0-3	30
4-5	18
6-10	16
11+	10

7. Top 8 environmental publications (%)

Odpady	22
EKO Journal	16
Vodni Hospodářství	14
Planeta	9
Souvak	7
Věstník MŽP	6
Eko Magazine	5
Ochrana Ovzduši	5
none	23

8. Top 8 business publications (%)

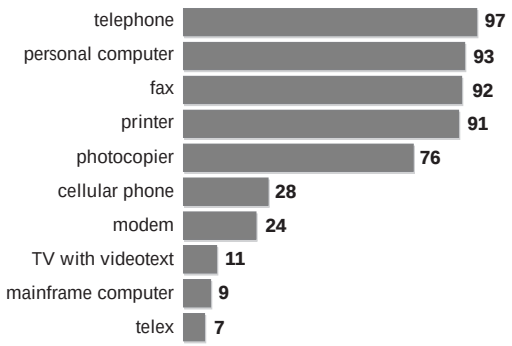
Hospodársky noviny	69
Ekonom	32
Profit	15
EPP	3
Daň. poradce	3
Obch. věstník	2
Účetnictvi	2
Zákoniík, zákoany	1
none	13

9. Top 5 environmental associations (%)

none	49
Asociace čzistírenských expertu čr	7
Hospodářská komora	3
Svaz autorizovaných inženýru	3
Zelený telefon	2
Cech odpad. hospodářství	2

10. Office equipment

(percentage of companies possessing the following types of equipment)



SURVEY RESULTS CONTINUED

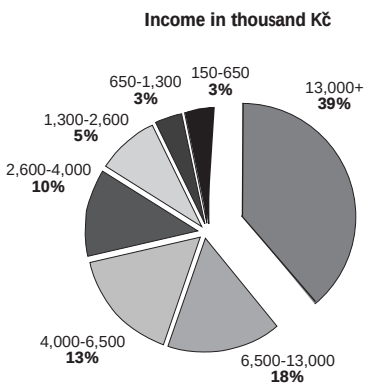
11. Source for new environmental business opportunities

personal contacts	96
trade shows and fairs	72
regular post	68
referrals from associates	64
daily press	61
business publications	59
conference attendance	58
environmental publications	55
fax	53
mailing list	47
environmental ministry	34
professional associations	32
universities or academy of science	17
industry and trade ministry	13
chamber of commerce	11
other	10
e-mail	7
other national level ministries	7
local government offices	6
don't know	1

12. Full-time employees, by ownership of companies

Number full-time employees	private %	Co.,ltd %	state-owned %
0-5 persons	90	5	0
6-10 persons	86	10	3
11-20 persons	90	10	0
21-60 persons	91	4	4
61+	68	4	7

13. Annual turnover (in percentage)

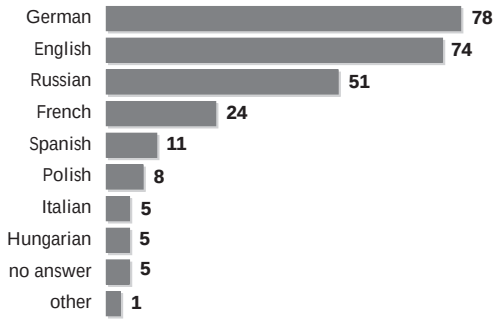


14. Percentage of foreign income compared to annual company revenue

Total income (in million kč)	Foreign income in % 50+	26-50	10-25	-10	none
.15-.65	0	0	0	0	60
.65-1.3	0	0	20	60	20
1.3-2.6	13	7	13	13	53
2.6-4.0	13	0	13	25	50
4.0-6.5	0	0	15	30	55
6.5-13	7	11	15	44	15
13+	8	5	20	42	24
All companies	**7**	**5**	**16**	**34**	**34**

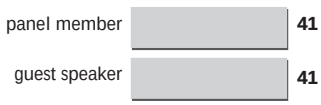
15. Foreign language proficiency

(i.e. what percentage of companies have at least one employee who speaks the following languages)

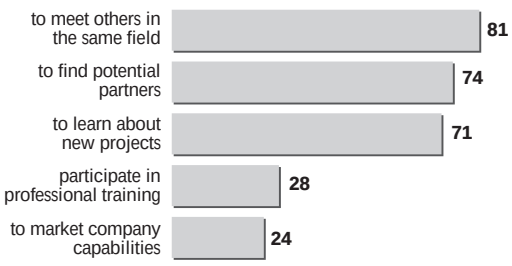


16. Conference participation (%)

TYPE OF PARTICIPATION



FUNCTION OF PARTICIPATION



HOW MANY SCIENTIFIC CONFERENCES DID YOU PARTICIPATE IN LAST YEAR?

	%
1-2	28
3-5	35
5+	28
none	8

SURVEY RESULTS CONTINUED

17. Preference for environmental information

	1=very important, 5=not important at all
	average
conference or trade fair announcements	2.36
environmental problems in the region	1.72
how to control costs	2.95
how to find foreign partners	3.01
how to manage projects better	2.78
information about environmental regulation	1.61
information about investors	2.22
information about sources of project financing	2.18
new envronmental technologies	1.83
tenders for new projects	1.74
upcoming project news	1.73
where to find Czech partners for large projects	2.56

18. Preference for information delivery options

	1=very important, 5=not important at all
	average
regular bulletin with new project opportunities	1.95
a telephone information service	3.07
a regional directory of environmental services and products in print	3.09
a computer database of information resources accessible by modem	3.01
broadcast fax service to inform you about project opportunities in your field of expertise	2.55
conferences designed to introduce you to potential wester partners and investors	2.78
workshops where you could meet other companies from your field to share and solve problems	2.57

19. Interest in professional training courses

	1=very important, 5=not important at all
	average
environmental economic analysis	2.76
environmental auditing	2.74
environmental impact assessment	2.74
environmental management	2.81
environmental regulations	1.94
environmental risk assessment	2.59
environmental systems and sustainability	2.74
financing environmental investment	2.17
project management	2.79

SURVEY RESULTS CONTINUED

20. Evaluation of experience with Western companies

	strongly agree	agree	disagree	strongly disagree	no idea
Western firm understood local business practices	3	47	21	9	17
Western firm understood our capabilities	6	55	19	5	15
Western firm had good management skills	12	49	19	5	13
language differences made working together difficult	10	42	22	3	13

21. Suggestions to improve cooperation with foreign firms

	# responses
do not know	76
understand local professional skills	5
improve information flow	5
greater understanding from their side	2
equal partnership	2
intensify information provided by chambers of commerce	1
ignore it	1
improve problems related to financial payments	1
legal and business consultancy	1
bank support for export	1
less interference, advice only on technical questions	1
improve knowledge of Czech legal system for partners	1
joint meetings, trade missions	1
improve relations on the basis of mutual advantage	1

KEY FACTS

AREA **93,000** SQ KM
POPULATION **10.5** MILLION
POPULATION DENSITY **111** PERSONS/SQ KM
OFFICIAL LANGUAGE **HUNGARIAN**
TYPE OF GOVERNMENT **PARLIAMENTARY DEMOCRACY**

HUNGARY

Current Situation

POLITICAL SITUATION

In May 1994, the Hungarian Democratic Forum (MDF) - the party elected post-1989 to help lead Hungary from a controlled to a free-market economy - was defeated by the Hungarian Socialist Party (MSZP). The MSZP joined the Alliance of Free Democrats (SZDSZ) to form a nearly three-fourths majority coalition government. Headed by Prime Minister Gyula Horn, the MSZP came in on a platform promising to ease the social burden of Hungary's economic transition. Horn, brought about the slowdown of Hungary's privatization program, the on-going discussion of ethnic Hungarian minority rights with The slovak republic and Romania, and negotiations on reductions in Hungary's social safety-net benefits, such as the elimination of free university tuition and the reduction of maternity benefits. Despite this, Hungary's government remains one of the most stable in the region. The next key elections are the parliamentary ones scheduled for 1998.

ECONOMIC SITUATION[3]

Hungary's GDP is expected to grow by two percent in 1995, and 3.6 percent in 1996. The agricultural sector produces 15 percent of Hungary's GDP and accounts for 20-25 percent of total exports. The private sector accounts for 50 percent of GDP. The government aims to keep the 1995 budget deficit under six percent of GDP.

The average inflation rate was approximately 30 percent for the first half of 1995. Unemployment, 10.6 percent in July 1995, is expected to fall to slightly below 10 percent by the end of 1995.

Hungary has been able to shift its trade from East to West, with over 50 percent of its market now in Europe . Although privatization history and strategies were subject to re-thinking in 1995, several opportunities for investment remain, with potential growth expected in telecommunications, financial services, advertising, food processing, construction and automotive industries.

ENVIRONMENTAL EXPENDITURES

Total environmental spending for Hungary was approximately USD 250 million in 1993, or about 0.6 percent of GDP (about 0.7 percent including household expenditures). This is one of the lowest rates in comparison with OECD countries and the other three Visegrad countries. However, clear comparisons are difficult to make due to differences in accounting practices and definitions of what constitutes 'environmental' spending. Table 22 presents the breakdown of the sources of environmental spending in Hungary.

The Hungarian government, like the other four Visegrad countries, has established earmarked environmental funds including the Central Environmental Protection Fund (CEPF) and the Water Fund. The CEPF is the main fund and received about $32 million in 1994 from fuel taxes, fines and user fees. This amount is expected to double in 1996 due to the passage of legislation containing new product charges and gas taxes. As a result, total expenditures on environmental projects in Hungary should exceed $300 million in 1996.

TABLE 22
ENVIRONMENTAL EXPENDITURES FOR 1993 (IN MILLION USD)

Source of Funds	Amount
National Budget	123
Municipalities and environmental funds	75
Central Environmental Protection Fund	28
Private Sector	19
Other	8
TOTAL	253
as % GDP	0.7

Source: REC Report, National Environmental Protection Funds in Central and Eastern Europe, November 1994

These funds are used to finance public infrastructure projects, provide loan guarantees, and cover the cost of remedial actions. The CEPF funds are available to finance up to 100 percent of public infrastructure projects. Businesses, both public and private, can request up to 60 percent of the costs of environmental projects from the CEPF. In addition, businesses can apply for interest-free loans or soft loans with below market interest rates. These loans are usually available with terms up to 2 years and 5 years, respectively.

ENVIRONMENTAL PRIORITIES[4]

According to a recent Gallup poll entitled "The Greening of Hungary," half of those surveyed think the environment is much more important than economic growth and say they are willing to pay for environmental protection. The environmental situation in Hungary is similar to other CEE countries: the number one problem is water quality. Overall, the quality of the environment has improved over the last five years due to decreased industrial activity. Although environmental protection is not the government's highest priority, the prospect of joining international organizations such as the OECD and the EU has increased government attention on environmental issues.

Privatization or bankruptcy of some state-owned companies has created new business opportunities in the environmental services field, and Western investors concerned about liability for restoring contaminated property are demanding environmental audits.

Hungarian companies that export a significant portion of their production cannot succeed if they neglect the environmental provisions and norms of importing countries. It is not only in the company's interest but in the national interest that OECD and EU standards and environmental norms become obligatory in Hungary. Western companies

3 Source: Economist Intelligence Unit Country Reports, Eastern Europe, 1993 - May 1995, Silver Platter International, N.V.
4 Source: REC Report, *Status of National Environmental Action Programs in Central and Eastern Europe, May 1995*

specializing in environmental technologies and consulting could expand their activities to Hungary parallel with the growing need for OECD and EU environmental conformity.

As another positive signal, the government has introduced several new economic instruments for environmental protection. Besides passing new environmental legislation, the Hungarian government has taken numerous steps to improve the environment:

- finalizing an intersectoral air quality protection action plan for 1994-1998
- accepting the new Water Act which is to be sent before the Parliament in 1996
- preparing the Balaton Comprehensive Action Plan to improve the water quality of Lake Balaton
- preparing the National Environment and Health Action Plan in cooperation with the Ministry of Welfare

The government has also identified short-term priorities which cannot be postponed further due to the potential risk to human health and the environment. Environmental projects with short-term priority include:

- developing a detailed assessment of the state of the environment
- surveying the activities of industrial plants
- providing regular funding to restore contaminated areas
- creating qualification, labeling and auditing systems that meet the recommendations and stipulations of the International Standardization Organization (ISO) of the European Union as well as assisting companies with developing environmental management systems.
- spending 1.5-2 percent of GDP on environmental protection
- increasing the selective collection of communal waste
- eliminating unauthorized disposal sites
- developing proper disposal facilities for hospital waste
- reducing sulfur dioxide and heavy metal emissions from transport and industrial activities
- developing an up-to-date air monitoring network
- developing a noise classification system and introducing stringent noise insulation requirements
- controlling radioactivity in drinking water, agricultural products, building materials and industrial wastes

Despite progress, the government is still in the process of defining the responsibilities and jurisdictions of different ministries and authorities. There is a visible gap between increasing demands on environmental administrators and their limited capacities. The responsibilities of state, territorial and local governments are being revised, and in the field of environmental protection, county governments are taking on more responsibility. Without an increase in institutional development, this gap will continue to widen, especially as Hungary presses to join the OECD and the EU.

Regulatory and Enforcement Environment

After several years of preparation, a new environmental protection law has been enacted by the Hungarian Parliament. This bill contains new enforcement requirements and economic instruments for environmental protection. They include new or increased fees on products such as gasoline (increases of 1 - 2 Forint (Ft)/liter), tires (30 Ft/kilogram new or 120 Ft/Kilogram used or imported), refrigerating equipment (600 Ft for a capacity less than 120 liters and 2800 Ft for more that 250 liters), car batteries and packaging material (2 Ft/kilogram glass and 10 Ft/kilogram plastic). These product fees are expected to reduce consumption and encourage recycling, and funds generated will go to the Central Environmental Protection Fund.

With regards to privatization, there are still unresolved liability issues as well as unclear environmental auditing procedures, and the requirements are different depending on privatization techniques. For example, the Csepel Iron and Steel Works, once one of the biggest state-owned enterprises in Hungary, is now fragmented into hundreds of limited-liability companies. Each has unclear liability for restoring damage done by the original state-owned enterprise.

Key Actors in Environmental Protection at the National Level

The modification of the Hungarian Constitution and the adoption of many laws aimed at the creation of a pluralistic democracy resulted in a substantial increase in the number of organizations playing a role in environmental protection.

Environmental protection is also getting more and more attention in the mass media. In the electronic media there are more than a dozen different "green" programs. The biggest national newspapers have regular "green pages" or environmental supplements.

Academic institutions are active in policy development and are funded to help develop national environmental policy. The Ministry of Environment (MoE) and the Hungarian Academy of Sciences together published an important document entitled "The Green Future of Hungary", and the MoE is currently planning the logistics and management of a national environmental action plan. Many research institutes, university departments, national and international independent experts and representatives of green movements will be involved in the preparation of this plan.

The economic and business sphere is also playing an increasingly active role in influencing environmental policymaking. The Hungarian Chamber of Commerce signed the Business Charter of Sustainable Development issued by the International Chamber of Commerce. In addition, the MoE is building up regular contacts with nationally important economic interest groups: the Hungarian Association of International Companies, the Hungarian Association of Large Industrialists, the National Association of Entrepreneurs and the National Association of Small Industrialists.

Businesses are beginning to lobby to influence environmental regulations, evident by the long debate on the planned product charges on packaging materials. During the Open Days of Parliament organized by the Environmental Committee so the public could exchange ideas with MPs and ministerial officials in March and November 1994, the Environmental Protection Act was discussed and accepted with the strong support of the business sector and the green movement.

Status of Hungarian Environmental Business Sector

The Hungarian environmental market is comprised of over 400 companies providing environmentally related services or products. Annual revenues exceeded USD 170

TABLE 23
PERCENTAGE OF COMBINED ANNUAL REVENUES BY ENVIRONMENTAL ACTIVITY FOR HUNGARIAN COMPANIES

	ACTIVITIES						
	General Consulting	Research Education	Engineering Design	Env. Products	Testing/ Monitor	Project Management	Total
WATER	**2.6**	**1.8**	**5.9**	**6.6**	**6.4**	**3.4**	**26.7**
Municipal Water	0.7	0.3	1.3	1.1	1.0	0.2	4.6
Surface Water	0.8	0.7	1.6	1.9	2.7	1.3	9.0
Industrial Water	0.2	0.3	0.8	1.8	0.5	0.7	4.3
Ground Water	0.9	0.5	2.2	1.8	2.2	1.2	8.8
SOLID WASTE	**1.2**	**0.7**	**2.1**	**3.9**	**2.0**	**1.8**	**11.8**
Industrial Solid Waste	0.5	0.1	0.9	3.2	0.6	1.0	6.3
Municipal Solid Waste	0.1	0.4	0.3	0.1	0.3	0.5	1.7
Soil	0.6	0.2	0.9	0.6	1.1	0.3	3.7
AIR	**2.1**	**0.7**	**3.3**	**5.8**	**3.8**	**2.4**	**18.0**
Air Protection	1.7	0.6	2.7	4.3	2.0	2.1	13.4
Gaseous Emissions	0.4	0.1	0.6	1.5	1.8	0.3	4.6
NATURE PROTECTION	**0.4**	**0.2**	**0.8**	**0.4**	**0.4**	**0.8**	**2.7**
Nature Conservation	0.3	0.1	0.4	0.3	0.2	0.6	1.7
Landscape	0.1	0.1	0.4	0.1	0.2	0.2	1.0
OTHER	**2.2**	**2.5**	**7.1**	**5.6**	**2.3**	**8.2**	**27.8**
Noise,Vibration Control	0.3	0.1	0.5	0.0	0.6	0.1	1.6
Other Environmental	1.9	2.4	6.6	5.6	1.7	8.1	26.3
Total[1]	**8.4**	**5.8**	**19.1**	**22.4**	**14.7**	**16.6**	**87.0**

Notes: Since companies provided estimates for their percentage of revenues for each activity,

million and these firms employed more than 8000 full-time employees in 1994. The 150 surveyed companies reported annual revenues exceeding USD 40 million in 1994, which represents approximately 25 percent of the estimated market activity. However, some companies were reluctant to give income details or were unable to provide accurate figures. As a result only 115 companies provided details on their source of revenues.

The market is geared towards providing technical services; activity in this sector captured approximately 50 percent of company revenues. Engineering and design for air protection generated the most revenues in this area. Technical services were followed by environmental product-related activities which captured 22 percent of surveyed company revenues. Products for air protection generated the most revenues. Laboratory activities (analysis and examination) captured approximately 15 percent of company revenues.

Analysis by media revealed that water-related activities generated approximately 28 percent of company revenues. Close behind were air-related activities (19 percent) and solid waste-related activities (12 percent). Hungarian companies generate about 1 out of 4 dollars from non-media specific activities (other environmental) such as energy efficiency products, environmental audits and energy conservation studies. Companies were not very active in the municipal solid waste sector with this area comprising only about 2 percent of revenues.

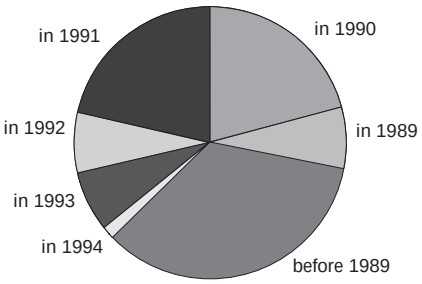
Most of the companies (2 out of 3) were established after 1989 and operate as private enterprises. Relative to the other Visegrad countries, Hungarian firms were active in international markets; approximately 25 percent of the companies operated as joint ventures with foreign partners and 45 percent earned income from foreign projects.

Most of the companies in the survey were small enterprises, with more than two-thirds of the companies employing less than 30 full-time employees. Almost 9 out of 10 firms employing less than 30 persons were private enterprises. Large enterprises were mainly state-owned firms, comprising 70 percent of the organizations employing more than 100 persons.

The following section presents the responses and selected correlations to the questions from the REC's survey of 150 environmental companies in Hungary .

SURVEY RESULTS: **HUNGARY**

1. Date company founded?



2. Share structure

Private	78%
State-owned	22%

3. Do you operate as a joint venture?

No	75%
Yes	25%

4. Nationality of foreign shareholders in joint ventures (in percentage)

Austria	38
Germany	27
USA	12
UK	6
Israel	3
Holland	3
Luxembourg	3
Italy	3
Switzerland	3
Sweden	3

5. Number of full-time and part-time employees: % surveyed companies

# employees	full-time	part-time
none	0	32
1-5	30	28
6-10	19	16
11-30	22	18
31-100	13	7
101-500	11	0
500+	6	0

6. Top 8 environmental publications (%)

Kornyezetvedelmifuzetek • *General Environmental Leaflets*	34
Kornyezet es fejlodes • *Environment and Progress*	13
Környezetvédelmi és vízügyiértesítô • *Environment and Water Management*	6
OMIKK	5
Hulladékgazdálkodás • *Waste Management*	4
Hidrológiai közlöny	4
Environmental technology	4
Öko	3

7. Top 8 business publications (%)

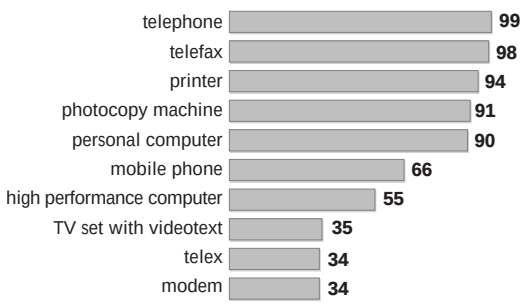
HVG • *World Economy Weekly*	35
Napi Vilaggazdasag • *World Economy Daily*	28
Cegvezetes • *Company Management*	22
Figyelo • *Watcher*	10
Budapest Business Journal	8
Piac • *Market*	6
Adó • *Taxation*	6
Magyar Hírlap • *Hungarian Daily News*	4

8. Top 8 environmental associations (%)

Hidrológiai társaság • *Hydrology Society*	23
METESZ	12
Mérnöki kamara • *Chamber of Engineers*	10
Kémikusok egyesülete • *Association of Chemists*	7
Környezetvédelmi egyesület • *Environmental Protection Association*	6
Gazdasági kamara • *Chamber of Economy*	3
Építéstudományi Egyesület • *Construction Science Society*	2
Neumann János Társaság • *John von Neumann Society*	2

9. Office equipment

(percentage of companies possessing the following types of equipment)



SURVEY RESULTS CONTINUED

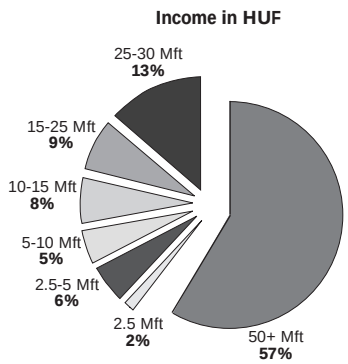
10. Sources for new environmental business opportunities?

professional associates	92
personal contacts	91
referrals from associates	84
conference attendance	69
environmental publications	66
daily press	62
business publications	59
trade shows and fairs	53
Environmental ministry	42
regular post	34
Traff., Tele., Wat. ministry	32
Chamber of Commerce	32
universities or academy of science	27
local government offices	27
Industry and Trade ministry	27
fax	23
other	19
Home Office	15
other national level ministries	14
e-mail	7

11. Number of employees by type of ownership

Number of full-time employees	private %	state-owned %
1-5 persons	93	7
6-10 persons	85	15
11-30 persons	93	7
31-100 persons	61	29
101-500 persons	27	73
501+ persons	29	71

12. Annual turnover (in percentage)

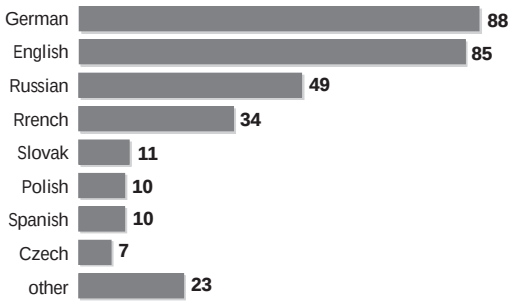


13. % Income from foreign sources compared to company annual turnover

Total income	Foreign income in %					
	50+	**26-50**	**10-25**	**-10**	**no**	**total**
- 2.5 HUF	0	0	0	0	100	100
2.5-5 HUF	0	13	0	13	75	100
5-10 HUF	0	14	0	29	57	100
10-15 HUF	0	9	9	0	82	100
11-25 HUF	0	15	23	8	54	100
25-50 HUF	0	11	17	22	50	100
50+ HUF	5	8	15	23	49	100
Total	**4**	**9**	**13**	**19**	**55**	

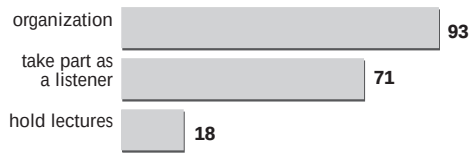
14. Foreign language proficiency

(i.e. what percentage of companies have at least one employee who speaks the following languages)

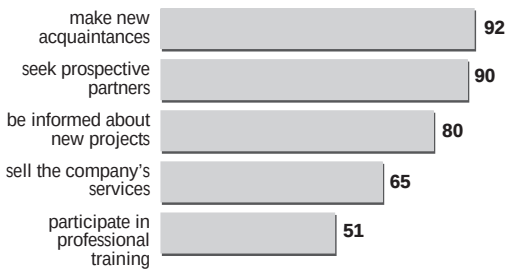


15. Conference participation (in percentage)

TYPE OF PARTICIPATION



FUNCTION OF PARTICIPATION



HOW MANY SCIENTIFIC CONFERENCES DID YOU PARTICIPATE IN LAST YEAR?

	%
1-2	25
3-5	36
5+	27
none	12

SURVEY RESULTS CONTINUED

16. Preference for environmental information (in percentage)

1=negligible, 5=essential

	1	2	3	4	5	average
information on new environment protection technologies	3	3	9	25	60	4.34
information on environmental regulations	3	3	12	22	60	4.32
new project tenders	5	6	12	18	59	4.21
news on lates projects	4	5	17	28	46	4.07
information on sources of project financing	9	8	11	21	51	3.97
information on the regional environmental problems	8	8	17	23	45	3.9
how to cut back costs	11	13	17	15	44	3.66
information on investors	11	9	22	25	33	3.6
how to manage projects more efficiently	11	8	29	24	28	3.49
where to find Hungarian partners for large scale projects	15	14	19	23	30	3.39
how to find foreign partners	15	12	26	22	24	3.28
advertisements of conferences or trade fairs	13	21	28	25	12	3.03

17. Preference for information delivery options (in percentage)

1=negligible, 5=essential

	1	2	3	4	5	average
regular bulletin with new project opportunities	8	4	10	27	52	4.12
workshops, where others from the same profession can be met and problems shared	8	7	24	28	32	3.7
conferences, where potential Western partners can first be contacted with	10	5	30	25	31	3.61
printed register of local environmental services and products	9	11	22	29	29	3.58
wide range fax service providing information on project opportunities in particular fields	15	7	20	23	35	3.58
computer operated database of information sources accessible by modem	24	10	19	23	25	3.15
telephone inquiry service	29	21	27	16	7	2.52

18. Evaluation of experience with Western companies

	strongly agree	agree	disagree	strongly disagree	no idea
the Western company possessed good project management skills	33	34	11	5	18
the Western company had a clear view of the possibilities of our company	31	37	37	7	12
the Western company understood Hungarian business practices	10	34	34	12	21
language barriers made cooperation more difficult	10	11	11	54	8

SURVEY RESULTS CONTINUED

19. How interested are you in professional training courses in the following topics?

1=negligible, 5=essential

	1	2	3	4	5	average
environmental regulations	9	4	19	24	43	3.88
financing of environmental investments	11	9	18	24	38	3.69
environmental impact analysis	13	8	19	22	40	3.68
project management	13	8	22	22	35	3.57
environmental risk assessment	13	10	23	25	30	3.5
environmental protection auditing/supervision	15	11	23	26	25	3.35
environmental management	16	9	30	22	22	3.26
environmental systems and their sustainability	15	11	39	16	20	3.17
environmental economic analysis	27	18	18	29	8	2.76

KEY FACTS

AREA **312,700** SQ KM
POPULATION **38.6** MILLION
POPULATION DENSITY **123** PERSONS/SQ KM
OFFICIAL LANGUAGE **POLISH**
TYPE OF GOVERNMENT **PARLIAMENTARY DEMOCRACY**

POLAND

Current Situation

POLITICAL SITUATION

Like many of its former Soviet bloc neighbors, Poland is a parliamentary democracy. In September of 1993, the Social Democratic Alliance (SLD) joined with the Polish Peasants Party (PSL) to win a two-thirds majority in the Polish Parliament. This coalition brought in Jozef Oleksy as Poland's new prime minister. Poland's president, Lech Walesa, serves as the country's head of state with a five year term; presidential elections are scheduled for 1995. The new government has continued with its program of free market economic reforms. A new constitution is being drafted and will be submitted to the Polish electorate in the autumn of 1995. The next parliamentary elections are scheduled for September 1997.

ECONOMIC SITUATION[5]

In June of 1994, Poland approved an economic strategy for Poland, a three-year plan which recommends policies that seek a high growth rate, increased foreign and domestic investment, reduced inflation and lower unemployment. Unemployment is expected to decline from 14.7 percent in 1995 to 14.2 percent in 1996. Inflation, forecast as high as 22 percent in 1995, is expected to drop to 17 percent in 1996. The Polish currency unit, the zloty, has been recently remunerated and devalued.

GDP, steadily growing since 1993, is forecast to increase to 5 percent in 1995 and 5.5 percent in 1996. Manufacturing accounts for 40 percent of GDP; the agricultural sector accounts for only 7 percent of GDP but employs 25 percent of the Polish labor force.

Electrical engineering, transportation, clothing, food, chemicals, paper and wood are among the industries showing the highest real growth rates. Other areas of opportunity include telecommunications, banking, tourism and housing development. Privatization, however, is moving along slowly.

ENVIRONMENTAL EXPENDITURES

Based on recent government estimates, spending in the Polish market increased to over USD 1 billion in 1994 from USD 890 million in 1993 - surpassing spending in the Czech Republic to become the largest market of the Visegrad four. This figure is supported by incomes reported during this survey, which show the Polish market leading the four Visegrad countries.

For government spending, the strategy for environmental investments in Poland is based on the priorities of the National Environmental Policy and on Poland's international obligations. Currently, about 47 percent of the financing for environmental investments is provided by environmental funds, and about 41 percent by enterprises, local administrations and private users. Only 7 percent comes from the state budget, and 5 percent from foreign assistance. Poland has maintained a stable level of expenditure for environmental protection above 1.0 percent of GDP for the last two years.

Poland's National Fund for Environmental Protection and Water Management (NFEP) plays an important role in financing environmental projects. In the period 1990-1993 the NFEP concluded 1,606 agreements totaling USD 718 million (85 percent loans, 15 percent grants). In the first quarter of 1994 there were 700 agreements with a total value of about USD 67.7 million. The main recipient sectors were air protection (42 percent), water and water management (41.6 percent) and land surface protection (6.1 percent).

Between 1990-1993 NFEP investments were responsible for reducing annual emissions of sulfur dioxide by 246,000 tons, nitrogen oxides by 5,000 tons, particulates by 120,000 tons and carbon monoxide by 50,000 tons. According to the State Inspectorate for Environmental Protection (SIEP) these estimates are 9.0, 0.5, 6.2 and 0.6 percent, respectively, of their 1993 values.

In the water protection sector, the government constructed new waste water treatment plants, increasing the overall capacity by 3.1 million m^3/day, and installed 846 km of sewers. Investments in potable water treatment infrastructure have resulted in an increase in water retention reservoirs of 127 million m^3, an increase of water supply mains by 356 km and an increase in the capacity of water treatment stations by 182,000 m^3/day. In the field of land surface protection, Poland increased the capacity of municipal dumps by about 7.5 million tons. This has helped alleviate the serious capacity shortage.

The NFEP's main activity is to provide financial support for investments, usually through soft loans. Support can also come in the form of grants for environmental education, nature conservation, the development of programs and studies, and for geological and mining activities. The NFEP gives preference to solutions which allow comprehensive protection of the natural environment and water resources. The income of the Fund comes from fines and charges for the use of the environment.

Another important institution financing environmental protection in Poland is the ECOFUND. This fund was established when the international community relieved a portion of Poland's sovereign debt with the stipulation that the money be earmarked for environmental projects. The funds are used to reduce emissions of acid gases and greenhouse gases, as well as for reducing the use of controlled substances by Polish industry. The overall amount available under eco-conversion is about USD 3 billion.

TABLE 24
ENVIRONMENTAL EXPENDITURES FOR 1992-1993 (MILLION USD)

Source of Funds	Amount (in million USD) 1992	1993
National Fund for Environmental Protection	210	199
Other	658	690
Total	878	889
as % of GDP	1.3	1.0

Source: REC Report, *National Environmental Protection Funds in Central and Eastern Europe*, November 1994

5 Source: Economist Intelligence Unit Country Reports, Eastern Europe, 1993 - May 1995, Silver Platter International, N.V.

The ECOFUND can provide no more than 30 percent of the total investment cost, though the limit for municipal investments is up to 50 percent for nature conservation and 80 percent for environmental education.

To receive funds from either the NFEP or ECOFUND, the project initiator must submit a technical description, an economic analysis and a timetable for implementation. The basic funding priorities include:

- improving the environment in 27 threatened areas
- protecting natural areas
- supporting pollution prevention projects
- meeting Poland's international obligations
- reducing low-level emissions of air pollutants, particularly through coal-to-gas conversion projects and the use of alternative energy sources
- preventing transboundary air pollution by reducing the emissions of sulfur dioxide and nitrogen oxides
- protecting the Baltic Sea by reducing the pollutant discharge from Polish territory
- reducing greenhouse gases emissions (carbon dioxide, carbon monoxide, nitrogen oxides, sulfur dioxide, methane)
- promoting new technologies and organizational methods (pilot projects)
- promoting a domestic environmental service and technology industry
- training Polish specialists for public environmental education programs
- upgrading waste water treatment plants selected as priorities for the Baltic Sea protection by the Helsinki Convention

The government is currently promoting the development of a financial infrastructure to fund the large, pro-environmental restructuring of the industrial sector. There is a growing need to involve large commercial banks in financing environmental protection activities; because of the traditionally large doses of grants and soft credits in this area, banks cannot compete in this sector. Other obstacles for commercial financing include: insufficient knowledge of environmental laws; insufficient strategies by banks towards environmental investments, due to the relatively weak position of the national environmental policy; difficulties in assessing risk in environmental investments due to poorly developed environmental criteria; lack of environmental criteria for assessing credit applications.

An important achievement with regard to environmental investments in Poland was the establishment of the Bank for Environmental Protection, which gives preferential credits for investments in environmental protection. Since the bank operates on a commercial basis, the NFEP covers the difference between market and preferential credit rates.

Environmental Priorities[6]

Poland gave environmental protection high priority in the aftermath of the landslide political changes in Central and Eastern Europe. During this period important laws were enacted, including the 1991 law aimed at increasing the SIEP's effectiveness. Other legislation established the institutional infrastructure for financing environmental protection activities, and the Parliament adopted the National Environmental Policy (NEP) in 1991. Another important event was the 1990 publication of the "list of 80," a list of the most polluting industrial plants in Poland that applied strict control measures over their activities. As a result, momentum was created which considerably improved the state of the environment.

During the last three years, there has been a decrease in the importance attached to environmental protection issues, with priority now given to achieving economic benefits. Fortunately, due to the establishment of the NFEP, the environment does not have to compete directly with other sectors for scarce state budget resources.

An important event affecting Poland's environmental priorities was entry into the Europe Agreement on 1 February 1994, a move that established the association of Poland and the European Union along with Poland's application for EU membership. This act obliges Poland to harmonize its environmental laws and standards with those of the EU and establish close cooperation with the EU in combating environmental pollution. Poland will have to substantially increase financial and human resources to restructure both environmental protection activities and the economy to EU standards. Another important factor is Poland's ratification of the international environmental conventions and associated protocols that require Poland to undertake a number of pollution abatement activities.

There are a number of other environmental priorities that include:

- establishing an efficient system of environmental information management and monitoring based on computerized data management systems
- establishing the Committee for Sustainable Development, composed of high-level government representatives and other groups
- conducting environmental audits for property transactions by the Inter-ministerial Team for Addressing Environmental Problems in Privatization. Environmental audits are often made at plants that are subject to "capital privatization." The cost of necessary environmental restoration is taken into account, and responsibility for clean-up is negotiated between the seller and purchaser.
- increasing the area of land subject to protection in Poland. Presently, about 23.7 percent of the country's area is subject to various forms of protection. There are 19 national parks in Poland covering 0.8 percent of the total area of the country, three of which were established in 1993.
- increasing clean production efforts by switching from "end-of-pipe" to "elimination at source" solutions. This has resulted in increased interest in clean production technologies and processes on the part of decisionmakers and industry. About 150 industrial plants have voluntarily signed the Declaration of Cleaner Production, and there are plans for establishing a Cleaner-Production Center in Poland.

Regulatory and Enforcement Environment

Enforcement of environmental regulations greatly improved after the enactment of a law on the state inspection of the environment. An indication of the enforcement climate can be based on the collection rate for revenues obtained by the NFEP from 1991-1993:

6 Source: REC Report, *Status of National Environmental Action Programs in Central and Eastern Europe, May 1995*

- the collection efficiency of environmental charges was generally high and ranged from about 50 percent for waste water, to almost 90 percent for waste and sulfur dioxide
- the collection efficiency of environmental fines was lower, ranging from 4 percent for waste to over 90 percent for nitrogen oxides
- a separate problem is inefficient collection of charges and fines for the discharge of saline mine water, which remained at a level of 5 percent

The basic principle of the environmental law in Poland is that economic entities are responsible for the consequences of their activities on the natural environment, and for addressing the damage they cause. In practice, the enforcement is relatively weak since Poland does not close enterprises for failure to pay environmental charges.

One can observe the effectiveness of enforcement by looking at the 80 most polluting plants in Poland. A list of these was made public by the media, and all of these plants were placed under the special supervision of SIEP and the respective Voivodship environmental divisions. By decision of the respective Voivodas (provincial governors), these plants were obliged to implement environment-friendly production technologies and to install environmental protection equipment. The result of these special measures was a 60 percent reduction in particulate emissions, a 40 percent reduction in gas emissions, a 70 percent lower chemical Oxygen Demand (COD) charge in waste water and a 40 percent decrease in the total quantity of collected waste.

Maximum discharge limits are issued by the environmental divisions in each Voivodship office based on an assessment of their environmental impact. The SIEP ensures that the Voivodships comply with national environmental standards.

In addition to pollution fees, Poland requires polluters to pay noncompliance fines based on the pollutants discharged into the environment above its maximum discharge limit. Generally they are much higher than emissions fees. In the period 1992-1993, SIEP imposed 12,000 fines totaling USD 141.7 million, and there were 391 cases submitted for prosecution.

Payment of fines can be suspended if the plant implements investments which will limit or eliminate emission of pollutants into the environment. It was noted that the application of this tool is very successful, since 77 percent of plants which have used this option fully implemented their pro-environment investments.

Key Actors in Environmental Protection at the National Level

The institutions involved with environmental protection projects include the Ministry of Environmental Protection, Natural Resources and Forestry (MoE) and the Parliamentary Committees for Environmental Protection. There are also two bodies which perform advisory functions: the Environmental Council, established by the president of the Republic of Poland in 1993, and the Council for Sustainable Development, established in October 1994 by decree of the prime minister. Furthermore, there were other advisory bodies established by the minister of environmental protection, such as the State Council for Environmental Protection, the State Council for Nature Conservation and River Basin Councils.

Policy implementation at the regional level is performed by the Voivodship (Provincial) Divisions of Environmental Protection, except river basin management. This is performed by the Regional Water Management Authorities.

Enforcement of environmental laws and monitoring of the state of the environment are the responsibility of the State Inspectorate for Environmental Protection (SIEP). The Inspectorate is composed of the chief inspectorate and Voivodship Inspectorates, supported by a network of laboratories. The SIEP is the main source of information on the state of the environment in Poland.

To ensure that environmental considerations are taken into account during the privatization process, the Inter-ministerial Team for Addressing Environmental Problems in Privatization was established in 1992 as a joint body of the minister of privatization, the minister of environmental protection, and the chief inspector of environmental protection.

The Polish government established the Regional Authorities for Water Management in 1991, with the task of balancing surface and ground water resources. Tasks of the Water Management Authorities include: developing conditions for water usage from river basins, protecting the quantity and quality of water resources, developing water management programs, examining investments affecting water management in river basins, monitoring surface and ground water quality, implementing methods of leakage detection in water supply networks, issuing water rights permits for water transfers and building flood protection facilities.

Seven water management regions were established, and the Regional Authorities for Water Management are directly responsible to the minister of environmental protection. The expected enactment of the new Water Law will greatly enhance their operations, as it includes the power to determine the level of water charges in their areas.

There are about 400 environmental NGOs in Poland, of which about 36 are actively working on a regional or national scale. The majority of these organizations weren't established until the end of the 1980s and the beginning of the 1990s. Most are small groups, largely composed of young people, and often perform "watch dog" functions at the local level. There are also larger organizations such as the Polish Ecological Club, the Green Federation, the Nature Conservation League and the National Environmental Education Center which are all active on a national level. Furthermore, there are political parties with a declared interest in environmental protection, such as the Green Party and the environmental faction of the Democratic Union.

Status of The Polish Environmental Business Sector

The largest market in the Visegrad four, the Polish environmental business sector is developing rapidly with an estimated 700 companies providing services or products related to environmental protection. The total annual revenues of the 150 Polish environmental companies surveyed exceeded USD 110 million in 1994 - more than the total annual revenues from the companies in the other three countries combined.

Half of the activity in the Polish environmental market comes from the sale of environmental products and technologies, providing the best market out of the four countries in the survey. Table 25 presents a matrix of the revenues generated by surveyed Polish environmental companies by media and activity

Environmental products generated the most revenues, specifically those related to the protection of surface water

TABLE 25
SOURCES OF REVENUES BY ENVIRONMENTAL ACTIVITY FOR POLISH COMPANIES (% COMBINED ANNUAL REVENUES)

	ACTIVITIES						
	General Consulting	Research Education	Engineering Design	Env. Products	Testing/ Monitor	Project Management	Total
WATER	**2.9**	**1.4**	**10.0**	**29.1**	**1.6**	**1.4**	**47.8**
Municipal Water	0.6	0.3	3.0	8.6	0.1	0.2	13.2
Surface Water	1.2	0.6	4.3	11.6	0.6	0.3	18.9
Industrial Water	0.4	0.3	1.3	3.7	0.1	0.7	6.5
Ground Water	0.7	0.2	1.4	5.2	0.8	0.2	9.2
SOLID WASTE	**1.3**	**1.1**	**4.7**	**6.3**	**1.6**	**0.6**	**16.5**
Industrial Solid Waste	0.3	0.2	1.7	1.3	0.5	0.2	4.5
Municipal Solid Waste	0.3	0.4	2.0	2.5	0.2	0.3	6.0
Soil	0.7	0.5	1.0	2.5	0.9	0.1	6.0
AIR	**1.8**	**1.3**	**5.5**	**11.4**	**1.8**	**0.5**	**22.2**
Air Protection	1.3	0.6	3.6	6.9	1.4	0.5	14.2
Gaseous Emissions	0.5	0.7	1.9	4.5	0.4	0.0	8.0
NATURE PROTECTION	**0.4**	**0.2**	**1.5**	**2.6**	**0.1**	**0.1**	**5.1**
Nature Conservation	0.3	0.1	0.5	2.0	0.1	0.1	3.2
Landscape	0.1	0.1	1.0	0.6	0.0	0.0	1.9
OTHER	**1.0**	**0.9**	**2.0**	**3.6**	**1.0**	**0.3**	**5.3**
Noise,Vibration Control	0.3	0.1	0.3	0.4	0.2	0.0	1.0
Other Environmental	0.7	0.8	1.7	3.2	0.8	0.3	4.3
Total[1]	**7.0**	**5.0**	**24.0**	**53.0**	**6.0**	**3.0**	**97.0**

Notes: 1.Since companies provided estimates for their percentage of revenues for each activity, the total percentages may not sum to 100 percent.

and municipal water treatment. Following products, technical services captured approximately 38 percent of the market activity. Again, companies were most active in providing water-related services.

When looking at the market activity for each media, 48 percent of the combined annual revenues for all companies came from water-related services and products. Air-related services and products accounted for 22 percent, and solid waste and soil contamination-related services and products accounted for 17 percent.

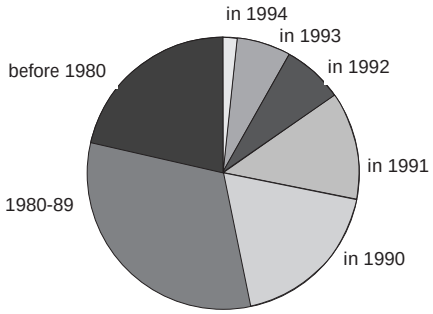
More than the other Visegrad countries, 8 out of 10 Polish environmental companies employed less than 30 full-time employees. Privatization seems to be going well in this sector with about 85 percent of the companies operating as private enterprises. This sector is older, on average, than the other markets; only half the companies were established after 1989.

Since the sector is relatively young and small, the demand for information and professional training was high. The most popular topics included environmental regulations, financing environmental investments and new environmental technologies.

The following section presents the responses to each question and selected correlations from the REC's survey of 150 environmental businesses in Poland.

SURVEY RESULTS: **POLAND**

1. When was your company founded?



2. Company Share structure

Private	85%
State-owned	12%
Other	3%

3. Joint venture?

No	93%
Yes	7%

4. Nationality of foreign shareholders in joint ventures

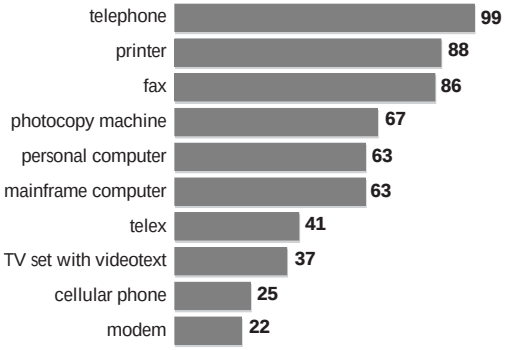
	%
Denmark	n/a
Germany	n/a
Great Britain	n/a
Finland	n/a
Luxembourg	n/a
Sweden	n/a

5. Number of full-time and part-time employees: % surveyed companies

# employees	full-time	part-time
none	1	18
1-3	20	15
4-6	14	16
7-10	9	20
11-20	17	14
21-30	9	7
31-50	11	4
50+	8	5
difficult to say		2

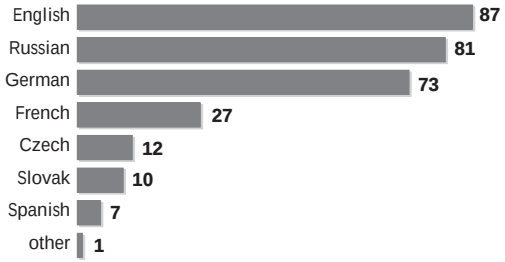
6. Office equipment

(percentage of companies possessing the following types of equipment)



7. Foreign language proficiency

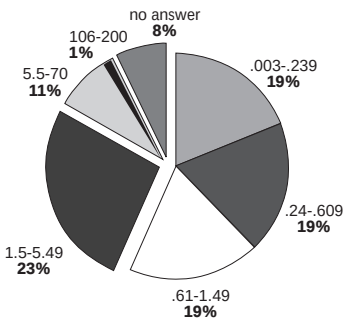
(i.e. what percentage of companies have at least one employee who speaks the following languages)



8. Annual turnover (in percentage)

1 new zloty = 10,000 old zloty	%
3,000-239,999	19
240,000-609,999	19
610,000-1,499,000	19
1,500,000-5,499,000	23
5,500,000-70,000,000	11
106,000,000-200,000,000	1
no answer	8

Income in million zloty
(1 new zloty = 10,000 old zloty)



SURVEY RESULTS CONTINUED

9. (%) Income from foreign sources

% foreign income	% companies
0%	70
<10%	15
10-25%	6
26-50%	1
>50%	7

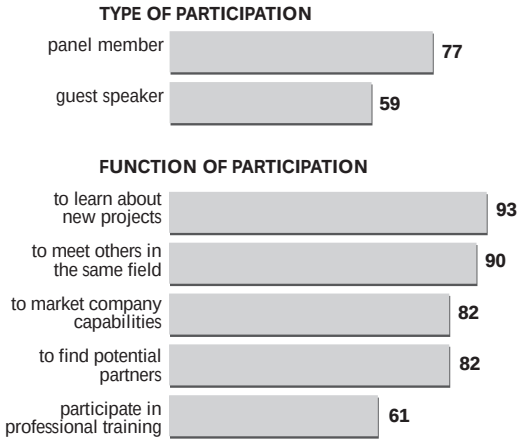
10. Top 10 business or environmental publications (%)

Gaz, Woda, Technika Sanitarna	43
Ochrona Srodowiska	23
Aura	20
Ekopartner	18
Ochrona Powietrza	13
Gospodarka Wodna	11
Środowisko	9
Instalator	8
Rzeczpospolita	6
Biuletyn komisji d/s Ocen oddzialywania	6

11. Top 5 environmental associations (%)

Polskie Zrzeszenie Inzynierów I Techników Budowlanych • *Polish Sanitary Engineers and Technicians Association*	21
Not-Naczelna Organizacja Techniczna • *Chief Technical Organization*	11
Simp-Stowarzyszenie Inzynierów Mechaników Polskich • *Association of Polish Mechanical Engineers*	9
Izba Gospodarcza 6 • *Chamber of Commerce*	6
Sep-Stowarzyszenie Elektryków Polskich • *Association of Polish electrical engineers*	5
Stowarzyszenie InZynierów I Techników Wodno-Melioracyjnych • *Association of Land Melioration Engineers and Technicians*	5

12. Conference participation (in percent)



HOW MANY SCIENTIFIC CONFERENCES DID YOU PARTICIPATE IN LAST YEAR?

	%
1-2	23
3-5	35
5+	33
none	10

13. How do you find out about new environmental business opportunities?

personal contacts	98
trade shows and fairs	91
referrals from associates	85
daily press	84
environmental publications	83
conference attendance	81
business publications	77
regular post	65
local government offices	59
professional associations	53
fax	42
universities or academy of science	42
Environmental ministry	31
Chamber of Commerce	24
other national level ministries	19
Industry and Trade ministry	17
other	13
e-mail	7

SURVEY RESULTS CONTINUED

14. Preference for environmental information (in percentage)

	not at all important	rather not important	rather important	very important
conference or trade fair announcements	3	12	57	27
environmental problems in the region	1	12	42	43
how to control costs	3	22	43	31
how to find foreign partners	6	34	38	19
how to manage projects better	3	21	54	20
information about environmental regulation	1	6	33	60
information about investors	1	4	40	53
information about sources of project financing	3	13	34	49
new envronmental technologies	1	3	36	61
tenders for new projects	1	9	27	63
upcoming project news	1	10	44	44
where to find Polish partners for large projects	5	21	42	30
other	86	0	1	13

15. Preference for information delivery options (in percentage)

	not at all important	rather not important	rather important	very important
regular bulletin with new project opportunities	0	11	52	37
a telephone dial-up information service	3	40	49	7
a regional directory of environmental services and products in print	3	31	50	15
a computer database of information resources accessible by modem	8	25	39	24
broadcast fax service to inform you about project opportunities in your field of expertise	4	36	45	10
conferences designed to introduce you to potential western partners and investors	2	12	45	40
workshops where you could meet other companies from your field to share and solve problems	2	18	48	31
other	88	1	1	11

16. How interested are you in professional training courses in the following topics?

	not at all interested	rather not interested	rather interested	very interested
financing environmental investment	4	11	35	51
environmental regulations	1	9	40	50
project management	7	18	43	30
environmental risk assessment	5	27	42	27
environmental management	9	37	41	24
environmetnal impact assessment	4	25	47	23
environmental auditing	5	33	41	19
environmental economic analysis	5	37	41	18
environmental systems and sustainability	6	21	51	18
other	90	0	1	9

SURVEY RESULTS CONTINUED

17. Evaluation of Experience with Western Companies

	strongly disagree	disagree	agree	strongly agree	no idea
Western firm understood local business practices	11	20	39	27	4
Western firm understood our capabilities	12	16	41	29	1
Western firm had good management skills	3	9	48	23	17
language differences made working together difficult	35	35	17	13	0

18. What can be done so that cooperation with foreign firms will turn out better?

	# of responses
stable customs and tax regulations	5
improvement, amendment, simplification of legal regulations, better knowledge of the law	3
reducing, abolishing tariffs	4
improvement of customs clearances	2
inexpensive, low-interest loans, greater availability	4
improving the efficiency of the banking system, guarantees, possibility of a better settlement of financial obligations, better financial law	4
change of economic policy, a government policy favoring foreign firms, changes of the system, stability	7
preparing informational materials, catalogues listing the possibilities of Polish firms, specific features of the Polish market, capacities of the economy, legal regulation preparing foreign firms to operate in Poland	7
enhancement of credibility, rank, reputation of Polish firms as well as highlighting the accomplishments, development of firms and people working in Poland (greater advertising of Polish firms), reducing differences between Polish and foreign firms (also differences in wage schemes, costs, prices)	7
better information about foreign partners (the business and capabilities, needs of these firms), rules governing the operations of foreign firms and the foreign market	5
better exchange of information about ourselves, development of contacts, exchangers (generally)	10
improving the possibility of cooperation with Polish firms, integration of Polish firms, creation of task groups; decentralization, transformation of state enterprises into commercial companies, etc	3
improvement of telecommunications	1
increasing knowledge of foreign languages	3
nothing, there is no need to improve cooperation	3
other answers	5
don't know, difficult to say	1
don't cooperate with foreign firms	50

KEY FACTS

AREA **49,000** SQ KM
POPULATION **5.4** MILLION
POPULATION DENSITY **108** PERSONS/SQ KM
OFFICIAL LANGUAGE **SLOVAK**
TYPE OF GOVERNMENT **PARLIAMENTARY DEMOCRACY**

SLOVAK REPUBLIC

Current Situation

POLITICAL SITUATION

Following the so-called "velvet divorce" which characterized the division of the former Czechoslovakia, the Slovak Republic became an independent country in January 1993. The parliamentary elections of September and October 1994 brought an end to the reformist coalition of five parties, headed by Jozef Moravcik. In its place, the Movement for a Democratic Slovakia (MDS) came to power, headed by three-time prime minister, Vladimir Meciar. With its junior partners, the Slovak National Party (SNP) and the Association of Slovak Workers (ASW), the MDS holds 83 of the 150 seats in Parliament.

ECONOMIC SITUATION[7]

Despite political backsliding by the Meciar government, the Slovak economy continues to grow at an anticipated rate of 3.6 percent in 1995 and 3.4 percent in 1996. Average annual inflation is expected to decline to 11 percent in 1995 and 10 percent in 1996. Unemployment was at 13 percent for the first half of 1995, and is expected to fall in 1996. Privatization has stalled, with Meciar's government declaring a moratorium on all direct privatization initiated by the previous government.

ENVIRONMENTAL EXPENDITURES

Total environmental expenditures in the Slovak Republic, the lowest of all four countries, was approximately USD 173 million in 1993. The Slovak government supports environmental investments and projects through the State Environmental Fund. At present, this fund only supports small and medium-scale investments that include waste water treatment plants and potable water infrastructure projects.

The State Environmental Fund receives money from state budget donations (36.8 percent), waste water charges (33.3 percent), air emission charges (25.4 percent) and solid waste payments (2.5 percent). The Fund had a total of USD 35 million for 1994; only one in twenty applicants received funding. The new Act on the State Environmental Fund is now prepared for submission to the Cabinet in the second half of 1995. According to this act, the Fund would be restructured into a revolving fund, creating larger financial resources.

The main impediment to increasing environmental investment is limited government guarantees. Environmental investments are generally less profitable and less attractive for foreign investors, and are considered long term. That is why most foreign assistance loans require governmental guarantees, often 1.5 to 2 times the size of the loan. Because Slovakia has a tight state budget, a young banking sector, and has not been able to recover all past environmental damages, the government simply cannot afford to guarantee all necessary projects.

ENVIRONMENTAL PRIORITIES[8]

Similar to other Central and Eastern European countries, the Slovak Republic is undergoing an economic transition that brings with it a number of difficult tasks, such as reviving the economy, reducing unemployment and creating new systems for health care, education and social security. However, the government's Program Declaration lists environmental protection as a priority.

The state of the environment is reflected in the health and quality of life of the nation.where life expectancy is five to seven years less than in developed countries.

The Slovak Republic's environmental priorities are based on a 1993 document entitled "The Strategy, Principles and Priorities of the State Governmental Environmental Policy," which establishes the following five priorities:

- global environmental security and protection of the atmosphere against pollutants
- an adequate supply of drinking water and reduction of water pollution to acceptable levels
- soil conservation and the purity of foodstuffs and other products
- proper disposal or utilization of waste and minimization of its production
- preservation of biodiversity, conservation and rational use of natural resources, and optimizing land use

The government recently identified the need to conduct environmental audits in the privatization procedure. Unfortunately, such audits have not yet been used to evaluate specific projects. Like other countries, the Slovak Republic is struggling with privatization issues, such as how to assign environmental liability from formerly state-owned enterprises and

TABLE 26
ENVIRONMENTAL EXPENDITURES FOR 1993-1994 (IN MILLION USD)

Source of Funds	Amount 1993	1994
Government Spending		
■ water-supply systems	17.1	9.4
■ waste water treatment and sewage	51.7	14.1
■ other water management	0.2	20.8
■ atmospheric protection	1.2	21.2
■ waste management	3.0	8.6
■ nature protection	nd	78.9
■ other actions	nd	4.2
subtotal	83.5	78.9
Other	89.5	nd
TOTAL	173	nd
as % GDP	1.7	nd

Source: REC Report, *Use of Economic Instruments in Environment Policy in Central and Easter Europe*, December 1994. Includes funds from the State Budget and the National Environmental Fund.

7 Source: Economist Intelligence Unit Country Reports, Eastern Europe, 1993 - May 1995, Silver Platter International, N.V.

8 Source: REC Report, *Status of Environmental Action Programs in Central and Eastern Europe, May 1995.*

TABLE 27
SOURCE OF REVENUES FOR SLOVAK ENVIRONMENTAL COMPANIES (% COMBINED ANNUAL TURNOVER)

	ACTIVITIES						
	General Consulting	Research Education	Engineering Design	Env. Products	Testing/ Monitor	Project Management	Total
WATER	**3.1**	**1.0**	**9.6**	**13.4**	**4.4**	**2.2**	**33.7**
Municipal Water	0.6	0.2	3.0	5.4	0.6	0.7	10.5
Surface Water	0.9	0.4	2.4	3.1	0.8	0.5	8.1
Industrial Water	0.7	0.2	2.3	2.4	1.0	0.7	7.3
Ground Water	0.9	0.2	1.9	2.5	2.0	0.3	7.8
SOLID WASTE	**3.3**	**0.8**	**5.7**	**13.7**	**3.8**	**2.2**	**29.4**
Industrial Solid Waste	1.4	0.1	2.0	6.1	1.6	1.0	12.3
Municipal Solid Waste	1.0	0.3	2.8	6.2	0.8	1.0	12.1
Soil	0.9	0.4	0.9	1.4	1.4	0.2	5.0
AIR	**1.2**	**0.4**	**3.2**	**6.3**	**1.0**	**0.8**	**12.9**
Air Protection	0.9	0.3	2.6	3.8	0.4	0.7	8.7
Gaseous Emissions	0.3	0.1	0.6	2.5	0.6	0.1	4.2
NATURE PROTECTION	**1.2**	**0.2**	**1.8**	**2.2**	**0.9**	**0.6**	**7.0**
Nature Conservation	0.5	0.1	0.8	0.8	0.6	0.1	3.0
Landscape	0.7	0.1	1.0	1.4	0.3	0.5	4.0
OTHER	**2.5**	**1.0**	**2.7**	**4.5**	**0.4**	**1.7**	**12.8**
Noise,Vibration Control	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Other Environmental	2.5	1.0	2.6	4.5	0.4	1.7	12.7
Total[1]	**11.3**	**3.2**	**23.0**	**40.1**	**10.5**	**7.5**	**95.6**

Note: Since companies provided estimates for their percentage of revenues for each activity, the total percentages may not sum to 100 percent.

how to factor remediation cost into the purchase price.

The state of the environment in Slovakia has improved over the last five years as a result of declining industrial production. Slovakia has reduced the emission of sulphur dioxide by 58 percent compared to the year 1980. However, it still produces approximately 325,000 tons of sulfur dioxide per year, mostly generated by heating and power plants. Energy production, including heating, accounts for 64 percent of the total emission of pollutants into the atmosphere, and vehicular traffic contributes 19.5 percent. Pollution of surface and ground water is an extensive problem in 16 districts.

The waste management system in the Slovak Republic is one of its most under-developed areas. Prior to 1991, only 5 percent of recorded landfills were licensed and, in most cases, different categories of waste were disposed together (hazardous, special, etc.). According to Waste Act 238/1991, waste generators are responsible for managing their own waste and municipalities are responsible for municipal waste. This act and subsequent legislation also define duties for both generators and state administrative agencies responsible for waste management. The Waste Act allows a five-year period, until 31 July 1996, to meet waste management requirements. Facing economic hardship, the government postponed the fixed deadline to the year 2000, passed as Act 255/1993. The Ministry of Environment prepared, and the government approved, the Waste Management Program of the Slovak Republic, which defines targets and measures for short-, medium- and long-term periods to the year 2005.

Regulatory and Enforcement Environment

Regulatory enforcement is still relatively weak in the Slovak Republic. The government collects less than one-third of all environmental fines and charges it imposes on polluters.

Since the April 1993 Ministerial Conference in Lucerne several important steps have been taken to improve the situation. First, the Slovak Republic clearly declared its intention to solve complex environmental problems and established a framework for carrying this out. The document, entitled Strategy, Principles and Priorities of the Governmental Environmental Policy, establishes short-, medium- and long-term objectives in the most important sectors of environmental protection. However, this document is just a policy statement that does not address implementation.

A second important step is the process of harmonizing Slovak legislation with that of the EU. Several significant acts on air, waste and nature protection, and the Act on Environmental Impact Assessment (Nr. 127/1994), have been adopted. New acts on water protection and ozone layer protection are under preparation.

Key Actors In Environmental Protection At The National Level

The level of participation of nongovernmental groups (NGOs and businesses) is not as developed when compared to the other four countries. The MoE is the main government body responsible for environmental protection. However, jurisdictions often overlap. The Ministry of Soil Management deals with soil protection and forest management, while the Ministry of Health's water and sanitation works deals with water quality.

Trade associations and NGOs play a marginal yet growing role in protecting the Slovak environment. There are many NGO's active in the environmental arena. Similarly, the number of trade associations, such as the Association of Industrial Ecology (ASPEK), continue to grow and participate in the environmental debate.

Status of the Slovak Environmental Business Sector

The Slovak environmental business sector, the smallest of the Visegrad countries, includes an estimated 300 companies providing environmental goods and services. The 150 companies responding to the REC survey reported combined annual revenues exceeding USD 22 million.

The companies operating in this sector are very young, and very small; more than 65 percent were formed in the last five years and 67 percent have less than 25 employees. Privatization is going well according to the survey, 87 percent of the companies are not state-owned.

Slovak companies offer a wide range of services and products, with no particular environmental service generating more than 25 percent of total revenues. Almost half of combined company revenues came from providing technical services (engineering, consulting and research), especially from municipal water and solid waste projects.

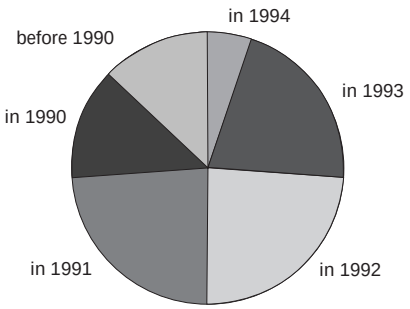
Revenues from services were followed by revenues from the sale or manufacture of environmental products, a sector that captured 40 percent of the total. Products primarily related to municipal solid waste generated the most revenues. Laboratory activities (analysis and examination) captured approximately 14 percent of company revenues.

When looking at media-specific areas, water-related activities generated approximately 34 percent of company revenues. The next two highest revenue generating media areas were solid waste-related activities (29 percent) and air-related activities (13 percent).

The following section presents the responses and selected correlations from the REC's survey of Slovak environmental businesses.

SURVEY RESULTS: **SLOVAK REPUBLIC**

1. When was your company founded?



2. Share structure

Private	71%
State-owned	13%
Mixed	14%
Other	2%

3. Do you operate as a joint venture?

No	86%
Yes	14%

4. Nationality of foreign shareholders in joint ventures (% of responses)

Czech Republic	5.5
France	2.7
Germany	2.7
Austria	1.4
United States	0.7
Great Britain	0.7

5. Full-time employees: % surveyed companies

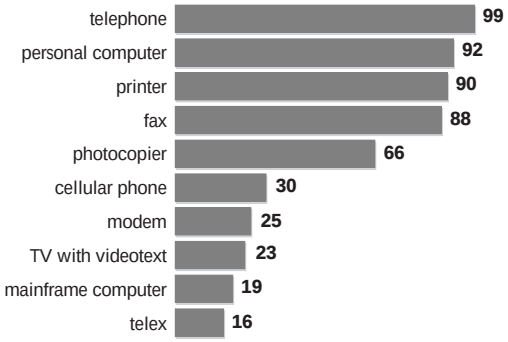
# full-time employees	%
1-5	24
6-10	21
11-25	22
26-50	5
51-100	8
101-200	8
200+	12

6. Part-time employees: % surveyed companies

# part-time employees	%
0	34
1-5	30
6-10	14
11-25	16
26-50	4
51-100	1
101-200	2
200+	12

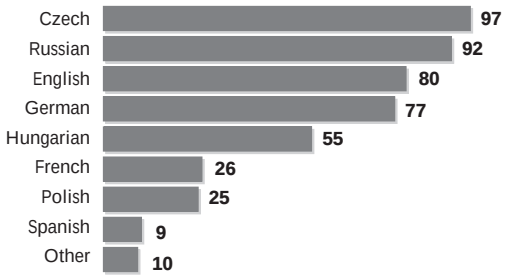
7. Office equipment

(percentage of companies possessing the following types of equipment)

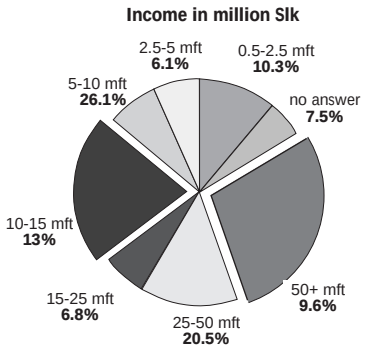


8. Foreign language proficiency

(i.e. what percentage of companies have at least one employee who speaks the following languages)



9. Annual turnover (in percentage)



10. % Income from foreign sources

% foreign income	% companies
0%	52
<10%	22
10-25%	9
26-50%	4
>50%	9

SURVEY RESULTS CONTINUED

11. Top 8 environmental associations (%)

none	55
Slovenská obchodná a priemyselná komora • *Slovak Chamber of Commerce and Industry*	18
ASPEK • *Association of Industrial Ecology in Slovakia*	14
Sväz stavebn´ych podnikatelov Slovenska • *Union of Engineering Entrepreneurs of Slovakia*	3
Slovenská asociácia hydrogeológov • *Slovak Association of Hydro Geologists*	2.7
Združenie pre hospodárenie s druhotnými surovinami SR • *Association of Secondary Raw Material Economics in the Slovak Republic*	2.1
Združenie organizácií verejno - prospešných záujmov • *Association of Organizations of Public Benefit*	2.1
Zväz priemyslu SR • *Union of Industry of the Slovak Republic*	2.1

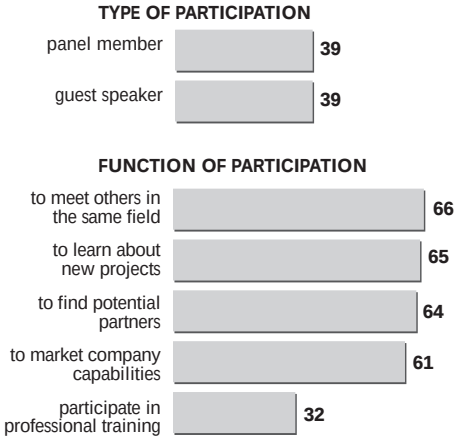
12. Top 8 environmental publications (%)

Opady	14
Zivotné prostredie	9
Planeta	5.5
Vestník M˘ZP SR	5.5
Ekológia	3.4
Vodní hosp. a ochrana ovzdůsí	2.7
Ekológia a život	2.7
Ekožurnál	2.1

13. Top 8 business publications (%)

Hospodárske noviny	50
Trend	38
Ekonomicky a prány poradca	36
Profit	19
Obchodný vestník	9
Ekonóm	6.8
Zbierka zákonov	5.5
Spravodaj SOPJ	3.4

14. Conference participation (in percent)



HOW MANY SCIENTIFIC CONFERENCES DID YOU PARTICIPATE IN LAST YEAR?

	%
1-2	30
3-5	25
5+	15
none	30

15. How do you find out about new environmental business opportunities?

personal contacts	94
referrals from associates	88
daily press	76
trade shows and fairs	73
regular post	70
business publications	69
conference attendance	69
fax	53
local government offices	53
environmental publications	51
Environmental ministry	51
professional associations	49
other national level ministries	47
Industry and Trade ministry	37
Chamber of Commerce	34
universities or academy of science	31
other	17
e-mail	10

SURVEY RESULTS CONTINUED

16. Preference for environmental information (% responses)

	not at all important	rather not important	rather important	very important
conference or trade fair announcements	6	25	41	28
environmental problems in the region	6	15	33	46
how to control costs	4	23	37	31
how to find foreign partners	9	27	34	29
how to manage projects better	8	16	43	33
information about environmental regulation	1	6	15	78
information about investors	6	10	24	61
information about sources of project financing	4	6	32	58
new envronmental technologies	1	4	32	62
tenders for new projects	6	13	20	60
upcoming project news	3	12	33	51
where to find Slovak partners for large projects	7	14	26	52
other	4	6	6	9

17. Preference for information delivery options (in percentage)

	not at all important	rather not important	rather important	very important
regular bulletin with new project opportunities	3	21	30	41
a telephone dial-up information service	17	33	25	16
a regional directory of environmental services and products in print	6	32	32	26
a computer database of information resources accessible by modem	9	18	22	35
broadcast fax service to inform you about project opportunities in your field of expertise	10	21	30	35
conferences designed to introduce you to potential western partners and investors	5	21	38	31
workshops where you could meet other companies from your field to share and solve problems	4	19	30	44
other	0	1	3	10

18. How interested are you in professional training courses in the following topics?

	not at all interested	rather not interested	interested	rather interested	very interested
environmental economic analysis	13	8	26	24	29
environmental auditing	14	13	31	21	22
environmetnal impact assessment	7	10	25	29	30
environmental management	6	10	25	32	27
environmental regulation	3	3	6	25	64
environmental risk assessment	6	5	19	34	38
environmental systems and sustainability	7	10	31	28	25
financing environmental investment	6	6	15	25	49
other	12	0	3	2	6

SURVEY RESULTS CONTINUED

19. Evaluation of experience with Western Companies

	strongly agree	agree	disagree	strongly disagree	no idea
Western firm understood local business practices	8	23	18	10	41
Western firm understood our capabilities	11	32	12	3	41
Western firm had good management skills	25	22	10	1	42
language differences made working together difficult	2	11	17	29	41

20. What can be done so that cooperation with foreign firms will turn out better?

	# of responses
communication, mutual distribution of information among the partners	12
equal partnership of Western and Slovak companies	11
increase of foreign investments in Slovakia	10
simplification of export/import of goods and services	9
political and economic stability	9
improve legislation concerning the field of private business	8
breaking language barriers	5
adjusting of foreign companies to the local situation in Slovakia	5
support from the environmental fund	4
It is impossible to work with Western companies	1
other	3
Do not know	43

APPENDIX A

English Version of Questionnaire

Development Assistance
Appendix A Environmental Business Information Survey of Regional Environmental Companies

SECTION 1:
Please tell us about your company.

1. On average, what percentage of your annual revenues is derived from the following activities? Please complete the following tables using approximate percentages.

Prevention	General Consulting	Research/ Education	Engineering Design	Environmental Products	Testing/ Monitoring	Project Management
Air Protection						
Ground Water						
Surface Water						
Soil						
Landscape						
Nature Conservation						
Other						

Remediation and Control	General Consulting	Research/ Education	Engineering Design	Environmental Products	Testing/ Monitoring	Project Management
Gaseous emissions						
Industrial waster water						
Municipal water						
Industrial solid waste						
Municipal solid waste						
Industrial noise, safety						
other						

2. What is your total annual turnover?
RANGE LISTED IN LOCAL CURRENCY

3. When was your company established?

4. Is it privately controlled or state controlled?

5. Is it a foreign joint venture?

6. If it is a joint venture, what country is your venture partner from?

7. How many full time employees are on the staff?

8. How many part-time employees (e.g. contractors for special projects) do you have?

9. What foreign languages does at least one staff member read, speak and write fluently? *(circle all that apply)*

Czech Russian English French German Polish
Slovak Spanish Hungarian Other_____ Other_____

10. What type of office equipment does your company have? *(circle all that apply)*

cellular phone telex fax TV with videotext
mainframe computer PC printers photocopiers
modems Internet connection GIS computers

SECTION TWO:
What are your information sources and needs?

11. How do you find out about environmental business opportunities?
(mark all that apply)

Source

❑ personal contacts ❑ referrals from associates ❑ daily press
❑ trade shows and fairs ❑ regular post ❑ business publications
❑ conference attendance ❑ broadcast fax service ❑ local government offices
❑ environmental publications ❑ Environmental ministry ❑ professional associations
❑ other national level ministries ❑ Industry and Trade ministry ❑ Chamber of Commerce
❑ universities or academy of science ❑ other ❑ e-mail

12. Which environmental or business publications do you read regularly?

13. What professional associations are you a member of?

14. On average, how many conferences do members of your company attend annually? *(please circle one)*

none 1-2 3-5 more than 5

15. Please circle the reasons why someone from your company has attended a conference in the last year.

organized the conference panel member guest speaker
present a paper receive training market company capabilities
to find potential partners to meet others in the same field to learn about new project opportunities

16. How important do you think the following types of information are for your company? *(please circle one)*

1 = very important • 2 = important • 3 = no opinion • 4 = somewhat important • 5 = not important at all

Type of Information	1	2	3	4	5
Announcements conferences or trade fairs in CEE	1	2	3	4	5
Environmental problems in the region	1	2	3	4	5
Directory of CEE environmental companies	1	2	3	4	5
Environmental regulations	1	2	3	4	5
Source of project financing	1	2	3	4	5
Information on potential project financing	1	2	3	4	5
How to manage projects better	1	2	3	4	5
How to control costs	1	2	3	4	5
New environmental technologies	1	2	3	4	5
Tenders for new projects	1	2	3	4	5
Upcoming project news	1	2	3	4	5
Information on where to find foreign partners	1	2	3	4	5
Other_____	1	2	3	4	5

17. Please rate the value to your company of the following services. *(please circle one)*

1 = very important • 2 = important • 3 = no opinion • 4 = somewhat important • 5 = not important at all

Type of Service	1	2	3	4	5
A regular newsletter that includes regional environmental business news such as the topics contained in question 16	1	2	3	4	5
A question & answer service available from telephone call or fax covering the topics contained in question 16	1	2	3	4	5
A regional directory of environmental companies and product providers in print	1	2	3	4	5
Local business coordinator to arrange meetings, contacts and workshops	1	2	3	4	5
A computer database of information resources (containing data listed in question 16) available by modem	1	2	3	4	5
A broadcast fax service to inform you about project opportunities in your company's field of interest	1	2	3	4	5
Partnering workshops designed to introduce you to Western partners, government environmental officials and NGOs	1	2	3	4	5
Conferences arranged to address specific environmental problems attended by other environmental businesses, government environmental officials and NGOs	1	2	3	4	5
Other_____	1	2	3	4	5

18. Please rate your interest in receiving advanced professional training on the following environmental management topics *(please circle one)*

1 = not at all interested • 2 = rather not interested • 3 = interested • 4 = rather interested • 5 = very interested

Type of Information	**1**	**2**	**3**	**4**	**5**
Environmental economic analysis	1	2	3	4	5
Environmental economic analysis	1	2	3	4	5
Environmental auditing	1	2	3	4	5
Environmetnal impact assessment	1	2	3	4	5
Environmental management	1	2	3	4	5
Environmental regulation	1	2	3	4	5
Environmental risk assessment	1	2	3	4	5
Environmental systems and sustainability	1	2	3	4	5
Financing environmental investment	1	2	3	4	5
Other	1	2	3	4	5

19. In the past two years, what percentage of your business income was from foreign sources, not including your partners' contribution if any? *(please circle one)*

none less than 10% 10%-25% 26%-50% over 50%

20. If you have worked with a Western company as a project partner, how would you evaluate the experience? *(please circle one)*

1 = strongly agree • 2 = agree • 3 = disagree • 4 = strongly disagree • 5 = no idea

	1	**2**	**3**	**4**	**5**
Western firm understood local business practices	1	2	3	4	5
Western firm understood our capabilities	1	2	3	4	5
Western firm had good project management skills	1	2	3	4	5
language differences made working together difficult	1	2	3	4	5

The Regional Environmental Center for Central and Eastern Europe (REC) is an independent, international organization established in 1990 by Hungary, the United States and the Commission of the European Communities. Twelve countries have since joined these founding sponsors.

All of the REC's programs are unified in their resolve to promote regional cooperation among diverse interest groups in Central and Eastern Europe, to build the capacity of stakeholders to solve environmental problems, and to promote the development of a civil society.

Beneficiary countries include Albania, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, FYR Macedonia, Poland, Romania, Slovak Republic and Slovenia. In these countries, the REC supports environmental nongovernmental organizations (NGOs), local authorities, national governments, the media, businesses and academic institutions.

The Emerging Environmental Market