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# **The Role of the Engineering Community in Infrastructure-Related Trade and Investment in Eastern Europe**

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**March 5-6, 1992 • The Madison Hotel • Washington, D.C.**

*sponsored by*

**U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT**

*and*

**HARZA ENGINEERING COMPANY**

# **THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE**

## **Table of Contents**

<b>I.</b>	<b>Agenda</b>
<b>II.</b>	<b>List of Attendees</b>
<b>III.</b>	<b>Key Acronyms</b>
<b>IV.</b>	<b>Welcome and Introduction</b>
<b>V.</b>	<b>Overview of A.I.D. Project Objectives</b>
<b>VI.</b>	<b>A.I.D. Capital Projects Program</b>
<b>VII.</b>	<b>Current Situation Analysis in Hungary, Czechoslovakia, and Poland</b>
<b>VIII.</b>	<b>Situation Analysis: Country Oversight</b>
<b>IX.</b>	<b>Current Engineering Assessment: Summary of EE Meetings</b>
<b>X.</b>	<b>Privatization of Infrastructure in Eastern Europe: Defining the Opportunity</b>
<b>XI.</b>	<b>Current Status of Privatization</b>
<b>XII.</b>	<b>Intellectual Proprietary Rights</b>
<b>XIII.</b>	<b>Sources of Project Financing</b>
<b>XIV.</b>	<b>The Role of the Engineering in Eastern Europe</b>
<b>XV.</b>	<b>International Registration and Education</b>
<b>XVI.</b>	<b>Education, Training, and Technology Exchange</b>
<b>XVII.</b>	<b>Standards and International Trade</b>
<b>XVIII.</b>	<b>Quality and Productivity: A Manufacturer's Point of View</b>
<b>XIX.</b>	<b>Environmental Projects in Czechoslovakia and Poland</b>
<b>XX.</b>	<b>Telecommunications Engineering in Central and Eastern Europe</b>
<b>XXI.</b>	<b>Budapest Office and Ownership Transfer</b>
<b>XXII.</b>	<b>Breakout Sessions</b>

**THE ROLE OF THE ENGINEERING COMMUNITY IN  
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**Madison Hotel, Washington, D.C.**

**March 5-6, 1992**

**Agenda**

- MARCH 5, 1992**            **EXECUTIVE CHAMBERS 1,2,3**
- 7:30-8:00**                **REGISTRATION**
- 8:00-8:15**                **WELCOME AND INTRODUCTION**  
*Mr. Robert H. Staplin, Senior Vice President  
Harza Engineering Company*
- 8:15-8:25**                **OVERVIEW OF A.I.D. PROJECT OBJECTIVES**  
*Mr. Fred Bieganski, Infrastructure Development Officer  
U.S. Agency for International Development, Bureau for Europe*
- 8:25-8:45**                **A.I.D. CAPITAL PROJECTS PROGRAM**  
*Mr. Fred Zobrist, Director, Office of Capital Projects and Engineering  
U.S. Agency for International Development*
- 8:45-9:15**                **CURRENT SITUATION ANALYSIS IN HUNGARY, CZECHOSLOVAKIA,  
AND POLAND**  
*Dr. John P. Hardt, Associate Director, Senior Specialist, Soviet Economics  
Congressional Research Service*
- 9:15-10:00**              **CURRENT ENGINEERING ASSESSMENT:  
SUMMARY OF EASTERN EUROPEAN MEETINGS  
CONDUCTED JANUARY 4-25, 1992**  
*Mr. Robert H. Staplin, Senior Vice President  
Harza Engineering Company*
- 10:00-10:15**             **BREAK**
- 10:15-11:45**             **PANEL DISCUSSION:**
- 'THE ROAD TO PRIVATIZATION - INSTITUTIONAL ISSUES'**
- Privatization of Infrastructure in Eastern Europe:  
Defining the Opportunity**  
*Mr. Roger Feldman, Partner and Head, Project Finance Group  
McDermott, Will & Emery*
- Current Status of Privatization:**
- **Legislation**
  - **Valuation**
  - **Taxes**
  - **Currency and Repatriation**
- Mr. Charles E. Hussey II, Partner and Head of International Practice  
McDermott, Will & Emery*
- Intellectual Proprietary Rights**  
*Mr. Ian D. Hughes, Partner  
KPGM Peat Marwick*

**THE ROLE OF THE ENGINEERING COMMUNITY IN  
INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE**

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March 5-6, 1992**

**Agenda (Cont.)**

**Sources of Project Financing**

*Mr. Peter Ridder, Consultant  
Consultant to Coopers & Lybrand*

**12:00-1:30**

**LUNCHEON - ARLINGTON ROOM**

*Featured Speaker: Dr. Carol C. Adelman, Assistant Administrator  
U.S. Agency for International Development, Bureau for Europe*

**1:30-3:00**

**PANEL DISCUSSION:**

**'THE ROAD TO PRIVATIZATION - ENGINEERING ISSUES'**

**International Registration and Education**

*Mr. Harry J. Parker, Executive Vice President  
Cullinan Engineering Company*

**Education, Training and Technology Exchange**

*Dr. Woodrow Leake, Deputy Executive Director  
American Society for Engineering Education*

**Standards and International Trade**

*Dr. Stanley I. Warshaw, Director Office of Standard Services  
National Institute of Standards & Technology*

**Quality and Productivity:**

**A Manufacturer's Point Of View**

*Mr. Mark Miller, Director Central and East Europe  
McDermott Incorporated Babcock & Wilcox*

**3:00-3:15**

**BREAK**

**3:15-4:45**

**CASE STUDIES**

**Environmental Projects in Czechoslovakia and Poland**

*Mr. David Burack, Director of International Affairs  
Mr. Timothy Van Epp, Technical Manager, Industrial/Hazardous Waste  
CH2M Hill International Ltd.*

**Telecommunications Engineering and Planning Project in Poland**

*Mr. Mark Burke, Marketing Director, Eastern Europe  
Teleconsult*

**Budapest Office Acquisition and Ownership Transfer**

*Mr. Stephen C. Mitchell, President and Chief Operating Officer  
Lester B. Knight & Associates, Inc.*

**5:00-6:30**

**RECEPTION HOSTED BY HARZA - MT. VERNON SALON A**

**THE ROLE OF THE ENGINEERING COMMUNITY IN  
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**Madison Hotel, Washington, D.C.  
March 5-6, 1992**

**Agenda (Cont.)**

**MARCH 6, 1992**

**DRAWING ROOMS 1,2,3,4**

**8:00-11:00**

**BREAKOUT SESSIONS IDENTIFYING SPECIFIC RECOMMENDATIONS  
TO A.I.D.:**

Breakout groups will be determined by issues identified by leaders during the previous day's Panel Discussions such as:

- **Engineering**  
*Moderator: J. Harry Parker, Principal and Partner, Cullinan Engineering Co.*  
*Reporter: Woodrow Leake, Deputy Executive Director, ASEE*
- **Legal/Financial**  
*Moderator: Roger Feldman, McDermott, Will & Emery*  
*Reporter: Mr. Harry Tollerton, Director, International Affairs,  
American Association of Engineering Societies*
- **Energy**  
*Moderator: Henry H. Chen, Vice President, Harza Engineering Company*  
*Reporter: Mark W. Miller, Director Central & East Europe, McDermott  
Incorporated Babcock & Wilcox*
- **Infrastructure**  
*Moderator: Mr. Robert N. Janopaul, President-Infrastructure Group, ICF Kaiser  
Engineers, Inc.*  
*Reporter: Christopher V. Oot, Vice President, Camp Dresser & McKee  
International, Inc.*

**11:00-11:15**

**BREAK**

**11:15-11:45**

**FINAL PLENARY**

Summary of Breakout Group Recommendations

**11:45-12:00**

**CLOSING**

*Mr. Robert H. Staplin*

## **LIST OF ATTENDEES**

### **List of Speakers**

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## ACRONYMS

AFBC	Atmospheric Fluidized Bed Combustors
CHP	Combined Heat and Power
COMECON	Council for Mutual Economic Assistance (Council of the Former Communist Bloc Nations)
EBRD	European Bank for Reconstruction and Development
EC	European Community
EE	Eastern Europe
EEEC	Eastern European Engineering Community
EFTA	European Free Trade Association
EI	Energy and Infrastructure
ESOP	Employee Stock Option Programs
FTEE	First Tier Eastern Europe
GATT	General Agreement on Tariffs and Trade
GOST	Gosstandart Standard (Russian)
IGCC	Integrated Gasification Combined Cycle
KFW	German Government Finance Arm
NIS	Newly Independent States (of the former Soviet Union)
OECD	Organization for Economic Cooperation and Development
OECF	Overseas Economic Cooperation Fund
OPIC	Overseas Private Investment Corporation
PEIBD	Private Energy and Infrastructure Business Development
PFBC	Pressurized Fluidized Bed Combustors
PME	Project Management Entity
USEC	U.S. Engineering Community

# THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE

## Welcome and Introduction

By: Mr. Robert H. Staplin  
Senior Vice President  
Harza Engineering Company

It is not often that one gets to help a U.S. government agency design its future program. The whole thought is rather exciting to me. So that we keep things moving along very quickly and very focused I want to make the point that this is a participation type of program. You will be in workshops tomorrow. I want you each to take the time right now to read the introduction in your book because that is where I describe what it is we are about here this morning. The operative words are *energy* and *infrastructure*. The vehicle is the engineering community and we have narrowed on three countries: Hungary, Czechoslovakia, and Poland.

To set the stage a little bit I'll tell you about my personal involvement and, quite frankly, my difficulty initially with this project. This is my 43rd year in the engineering profession and last fall I stepped down from my line assignment at Harza with the idea of gradually decelerating into retirement at the end of this year. The last 20 years basically all my experience has been in domestic operations and primarily focused in the utility industry.

Harza has a indefinite quantity contract with A.I.D. They can come to us and ask us to take on various assignments. Henry Chen, the project director for this program, asked me if I could assist him. I pointed out that it was a very interesting project; however, I had some personal reservations because international had not been in my title for 20 years. I had focused primarily on the private sector. I was not up to speed on government procedures, protocol, etc. I asked several colleagues to review the scope and one commented, "Well Bob, how in the world do you expect to do this? This is a year's assignment for three people." I said the only way that I know how is to try to narrow the scope and jump in and do it. My other biggest problem quite frankly was to

establish a benchmark. By that I mean to find out what the government and private sector was already doing so that we, in all of our wisdom here, do not try to reinvent the wheel. Many of the people I contacted indicated that they were already involved in Eastern Europe either directly or through government programs such as TDP or A.I.D.

To try and put things into perspective, there is no way that we could communicate to you in the short time that we have what is already going on, so I have decided to take a different approach. Start with a clean slate even though you are aware of ongoing activities. When you get into the workshops, please identify all areas that you think are critical, even if work is already going on. Let's not be constrained by constantly trying to compare with what we know is already in progress.

Now I am going to walk you through the mechanics of how we have approached the project. The implementation here is through the engineering community. So the first thing we did was to distribute a questionnaire to U.S. engineering organizations, societies, and trade groups and simply ask them what they had going on with their counterparts in the three countries and what they thought should be going on. From that list and from our own personal contacts, we developed a list of contacts in the three countries. The second step involved sending a similar questionnaire to the European contacts and then following up with a three-week personal visit.

The third step is why we are here today. This is an opportunity to report to you on my findings and to hear from a number of experts working in this area. But the bottom line is you are going to help me write the report. The outcome of what you do tomorrow morning in essence will be the basis for the final report. So we will start globally; we will narrow in on my findings; you will then have panel discussions in the various areas in the breakout groups.

A point on protocol. At many technical sessions I have attended recently, almost as much time has been spent introducing the speaker as the speaker has to talk. You have the sketch on each one of your speakers. They have been chosen for their qualifications. When I introduce each one of them, I'm simply going to give you their name and their present title. So, with that in mind, to give you a broader overview of A.I.D.'s objectives, I'd like to introduce Fred Bieganski, who is the

International Development Officer for A.I.D. He is the project manager from A.I.D. for this project.

15

# **THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE**

## **INTRODUCTION**

The purpose of this workshop is to identify engineering-related energy and infrastructure programs and projects for consideration by A.I.D. in developing business and investment opportunities for the United States in Czechoslovakia, Hungary and Poland. The program may be used as a model for similar development in other Eastern and Central European countries, and in developing ties to the Unified Countries.

The current situation in these countries will be presented thru individual speakers, panel discussions and case studies to provide the attendees with background to participate in small break-out groups. These break-out groups will be charged with developing specific recommendations for the following areas: engineering, legal/financial, energy, and infrastructure.

This is a unique opportunity to participate in helping A.I.D. develop future programs and to identify opportunities for U.S. organizations and business entities.

# **Overview of A.I.D. Project Objectives**

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**Mr. Fred Bieganski**

*Infrastructure Development Officer*

*U.S. Agency for International Development, Bureau for Europe*

## **FRED BIEGANSKI**

Fred Bieganski joined the Agency for International Development in 1980. He brought with him 28 years of private sector experience ranging from engineering through project and proposal management to general management. Much of his experience had an international dimension.

Upon joining the Agency, Mr. Bieganski was assigned to the Egypt Mission where he spent six-and-a-half years managing infrastructure projects valued at over \$500 million. He returned to Washington to assume the position of the Deputy Chief Engineer for the Asia Near East Bureau, with special responsibilities for telecommunications and electric power. When the Bureau for Europe was created in response to the demise of communism, Mr. Bieganski became the Infrastructure Development Officer with responsibilities extending to the Central and Eastern European Region. His activities include management of the Role of U.S. Engineering Organizations program, of which this workshop is a part.

# THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE

## Overview of A.I.D. Project Objectives

By: Mr. Fred Bieganski  
Infrastructure Development Officer  
U.S. Agency for International Development, Bureau for Europe

I cannot tell you how pleased I am to see this workshop materialize with participation of so many prominent representatives of the American engineering community. It has taken us a lot of effort to develop the concept of the study of the role of U.S. engineering organizations in developing trade and enhancing investment in Central and Eastern Europe. It took many hours of discussion to convince people of the value of this approach. When we finally were able to place an order with our indefinite quantity contractor, Harza Engineering, and Bob Staplin volunteered to direct the study effort, I knew we were off to an auspicious start. Bob has had numerous contacts with many of you. He traveled in three selected Central European countries. He collected a lot of information and engaged in discussions with more than 200 Central European engineers in dozens of organizations. Now is the time to use his accumulated knowledge and your vast experience to formulate ideas and approaches that will define the most productive and mutually rewarding role of American engineers in this most important effort to develop an energy and infrastructure-oriented engineering relationship with Central and Eastern Europe and cement this relationship with bonds of trade and investment. We need good, practical, implementable ideas. As broad a range of ideas as possible. Ideas that we can sell to our management, to our sister agencies, to the Congress. You're going to be offered a lot of substantive inputs by many prominent speakers. You will have to be the judges of the value of the various suggestions, based on your personal and institutional experience. We hope that through the process of conceptual cross-fertilization you will develop recommendations that will make a major contribution to our developmental trade and investment objectives in Central and Eastern Europe, as well as assure a prominent role for engineers in the East-West relationship. I would just like to clarify that the Harza study, as Bob

said, is oriented toward Central and Eastern Europe with strong focus on the so-called First-Tier Countries: Czechoslovakia, Hungary, and Poland.

Since the study was scoped, events have overtaken our contract. Any ideas you may have with respect to the new independent states (NIS) will be more than welcome, and we hope that many concepts developed for the Central and Eastern European countries will be equally applicable to NIS. Our role in this workshop will be largely passive by design. Dr. Adelman, our assistant administrator for Europe, will provide, over lunch, a broad vision of possible ideas and concepts applicable to this endeavor. Mr. Zobrist, our most senior engineer, will tell you about our plans for a Capital Projects Fund. Other than that, the floor is yours. We will be grateful for all suggestions and recommendations that you may offer us.

# **A.I.D. Capital Projects Program**

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**Mr. Fred Zobrist**

*Director, Office of Capital Projects and Engineering  
U.S. Agency for International Development*

21

## FRED A. ZOBRIK, P.E.

### EXPERIENCE

- Current Director of Office of Capital Projects and Engineering, (PRS/CAP) A.I.D./Washington. Developed policy and management structure for a new and expanded participatory role for A.I.D. in the International capital projects arena. Established a joint engineering, project development and financial office to manage a central fund (\$100 million start up) plus oversee \$500 million annual bilateral program.
- 1988 - 1990 Deputy Mission Director, USAID/Harare, Zimbabwe. Managed the development of \$50 million a year in new capital related projects for Southern and Eastern Africa.
- 1986 - 1988 Associate Mission Director, USAID, Cairo, Egypt. Directed a \$3.5 billion capital projects program in Egypt.
- 1984 - 1986 Director of Office of Urban Administration and Development USAID, Cairo, Egypt. Established and directed a \$1 billion Presidential Initiative focusing on Water and Wastewater Improvements for Egypt.
- 1981 - 1983 Chief Engineer for Southern African Program, USAID, Lesotho Project Manager for \$75 million Road, Rural Water and Facilities development program.
- 1978 - 1980 Chief Engineer, Africa Bureau, AID/Washington, D.C. Chief Technical Officer for African Program with annual expenditures of about \$400 million.
- 1977 - Water Resources Advisor, AID/Washington, D.C. Served as The Agencies Senior Water Resources/River Basin Planner on World Wide Programs.
- 1971 - 1976 President, Neighbor Island Consultants, Hawaii. Owner/Manager of a Consulting firm with three offices engaged in engineering, planning, management and environmental services.
- 1970 - 1971 Vice President, Koebig and Koebig, Hawaii. Established and directed regional office for an international A & E and Planning firm.
- 1966 - 1970 Director of Civil Works, Corps of Engineers, Honolulu District. Directed the Corps' Public Works activities for the Pacific including Hawaii, Guam, Samoa and the Trust territories.
- 1963 - 1966 Chief Economist, Corps of Engineers, Honolulu District.
- 1959 - 1962 Chief Engineer, Corps of Engineers, Seattle District.

# THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE

## A.I.D. Capital Projects Program

By: Mr. Fred Zobrist  
Director, Office of Capital Projects and Engineering  
U.S. Agency for International Development

Fred Bieganski told me I couldn't tell any Polish jokes this morning. I've never heard of an engineering joke. I've heard lawyer jokes, economist jokes but something is missing there. We're letting the world down somehow I think. Anyway, it's great to see so many engineers. As you probably well know that's a very rare commodity in A.I.D. these days. We do have a few engineers left, but not too many. We have a few under other titles: project development officers, mission directors in some cases, and they're easy to tell apart from anybody else: they're the ones who can't spell.

What I want to tell you about this morning is a little bit about what we're doing in A.I.D. I've got four short subjects I'm going to cover. Basically, (1) what we describe as a capital project; (2) a little bit on the history of A.I.D. and capital projects in A.I.D. (it's going to be very short); (3) a little bit on what we're doing with the Capital Projects Office; and (4) then something on a Capital Projects Fund.

The description of a capital project in A.I.D. is probably best described by thinking of a capital project in terms of its components. A capital project is made up of phases: a feasibility (and you could even subdivide that if you want), engineering, procurement, construction, and at the tail end there are, start up, and operations and maintenance. We also have overarching considerations that deal with training and institutional support and development. We're interested in all those phases. TDP, for example, is primarily interested in the feasibility stage, somewhere in the first 1 to 2 percent of the cost of a capital project. EXIM Bank is interested someplace in the middle, such

as the procurement of commodities. We try to look at the total picture and put all phases together. We may buy a piece or we may buy the total package. Historically, we've bought the total package. I think as we move into the future, we'll be looking more toward buying the right piece to make the total package work.

We view a capital project as something of a developmental tool; it's not a sector unto itself in the development business. But it's a tool that we use to do other things. For example, we might use it as an alternative to the popular cash transfers that the State Department likes to use these days. We can use it as a tool to help bring about policy change or policy dialogue. We can use it for job creation and employment. We can use it to advance democracy initiatives, another popular word that's tossed around a lot; and most importantly, we can use it as a tool to benefit U.S. trade and business, an interest of Congress.

A little bit on the history. As many of you know, A.I.D. has a very long and rich history in capital projects. We started out, basically, as a capital projects agency and some of you may have been around long enough to remember our great successes in Taiwan and Korea, which were basically capital assistance programs. In 1974 we started on a New Directions Program. New Directions legislation moved us into the basic human needs concept of today. Ten years after that legislation the agency had a \$1 billion capital projects budget representing about 20 percent of our program. That was in 1984. Today that's down to about one-half billion (\$500 million). That \$500 million represents about 7 percent of our budget. Granted, in 1984, 10 years after we got into this program, the capital projects program was heavily slanted to basic human needs such as rural roads, irrigation systems, and normal water systems. Rural development programs were the mode of the day. Today our engineers and our capital projects officers are still managing about \$5 billion worth of work around the world. Of course, much of that's in Egypt and some of it in Pakistan, with a big piece in the Philippines.

The Capital Projects Office is the next item that I wanted to cover. This is a new venture by the agency; I should say a renewed venture, as we've been there before. Our recent reorganization, which went into effect last October, reestablished a capital project and engineering office. This office will have three divisions: one will be the Engineering Division, one will be Operations



(operations in the sense of field support), and the third division will be what we're going to call Program. The Program Division will implement and manage the Fund. I'm going to tell you a little more about the Fund later. The status of this office right now is that we're just putting it together. The Engineering Division is going to be small and trim; a lot different from the last major, central engineering office we had in the late 70s with more than 100 people. We're talking about less than 10 engineers right now, but it's a foot in the door. We'll have a chief engineer, a chief electrical or power engineer, and chief telecommunications, transportation, environmental engineers, and probably a general engineer. We will also try to keep our staffs up in the field and within our regional bureaus wherever we can. The Operations Division will focus more on the project development side. We're going to be looking for financial skills there, as well as the technical side. We will be looking at the new way of doing business around the world by putting together financial packages, helping facilitate that process, and bringing other people's money into this process.

Our chief engineer will be an individual by the name of Ken Rikard who is currently our Deputy Director in Malawi. He'll be here by the middle of this month. He has been an engineer within the agency and formerly was the regional chief engineer for Forest Service out of Atlanta. Before I get to the Fund, I want to mention one other thing that the office will be handling, and that will be our IQCs. Bob's IQC (Harza) is going to be running out fairly soon. We like to rotate these at least every three years and so for the interest of everybody, there will be an announcement probably in the *CBD* within the next couple of weeks. We're going to split that into two IQCs in anticipation of more work. We're going to split it into the power and telecommunications group, and the other into the rest of the engineering disciplines, other than transportation. We do have a separate transportation IQC, which will be in force for at least another year.

Now the Capital Projects Fund, sort of the centerpiece of this new office. This idea was established based on a concept put together by the agency called The Partnership of Business and Development Initiative approved by our administrator in December 1990. It was included in the President's budget this year and in our current Congressional presentation for start-up in fiscal year 1993 at \$100 million. We started negotiating at \$300 million and most people feel were fairly lucky to end up with \$100 million. Anyway, we look at that as a fiscal year 1993 number only, and we'll be back

25

in there the next fiscal year looking at bigger numbers. This Fund will be available for use worldwide by all of our missions on a competitive basis for a variety of projects.

I'll give you some of the parameters that we're really going to be concerned about. We're going to be looking at more efficient ways of doing business and more fast-tracking, turnkey, shorter-term projects. With the Fund, we're not going to be interested in 10-year programs. The Cairos of the world can continue those if they want. But the Fund will be out there to help our mission supplement what they're already doing, in some cases, or start new projects in others. Probably much of the money will be used for buying engineering upfront. If we can get our American engineers out there, that will help get the follow-on construction or products later. We want to leverage this Fund using other people's money as much as we can, whoever they may be: EXIM, TDP, OPIC, World Bank, and other donors. We don't look at this Fund as being competitive to any other U.S. government agencies at all. We look at it as something that's going to add and help them maybe do more work, too. If TDP is out there and available to do the feasibility work, we're certainly going to want them to do it, and hopefully they will. We're going to look at helping facilitate new ways of getting into the privatization field, such as the BOOs and BOTs, the "build-own-operate" and the "build-operate-transfer" concepts. If we can facilitate that process, we're going to be out there helping.

The Fund will probably favor those areas in which the United States does have a competitive advantage. It will probably be the telecommunications, power, and environmental fields more than anything else. We hope the transport sector will stay fairly competitive, and probably a lot will go into equipment support. Leverage, as I mentioned, is really the critical factor in this Fund. A recent example of leverage: We did a mixed credit program with EXIM in Southeast Asia for \$500 million. Our investment was less than \$100 million, and yet we got the equivalent of more than \$500 million worth of program out of it. That's fairly good leverage when you look at what we can do with our budget line item. And that's almost five to one. When speaking of leverage, \$1 billion of exports will buy 20,000 U.S. jobs is commonly used. The 5-to-1 leverage will buy 100,000 jobs. We're also looking at loans and guarantees and possibly getting back into this business, if we can. We currently have a credit study underway that will be completed within the next week or so. Leverage, with loans and guarantees, can bring us up to a ratio of 25 or even 50-to-1. If you look

at the billion-dollar program that I've just mentioned as the level we did in 1984, a 25-to-1 leverage is equivalent to 500,000 jobs in the United States.

You may be thinking: how will the Fund work? First, we're not going to forsake our development approach. Our number one criteria will be development, and we will run everything through a development screen. By development screen I mean the traditional economic, feasibility, institutional, social, technical, and environmental checks that we do on any project. After a project passes that development screen, we'll run it against the trade screen. With the trade screen, we'll be looking at the short-term return to U.S. business, and the long-term return to U.S. business. Long-term includes such things as follow-on procurement and spares that might be purchased in the future. Obviously there's a lot of risks in making these sorts of estimates, especially when we buy the engineering out front. There's no guarantee who's going to get the final work in the end. We'll work the Fund primarily through our missions. They are going to be our front line. We hope, with the expanded and the new Capital Projects Office, we will have enough central technical support to fill out their needs to put these projects together and give them the guidance on implementation. Most of our missions, as many of you know, have pretty well given up their technical resources and are very weak on capital project developments. We are going to be counting fairly heavily on the support of our engineering management contracts to make this work, especially the IQC process.

How about the future? Obviously, it has been painful for much of the Agency to even think about capital projects. The evolution away from capital projects has been quite strong since the 1974 New Directions legislation, which was probably a little like a Michaelangelo virus put in place back then. It is still working against capital projects. But we do see that after we get the Fund in place and get it working, the next steps will be to annually increase that Fund. If one were a dreamer, ideally we would have a similar fund for our newest countries, the Newly Independent States, and possibly one for Eastern Europe, as well as the central Fund that I've just mentioned.

# **Current Situation Analysis in Hungary, Czechoslovakia, and Poland**

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**Dr. John P. Hardt**

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John P. Hardt is Associate Director and Senior Specialist in Soviet Economics at the Congressional Research Service. He is also adjunct professor in economics at George Washington University. Dr. Hardt is a frequent traveler to the Soviet Union and Eastern Europe, often with Congressional delegations such as the trade mission of the Ways and Means Committee to Eastern Europe in December 1983, the economic study delegation to the People's Republic of China (PRC) in November-December, 1984, the Trade Mission to Asia in 1985, the Congressional Gift of Democracy for the Polish Sejm in December 1989, the Trade Mission of the Ways and Means Committee to the Soviet Union August 24-September 11, 1991, and the U.S. Delegation to the European Parliament-Moscow part, January 5-8, 1992 (inclusive). He has edited, coordinated, and contributed to many volumes on the economies of the Soviet Union, Eastern Europe, and the PRC for the U.S. Congress including *Gorbachev's Economic Plans* (two volumes were released in December 1987); and *Pressures for Reform in the Eastern European Economies* in November 1989. *Perestroika: A Sustainable Process of Change* (With Sheila Heslin, Commentary by Oleg Bogomolov) was released by Group of Thirty in October 1989. He also briefed President Bush and the Cabinet on Soviet economic prospects before the Washington Summit in May 1990.

Dr. Hardt has a Certificate from the Russian (Harriman Institute), a Ph.D. from Columbia University and a B.A. and M.A. from the University of Washington. He has competence in Russian and German languages.



**THE ROLE OF THE ENGINEERING COMMUNITY IN  
INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE**

**Current Situation Analysis in  
Hungary, Czechoslovakia, and Poland**

By: Dr. John P. Hardt  
Associate Director, Senior Specialist, Soviet Economics  
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I appreciate the opportunity to talk with you. The reason for your being here, presumably, is that you think that the countries of Central Europe, and Eastern Europe as well, represent a potentially expanding market from which you can make profits, and my answer to that from this current assessment will be, objectively yes. However, you would do well to have your analysts and your bankers take a careful look at what is occurring in programs, performance, and policies from the standpoint of economic and political risk analysis; and with that caveat I will try to add some specifics to that notion.

When the development occurred that in the Czech and Slovak Federal Republic was referred to as the Velvet Revolution, following the Polish peaceful transfer of power and the Hungarian elective process and transfer of power, that development formed an important basis of the objective need that I referred to in reference to your interest. Namely, the people and the governments recognized the importance of developing a democratic market, a global-oriented society. In fact, Havel referred to this as returning to a "natural state." And in that sense, after more than 40 years, since the end of World War II, it was a delayed acceptance of what we thought (and I was in the U.S. Army in that region at the time) was going to be the development in 1945 and '48. It is a remarkable development: rejection of the old system, Communist rule, the command economy, and the police-dictated system, with the acceptance of pluralism, market forces, and a Western legal and regulatory system.

It was also a recognition that the West had remarkable success by using this formula. All of the 24 countries in the OECD, including Japan, the Asian country members, but particularly the West European countries, have experienced "economic miracles." They understand that if you want to raise living standards, if you want to have a better performing, more competitive economy, this is the way to go. So they generally accepted that. When they voted and we monitored their elections, in the three countries I am particularly talking about, there were free elections, contested elections. They voted not only for peace, (Western stability, pluralism, and our democratic political system), but they also voted, they thought, for prosperity. They thought they could vote for prosperity. I think that was a general sense that the East Germans had in joining West Germany; they would in effect get prosperity through joining the democratic West; and so did the Czechs and Slovaks and the Poles and the Hungarians. The "Blue Ribbon" study of Hungary, entitled "Peace and Prosperity" had this sense.

Well, it hasn't worked out that way, and some of the reasons are programmatic, some of them are policy, and some of them are quite external to the Central European economies. Before I indicate to you what the negative performance indicators are in each of these Central European countries, I'd like to give you some indication of the constraints they operate under, the problem of implementing the transformation to peace and prosperity.

The first programmatic constraint was that inflation was the key problem. In the first country, Poland, the approach to inflation, understandably, because this is the requirement of the International Monetary Fund of which they are a member, was to have a manageable monetary stabilization program providing for domestic convertibility of their currency with some allowances of repatriation of profits to encourage investment. This was called shock therapy. Now shock therapy in a country having 1,000-percent annual inflation has become quite manageable. The Polish zloty today is as convertible, domestically, as it was in January 1990. A remarkable success in squeezing out inflation. However, the architect of that program, Leszek Balcerowicz is here in Washington; he's no longer employed in the Polish government. The program, for understandable reasons, has run into problems because it dealt with one of the three aspects of economic policy that we usually consider in our legislation. We talk about stability, inflation - that's our Federal Reserve Board Chairman Mr. Greenspan's problem - production, and con-

sumer income and employment. Production and employment were not effectively addressed in the Polish program, and that problem of shock therapy is a problem throughout the region, but especially in Poland. So that was one of the constraints that was not anticipated. The need for social "safety nets," employment opportunities, and maintaining living standards is critical to the program's becoming viable. Now if the programs don't become viable, there's no money earned by exports to pay for your imports.

The second problem deals with another foundation element of the OECD-type model, the Western model; that is *private property*. Everyone agreed: Get the party out, get the state out, and put the property in the hands of the people. But it isn't that easy, as your detailed discussions on privatization will indicate. Let me give you an example in the Hungarian case. When it comes to the question of privatizing dwellings, the question is: Who owns this apartment you live in? Is it the ones that occupied it in '45, '48, '55? Or suppose it was occupied by a foreign visitor at the time? These are some of the many problems of a political nature.

In terms of state enterprises, privatization is very good in the sense of returning the control to the people. On the other hand, to return the control to the people you have to have corporatization, namely, they have to be cut off from state subsidies. They have to have the right to bankruptcy. That's a right that's not eagerly sought. And they also have to have the obligation of meeting requirements of a market-competitive environment. What that means in each of these countries, and they have dealt with it unevenly, is the problem of very substantial plant closings and unemployment. Let me be more specific. No major, large-scale industry privatization has yet occurred in Poland. It is a central political issue because nobody in Krakow wants to close the steel mill in Nova Huta. Why? It's an elephant and a dinosaur, unproductive by any standards, even East European standards. But it's the big employer of the town and it stays open. And if you list all of the major enterprises, they are still open, they are still subsidized.

In Czechoslovakia on this issue, it was almost 100-percent state ownership. Many of the large enterprises in Czech and Slovak lands that were defense-related were in Slovakia because Slovakia was preferred by the Russians, particularly after the invasion of 1968. So when they moved to zero out the defense budget and they'd lost the orders from the Russians, where would they

have massive plants closing - Slovakia. How did the Slovaks interpret it? It's a Czech conspiracy! I'm serious. This is a major issue. It may be an issue that tears the country apart. And that's not a small issue.

In terms of the question of externalities, the third element of these constraints, the problems are also serious. All the countries, particularly Poland, the Czech and Slovak Federal Republic, and Hungary, want to have nothing to do with the East. The sun now rises and sets in the West and accession to the European Community is the only way of life. However, all of the economies have one major, single market - Russia. What market has collapsed? Russia. Where are the plant closings and bankruptcies and unemployment that are occurring even with some major privatizations? They are in textiles, steel, agriculture, shipbuilding. Who has the traditional demand for them? The Russians. So on the one hand, they want to have nothing to do with those SOBs, who are named Russians, and they don't want to have any connection just as the independent successor states don't want to have anything to do with the center and the Russians. On the other hand, Russia is their best and natural customer, and they must have relationships. So one of the major problems that has hit them since they went into their reform process has been that of the collapse of their natural market. And it is their natural market also in terms of quality because they have few manufactured goods and many of their natural resource products - coal, for example, in Poland - cannot be sold elsewhere.

There is also the Western part of the external problem. The European Community says go to the market, here are the EC accession requirements, do as we say but not as we do because when Central Europe comes with competitive agricultural products, with competitive metal products, with competitive textile products, to the European Community's border, what does the West say? No entry or market access. And who among you is not familiar with the restrictions of market access to the European Community? The European Community is a major problem for Hungary, the Czech and Slovak Republic, and Poland due to lack of access to the Western European market. Agriculture is one of the critical elements because that has been one of Central Europe's dynamic sectors in exports and in competitive advantage. No Polish or Hungarian farmer has a chance of being preferred over a Bavarian farmer, and that is the political fact. It's protectionism and it's very serious to these countries, and if you're making the political

assessment that I suggest you make, you want to ask yourself the question: What are the prospects in the near term of the opening to the East of the West European markets? Now the terms of EC accession, and these three Central European countries are furthest along toward full membership. However, it is not only market access they need. Continued export controls, continued restrictions on credit, and continued restrictions on transfer of technology and management and other activities are major problems for the East. There is no question that the major country of Europe is more concerned with Germany than it is with these countries that border Germany both east and west. Objectively the three countries have said yes to the right formula but also objectively, they have very substantial barriers to cross.

I have travelled in this region a great deal, and it is fair to say that the infrastructure of Eastern and Central Europe is the infrastructure of 1945, and the infrastructure of Western Europe is the infrastructure of today. I am referring to telecommunications, transportation, every element of infrastructure. I have travelled, for example, through the eastern part of Communist Germany - no telephones; I had to go through the police. It is like going back to the 1930s in the United States. The Amtrak looked like a wonderful dream. But every element of a modern infrastructure is absent. Everybody knows that they need you. Everybody knows that they need to be able to talk to each other on the phone, have faxes, electronic mail, and transportation, and everything that is related to the productivity of a modern infrastructure. They know what's necessary; they are moving in the right direction; but there are very substantial financial restraints on what they can do.

What this all means in terms of current assessment can be reflected by some specific comments on each of the countries. Each of the countries, as I indicated, has done reasonably well in terms of monetary stabilization. In Poland it was an overt problem; it was clear, publicly acknowledged, evident inflation. To move from a zloty that was almost useless to a zloty that overnight was the basis on which people took dollars to the bank and exchanged them to Polish zlotys was a miracle. It happened and is still happening. The reduction of subsidies and the introduction of a stabilization program, the very substantial involvement of the International Monetary Fund (IMF) and World Bank and Western assistance to the country have led to remarkable changes, particularly in the area of monetary stabilization; the beginnings of an effec-

tive central bank, even Mr. Volker acknowledges the beginnings; development of a commercial banking system; and the development of legal and regulatory infrastructure. But at the same time, what happened when this inflation was cut and when the stabilization program went in to effect and provided this basis of internal convertibility was a sharp fall in production partly because of the collapse of the Russian market and partly because of the liberalization of prices and a very sharp fall in income. As soon as the program went into effect, the Poles were saying, in their own graphic, Polish way, "we're living on German prices and Indian wages," and they've had wage control ever since. This is very serious and very remarkable, and I think stabilization under Finance Minister Balcerowicz deserves a great deal of credit. All of the blame he got from the workers by holding the line rather than adopting what Solidarity always stood for, which was workers' wage indexation; indexation meaning no wage control. So the World Bank tells them, the IMF tells them, the last thing that should be liberalized is the price of labor, and they have not liberalized it yet. As a result, everyone is in a position where income and living standards are both uncertain but substantially less than they were while the Communists were in and they are not likely to rise again in this decade above that of the highest period when the Communists were in. Now is that politically saleable? Not in the kind of politics we understand. That is a very serious political economic problem.

Related to this also is the ever-present concern that there will be large-scale unemployment. The unemployed figures are as yet not serious. Although we might consider single-digit unemployment serious in the United States. Double digit is not yet apparent in Central Europe, but they know that as soon as old plants they are working in, as soon as the city plant that dominates the city is put in bankruptcy they are going to have substantial unemployment and they are very concerned. That is why the first government that introduced the program, the First Polish Solidarity Government, didn't even get a look when they stood for election, and the next government barely got in. Walesa barely beat an immigrant who appeared from somewhere in either Canada or Peru (we're never quite sure where he came from) and promised that "within a month after I'm elected, you'll be better off," and they voted for him. The politics of Polish reform has become a very important factor. In the last election, when the incumbents again got less votes than any of the others (he received 22 percent of the vote), the newly-elected government began flirting with industrial policy. In Poland what industrial policy means is return to



planning, return to subsidies, return to subsidizing and retaining old enterprises. The arguments are very clear. We've got to keep jobs, we've got to keep up income. People have suffered enough. But from an economic standpoint, it is a disaster. The problem in Poland now is to get a program that deals with the issues of employment and income. That is possible, but it isn't yet undertaken. There is a clear and present danger that if this program is formally adopted, the International Monetary Fund will pull out, and if they pull out, forget about foreign investments. I'm not trying to be alarmist, I'm just being realistic. The International Monetary Fund assessment, which hasn't been published and will not be published, is covered over by the public announcements that they are discussing matters and that things are fine. But Mr. Balcerowicz is in town and I think if you get a chance to talk to him, he'd tell you another story. The needs in Poland and the courage and dedication in the Poles to the reform are substantial. But the indicators are not good. They are in a deep recession. They are on the verge of substantial unemployment. They have not privatized many of the major sectors. Agriculture and light industry are definite dynamic and good sectors, but these sectors, unfortunately, are up against protectionism in the Western market and the continued deadened state of the Eastern market.

In Czechoslovakia, they didn't have a problem of overt inflation. They had the problems of lots of subsidies, a very poor price structure, and a lot of what bankers refer to as "dirty balance sheets;" that is, suppliers were keeping accounts on the books, even though they were deadbeats just in order to keep up their businesses. You'd never do that, I'm sure, but there were a lot of problems. But in any event, we act saintly when we provide examples, but we can also provide very graphic examples of the poor economics in our country. We are not planning to transfer our experience in savings and loans, for example.

In Czechoslovakia, the process of privatization in small business and the prospective privatization in large business is on track. This is remarkable because of the pervasiveness of state ownership. Everything in the Czech and Slovak Federal Republic was owned by the state. There never was a private sector in the Communist period. This is not a manufactured situation. This is not a privatization of some areas in a sea of the market. This is a sea with no state ownership, going to a private property system quickly. The key economic architect, Mr. Vadas Klaus, is a dedicated market philosopher; in many ways, people consider him to be to the right of the

Chicago School. That is, he has more faith in the market and its effectiveness than the Pope has in the Catholic Church. The point is that one of the problems that many people see coming as they go further in privatization is the problem of relying too much on the market and not enough on regulatory activities. How do you best demonopolize? How do you protect the less-competitive groups that are new entries into the system against the large, entrenched, old, established interests. Other elements of appropriate state role in the economy surface here. So on the horizon are problems in Czech and Slovak areas that will be indicated by the potentialities of either price pressures, depending on how they manage their wage policy, or unemployment pressures.

The problem of privatization in Czechoslovakia is a particularly difficult problem in another way that is common to each of the countries, Poland and Hungary as well: How do you empower those who bid for the shares of the privatized enterprise, and who are they, and what political judgments are being made by the process used? The easy thing to do, to put it in stark terms, would be to say: Let's take all of the enterprises, put them on auction, and see who comes up with the money, and disperse the assets quickly. Who would then own the assets? The old Communist and corrupt elements in the society who happened to have money, and the Germans. I'm not saying that because I'm anti-German, I'm saying that because that is the perception in Warsaw, Prague, and Budapest. Now, would that be bad? Well, yes and no. So they've worked on other ways of doing it. Coupons are way of providing capital to the average citizen. Providing ownership through Employee Stock Option Programs (ESOPs) is another way. Privatization is a highly political process in which equity and politics and efficiency are interwrapped. The particular problems on this have not yet surfaced. But it is going to be destabilizing as it moves forward and that is something you ought to give thought to.

In Hungary the issues of inflation and convertibility and stability of the economy have been much better in comparison, not so much with the Czech and Slovak areas, but certainly with Poland. However, Hungary's foreign debt burden, while not large, remains the highest per capita debt in the region. Hungary has substantial assets, but, as I noted, many of the assets in areas where they are particularly competitive are also areas for which markets are restricted either because of the collapse of the Eastern market or because of the restrictions in the West-

31

ern market. I'm talking particularly about agriculture and light industry. They have done reasonably well in large-scale privatization and bringing in large foreign investors. The investments of General Electric and General Motors are major projects and have some relatively positive aspects in terms of models for future privatization of large assets using foreign investment. In the Hungarian case, they have gone slower, in part because they didn't have the need for shock therapy, in part because when they had their election, it was a contested election. It was not the crowning of new leaders from the Solidarity group as it was in Poland, but a contested election. Two parties contested. One was a party that could be described as a Hungarian patriotic, traditional, political party. The other was a party representing economists and Western-oriented integrationists. You know which party won, the first, and so the liberal democrats, which included most of the economists, most of my colleagues, did not win. Whenever electorates are faced with voting for an economist or not, they usually follow their judgment and vote against the economist. But in any event, the policies of both parties tended to converge because Hungary has probably the largest trained cadre of economists and businessmen.

I have always had the prejudice to state that the human capital in education in Hungary is quite high relatively speaking. I think if you go there and you talk to the president of the Academy of Science, who invented the Rubic Cube, you get a sense of the nation as a highly intellectual society with very skilled people. This is also true of Czech and Slovak and Polish areas. But I think Hungary is singular in the area of business and commercial development, and they have the most progressive institutional market development. They have long had a joint-venture bank, Western banks; they have nine Western banks, one of which is Citibank credit. (Austrian Credit Anstalt Bank has a presence in every Central European country as a commercial joint-venture bank.) So in commercial banking, as in other areas, it is further along. But in terms of resources and in terms of the debt burden, in terms of the tightness of the political situation, in terms of making shocks or changes that will adversely affect, in the short run, the benefits of the population, they are constrained.

So you look at each of the countries in this area, its objective requirements and needs. These Central European countries are the best prospective areas, short of Russia if it really pulls its act together. The objective need is very substantial. However, look at the programmatic prob-

38

lems, the political problems, and the market problems that they face. Look at the fact that they come to this change at a time when the world is in recession and is protectionist. This is a remarkable area for development, but it is risky. I suggest you look carefully at the particular areas you are interested in and make a political and economic risk assessment along with your general assessment of enthusiasm for the overall demands and prospects in the region.

## SITUATION ANALYSIS\*

### Country Oversight

#### Hungary

Following 25 years of economic reforms, Hungary is the most Westernized nation of the former Soviet Bloc countries. In 1990, however, due to the disintegration of trade with the former Soviet Union and the implementation of painful economic reforms, the country sank into a recession and GDP fell an estimated 6 percent. Hungary has Europe's highest per capita foreign debt, and the inflation rate reached 31 percent in 1991. Despite this, the private sector is prospering, boosted in part by the influx of foreign capital that has been attracted by the passage of basic financial laws and relative political stability. Since 1989, there have been 11,000 joint ventures in Hungary, and half of total foreign investment in Eastern Europe has been in that country. Its stock market was the first to open in East Europe. Economists anticipate that GDP will stabilize and the economy will start an upswing in 1993.

Industry comprises 40 percent of GDP and includes precision and measuring equipment, pharmaceuticals, textiles, and transportation equipment. Much of the technology, however, is 25-30 years old, making it impossible for Hungary to be competitive with the West. There is a great need for modernization in key sectors and for assistance in technology management. The government is putting a high priority on upgrading the telecommunications system (one of Europe's least developed), environmental protection, transport infrastructure development, and advancement of the areas where they have the greatest potential for being competitive with the West, e.g., computers and software development.

Hungary is known for its world-class mathematicians and telecommunications and electrical engineering expertise, particularly in the area of software programming. Its knowledge base in the biotechnology, chemistry, and pharmaceuticals sectors is also strong. Nearly half of Eastern Europe's filings with the European patent office come from Hungary.

Traditionally, the government has had a strong commitment to spending on research, allocating 2.5 percent of GNP, close to Japan's 2.8 percent. There have also been more linkages among the various institutes that do research than in other CEE countries. For example, the university and Academy of Sciences institutes had contractual relationships with industry, thereby enabling the application of the fruits of their basic research. During the last 10 years in particular, as government funding decreased, 2/3 of the Academy institutes' funding came from industry contracts.

#### Poland

Although it was once considered the Eastern European economy least likely to succeed, "shock therapy" reforms have brought dramatic changes to Poland's economy. Hyperinflation has been

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\*The following Situation Analysis was provided by Janet Hunziker, Staff Officer, National Academy of Engineering.

slowed and controls on imports, hard currency exchange, and prices have been relaxed. Poland has a small stock market, and a private banking system is taking root. More than 500,000 new companies have started up in the past year and the privatization of small firms has gone quickly. However, there is still much anxiety and public disenchantment with the process of moving to a free enterprise system, particularly because there is less political consensus now over the best way to proceed. Problems such as unemployment and the privatization of large state enterprises -- a situation so intractable that Western investment funds have been invited to supervise their restructuring and sale -- remain.

Machine-building, iron and steel, extractive industries, chemicals, and ship-building have been the mainstays of Polish industry. There are many infrastructural shortfalls such as low telephone density (109 telephones per 1,000 people compared to 760 in the U.S.), an inefficient postal system, an unbalanced highway system with good roads in the western parts of the country but few elsewhere, and absence of telecommunications and computer networks.

Basic S&T research in Poland is carried out through the model typical of Central and Eastern Europe, but a new State Committee for Scientific Research was established in summer 1991 to allocate government funding for research. Poland's priorities are development of electronics and telecommunications capabilities and environmental issues. Compared to some other occupational categories, those in the sciences fared quite well under the old regime, because they maintained their contacts with the international community. However, what is lacking is an understanding of how to apply basic research and take advantage of market opportunities.

## **Czech and Slovak Federal Republic**

Czechoslovakia has adopted a blueprint for reform that has helped it make impressive gains toward economic restructuring. However, the impacts may include a decline in output, increases in inflation and unemployment, and an exacerbation of nationalistic unrest in the Slovak region most affected by the transition to a market economy. Privatization is a massive effort because, unlike Hungary and Poland, in its Soviet Bloc days 100 percent of the Czech economy was nationalized. The collapse of trade with the former Soviet Union has been particularly hard on the country because it accounted for about 45 percent of Czech trade. Inefficiency in the use of raw materials and energy, low productivity, slow application of new technologies, and low quality of production continue to plague the economy.

The outlook, however, is not completely bleak. Czechoslovakia has a financially strong economy with a relatively low debt. Although its plants and equipment are among the oldest in Europe, Czechoslovakia's skilled workers and low wages are attracting foreign capital. The Czechs have made expanded trade with the West a priority, and Austrian and German firms are increasing their activities there. New laws allowing for 100 percent repatriation of capital and 2-year tax holidays are also encouraging foreign investment.

Prior to World War II, Czechoslovakia's GNP was ranked tenth among the developed countries of the world, and it had one of the highest standards of living in all of Europe. It was a leader in light, more knowledge-intensive industry, for example, sewing machines and precision equipment. However, after World War II, the country was forced to transfer this technology to other CEE

countries, and Czechoslovakia was designated the "capital" of heavy industry in the Soviet Bloc. Today, industry comprises 60 percent of Czech GNP and is concentrated in heavy industry sectors: iron and steel\*, machinery and equipment, cement, sheet glass, motor vehicles, armaments, chemicals, and ceramics.

Despite the fact that industry was not knowledge-intensive and was aimed at supporting an autarchic economy, there are some bright spots in the technology picture. Czechoslovakia has strengths in automotive production and has made major contributions in the area of materials, as evidenced by innovations in contact lenses, glass-making, and fabric-processing. According to UN statistics, in 1988 Czechoslovakia had 5,961 robots, more than many countries of Western Europe. There were few incentives for innovation under the former regime, yet Czech scientists are prolific, filing 10,000 domestic patents a year.

Current national science and technology priorities focus on integrating the various research bodies, particularly the institutes of the Academy of Sciences and the universities, as well as on sectors that benefit the whole society, e.g., health, environment, energy, and agriculture. There are plans to build pipelines to the West, to connect with the West European electricity network, and to overhaul the telecommunications industry.

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\*In 1989, Czechoslovakia produced 15,465,000 tons of crude steel, about a ton per citizen.

# **Current Engineering Assessment: Summary of Eastern European Meetings**

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*Harza Engineering Company*

**ROBERT H. STAPLIN**  
**Senior Vice President**  
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Mr. Robert H. Staplin has 43 years of experience in Energy and Infrastructure-related fields. He spent 26 years with the Worthington Corporation, a manufacturer of equipment for the power industry, and 8 years with Chas T. Main, where he was primarily involved with the development of major coal-fired plants and utility-related projects. In his past 9 years with Harza he has worked in several capacities including Manager of Utility Operations and Manager of Domestic Operations. Bob currently serves as consultant and Senior Vice President of Harza Engineering Company with the responsibility of overseeing all power operations.

He holds a Bachelor of Mechanical Engineering degree from Cornell University and a Master of Business Administration degree from the State University of New York - Buffalo. He is a registered professional engineer in the state of New York and is a member of the American Society of Mechanical Engineers.

**SUMMARY OF MEETINGS HELD IN  
BUDAPEST, PRAGUE, AND WARSAW  
JANUARY 4 THROUGH JANUARY 25, 1992**

**Robert H. Staplin**

**Presentation Outline**

**Introduction**

1. 38 separate meetings ranging from one on one to 26 people in one meeting. Over 220 total contacts.
2. Primary emphasis on Engineering Societies identified by USEC societies, but included Utilities, Trade Associations, Engineering Firms, Contractors, Universities, and Governmental Agencies.
3. All organizations asked to provide written response to questionnaire.
4. Questionnaire response excellent and provides basis for this summary.

**General Observations**

1. Many EEEEC organizations already have linkage with USEC and all are interested in establishing or expanding ties.
2. No lack of engineering expertise except on high end. Abundance of engineering manpower.
3. Intense competition from EC trying to get in early and cheap. Most would prefer to establish ties to U.S.
4. Confusion regarding different U.S. programs and their implementation.
5. Concern U.S. is putting too much emphasis on studies and not providing the means to move critical projects forward.

40

### **Engineering Issues - Common to all Three Countries**

1. Shifting from straight technical to the business of running an Engineering Society or Organization.
2. Need for publication of all types.
3. Need for exchange visits and conference support.
4. Need for common standards.

### **Legal/Financial Issues - Common to all Three Countries**

1. Lack of capital for major projects
2. Cost of goods and services not related to cost of production.
3. Lack of skilled managers:
  - Operations
  - Financial and Economic Planning
  - Marketing and Sales
4. Need for network planning tools and development of a staged affordable approach.
5. Whole legal and financial system in transition.

### **Energy Issues - Common to all Three Countries**

1. Old, dirty and inefficient power plants contributing to major air pollution.
2. Reliability and availability.
3. Inefficient end use. Can't compete in global markets.
4. Dependency on imported energy.
5. Loss of industrial electrical load.
6. Design of the new generation, transmission, distribution entity. Regulation versus market forces.

## **Infrastructure Issues - Common to all Three Countries**

1. Communication.
2. Crumbling Infrastructure in all areas.
3. Air, water and ground pollution.
4. Potable water needs.
5. Heavy dependence on outdated rail transportation.

# **Privatization of Infrastructure in Eastern Europe: Defining the Opportunity**

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**Mr. Roger Feldman**

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## Privatization of Infrastructure in Eastern Europe: Defining the Opportunity

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Can participation in the privatization of infrastructure be a significant way in which U.S. engineering firms can actively involve themselves in Eastern Europe?

The answer depends on what is meant by the question. Over the past few years, we have all become accustomed to hearing the term "privatization" used in a wide variety of ways to describe the withdrawal of government from ownership and responsibility for enterprises. Increasingly, too, we have heard the term "infrastructure" tossed about, frequently in statements broadly asserting its essentiality to long term growth.

But: (1) what the combination of these terms mean (and does an oxymoron result) in the countries in question; (2) what forms of U.S. private sector financial investment in

infrastructure privatization are realistic? (3) is a platform for U.S. engineering community activity presented? In sum: What should we realistically hope to achieve? Later speakers will consider: What barriers must be overcome to do so?

We should begin by recognizing that privatization of power and of infrastructure are very different undertakings. Privatization of power can take one of several forms. The British model, transmuting a wholly governmental monopoly into a free market system is the most dramatic. Less far reaching is the U.S. model of permitting individual plants to be developed on a private basis, which then sell into the grid (which is utility or publicly owned). Least recognized is the creation of regulated private utilities (perhaps, again paralleling the U.S. model) in joint venture with public operators. Presumably these ownership models may be adaptable to telecommunications and retail gas distribution activities as well.

Privatization of infrastructure, to the extent that it relates to public works (roads, bridges and tunnels, environmental facilities, water supply, buildings and facilities) is a very different matter. Some of the activities have been converted (as in the U.K.) or initiated (as in the U.S.) into utility type activities, such as water, wastewater and certain environmental facilities. Heavier public works transportation infrastructure has until lately been publicly owned. Several continental countries, more recently the U.K. and now fitfully the U.S., have begun to experiment with

application of the private ownership model to individual facilities, partially as a means of raising capital. The private owners may themselves in turn be partially held by public shareholders.

In each case, privatization infrastructure frequently is identified with some variant of the build, own, operate and transfer -- BOOT -- structure. Its success requires private investors to take a longer term outlook.

Infrastructure privatization constructs must be tested and adapted; they will not inherently work. Consideration of the application of these models to the power and infrastructure situations in Poland, Hungary and Czechoslovakia illustrates the point.

#### Power Plants

Poland is a highly energy intensive country, in which even within the last 6 months power prices have increased 5 1/2 times for industrial users and 22 times for households. It has an aim of modernization of existing facilities, many of which are hydrocarbon fueled and high polluters. Introduction of clean coal technology and improved transmission are objectives.

The Czech objective is conversion away from coal and natural gas reliance and toward nuclear power. The nuclear construction program is now estimated to consume over 10 percent of all industrial investment. Several large plants are scheduled to come on line. Czech energy intensity in production is almost twice that of Western economies.

The Hungarian energy sector must be developed in the context of limited oil, coal and gas reserves, and a desire to downplay government investments in order to support balance of payments equilibrium. Energy now commands one half of public investment resources as the government continues to expand its nuclear energy program as well as a major hydroelectric project. Two large projects are scheduled to come on line.

What is the best way to seek to participate in these markets through the privatization vehicle? Perhaps something instructive can be gained from a recent French-German effort to expand French participation in the electrical networks of eastern Germany in exchange for a German share in a new French nuclear reactor. One primary reason the deal was unsuccessful was a valuation exchange problem. A second, however, was that the affected communities sued in constitutional courts to protect their rights to purchase electricity on the open market, as is planned by the European Community Competitive Commission.

This situation serves to remind us that participation in power markets will necessarily reflect overall national power market systems. In considering the purchase of all or a portion of an existing state system, it is valuable to remember both how dependent on a sturdy political system traditional utility regulation is, and how politicized power supply can become. We have only to remember the U.S. power industry in the 1970s when the oil embargo and unclear sticker shock coincided, to recognize the vulnerability of private capital

investors engaged in private system ownership and operation, to the impact of erratic public regulation. Similarly the appeal of an elegant British-type market system to private investment, may be clouded by the recognition that free markets do not always produce publicly acceptable results.

In principle, the project finance model of B-O-O-T projects should not be subject to these kinds of political risk. Private debt can be secured by a power purchase agreement with the host government (or the state owned utility). Country credit risk would appear to be the most immediate problem in this scenario. It is useful to keep in mind, however, the importance in a project finance setting of the interaction of all of the other variables, such as the relationship of long term fuel price to long term power price. Also of critical importance is the existence of a legal environment which permits the creation and enforceability of security interests in the key contracts assigned to lenders as the sole source of repayment of their debt. As project size increases, so does the difficulty of getting private capital to rely on this legal environment. While the World Bank has been promoting private power for several years, the time necessary to negotiate necessary agreements has been protracted. In sum, private project finance of power may not be an expeditious mode of project development.

These reservations need to be considered in light of the requirements of the host countries. Smaller capital units are more readily privatized than large scale central station

generating units. For those projects, ancillary financings, like the nuclear care leasing and fuel trusts developed by U.S. utilities may be more suitable. Overall system privatization may be less attractive when significant future capital investments must be made. Sale and upgrade of individual units in a system may be a more attractive way to proceed.

### Infrastructure

A similar type of critical analysis seems to be appropriate in consideration of the privatization opportunities in the general sphere of non-power infrastructure. Poland's interest in the environmental protection field has been clearly demonstrated, extending beyond reduction of powerplant sulfur dioxide emissions to municipal waste disposal, wastewater treatment and disposal of toxic waste. Poland has also obtained World Bank credits for the construction of identified new roads, which it hopes to do on a tolled basis. Investors are being sought in this regard (as well as in the trucking and forwarding fields). Some World Bank credits also have been made available for upgrade of rail transport.

Czechoslovakia, by contrast, has not focused on infrastructure as being one of the key constraints to economic development. Focus has been placed on high energy and raw material consumption per unit of output, slow application of new technologies and low production quality. The country is falling behind in its infrastructure and housing development because of a state strategy of shifting resources from new construction to investment in machinery and equipment to deal

with these production issues.

By contrast, the basic Hungarian approach of pushing the ownership of enterprises by private capital has carried over to some extent in infrastructure development. To the extent the Government itself is unable to provide what it recognizes is needed infrastructure to achieve economic growth, the Government is looking to develop regional or private development for roads, telephone systems, service buildings, and similar facilities. The Government has set up an Investment Promotion Fund to provide infrastructure grants to firms with specified minimum capitalization and a minimum incorporation of 30% foreign investment. Hungary has also conducted a competitive bid for the development of private toll roads.

Some light on the issues which might be confronted by private capital in the development of private toll roads may be cast by the recent experience in eastern Germany. The Government sought to pass legislation for the acceleration of new highway transport projects from the current 15-20 years to 3-5 years. The proposed legislation was intermodal, covering roads, rail lines, inland waterways, airports and municipal transportation systems. The Federal Government asserted that the new law complies with the European Community's directive on conducting environmental impact assessments. However, the German environmental groups are angling to bring a case before the European Court of Justice challenging the legislation.

I think this matter is broadly instructive, because it directs our attention to the extent to which infrastructure

development, even when it is privately sponsored, is intertwined with the exercise of state functions and with the operation of the political process. The interplay of many public works with the environmental permitting process is a vivid example of this. While there has been an increased private developments of motorways in Europe (and, indeed, six European firms are in the running for the recently competed Hungarian toll roads), typically there is a governmental or at least quasi-governmental involvement with them and in their oversight. The need to cope with the politicized nature of project development could be a difficult factor for U.S. firms to deal with, if they are owning rather than simply constructing the facilities.

Issues typically raised with respect to privatized BOOT infrastructure development include allegations of private cream skimming of desirable projects -- and its converse, government desire to have the private sector undertake the less desirable projects and oversizing of projects relative to private sector capacity.

The essence of private infrastructure finance, whether environmental or transportation, is to be able to establish private user charges, and enforce them on a long term basis. From the point of view of a firm undertaking the activity, the ability to set rates to deal with this market risk is critical. Obviously, however, this is a matter of high sensitivity politically. So too is the issue of compliance with environmental standards as they change over time. Consequently, the use of the highly change sensitive project finance mechanism

may be difficult, as may the effort to convert toll and privatize an existing transportation facility.

Nevertheless, as we have seen, the needs for capital to finance infrastructure clearly are outstripping government resources in each country. Private involvement in infrastructure also provides a dynamism and efficiency which may be lacking in traditional government settings. And user charges are frequently a better rationalized form of assessment than are taxes. These factors would seem to suggest opportunities for private infrastructure development.

Is there then a role for privatization in the development of East European infrastructure? Yes -- once it is understood that it need not entail full private ownership or heavily leveraged B-O-T, and must conform to the contours of the host country. Specifically, there are opportunities for: private lease and operation after public development (perhaps with private construction); private operation of a public or public/private developed and financed facility; public/private joint venture (where the public component relates to police power exercise and the private component relates to project development); private rehabilitation and restoration to the public sector of facilities. Each of these models can also involve some component of private financing; private credit support for financing; private equity contribution; or private contribution in kind. These need not come from the same person as is doing construction and operation. What is important to recognize is that these public/private ventures are not

textbook copies of English privatization, or even of type of privatization contemplated by the recent legislation of these countries, related to the sell off of enterprises. It is more akin to the pragmatic urban development programs in this country.

Conclusions: Implications for U.S. Firms

The engineering and construction community in the United States has come to the realization that projects frequently either cannot be sold without an innovative financing component, or will only yield the desired financial return if a package which incorporates financing or associated risk sharing is developed. Clearly the Eastern European nations are looking for financing along with infrastructure and infrastructure services. I have tried to suggest, however, that it may be imprudent to seek to offer such funding and services within the framework of what is generally styled infrastructure privatization, based on full asset takeover or project financing.

American engineering firms have the experience to participate in the development of the innovative financing packages. Indeed, their conservative instincts are appropriate to their development. As we consider during the balance of this session the pragmatic lessons learned from hands on development, we should consider what additional ideas they suggest for the competitive development of programs for the marketing of engineering and construction services through privatization.

Some of the specific questions we should be asking include the following:

- What allocation of public and private credit risk makes sense for engineering firms to seek to achieve in infrastructure privatization in different countries?
- What tools are available for risk mitigation, whether from host governments or third party credit sources?
- Can payment for engineering construction services be insulated from the risks of project development?
- Can an upside reward for the value captured as a result of infrastructure development be realized in conjunction with infrastructure development?

Privatization conducted with these questions in mind, and tailored to each country's respective power and infrastructure setting appears to have potential for U.S. firms in Eastern Europe.

# **Current Status of Privatization**

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**Mr. Charles E. Hussey II**  
*Partner and Head of International Practice*  
*McDermott, Will & Emery*

CHARLES E. HUSSEY II

Charles E. Hussey II is a partner in the Tax Department of the firm's Chicago office. He is Chairman of the International Practice Group, a member of the Management Committee and former Chairman of the Tax Department.

Mr. Hussey's practice focuses on tax and legal matters relating to investments outside the United States and foreign investment in the United States. He works extensively with multinational corporations and foreign investors. Mr. Hussey has participated in a substantial number of acquisitions, reorganizations and joint ventures involving foreign operations for American companies and multinationals, including investments in Eastern Europe. He has had extensive experience in several countries in Eastern Europe, including privatization matters. He has represented numerous foreign corporations, including foreign multinationals and individuals in their U.S. investments, acquisitions and divestitures.

Mr. Hussey is a frequent speaker at national and international conferences in the areas of his practice. He is a director of several American and foreign corporations.

Mr. Hussey is a member of the bar of the state of Illinois. He is also affiliated with the American Bar Association and the Chicago Bar Association where he participates on the tax and international law committees.

Mr. Hussey obtained his J.D. from the University of Chicago Law School in 1958 and his B.A. from the University of Maine in 1955.

# THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE

## Current Status of Privatization

By: Mr. Charles E. Hussey, II  
Partner and Head of International Practice  
McDermott, Will & Emery

I will begin by addressing two main areas. First, the legislative framework that we find in Eastern Europe; and second, the privatization process and how engineering firms can get involved. On the first area, the legislative framework, a lot of statutes have been put on the books fairly recently to create this framework for investment. By and large the pattern is predictable. It is somewhat analogous to the European mode. For example, in Hungary and in Czechoslovakia, as well as in Poland, they have two different kinds of corporations; that is similar to the German examples of the AG and the GMBH. They set up boards of directors and give shareholder rights of joint venture. Agreements are concluded. It is the same framework that you would expect if you were investing in Germany or, to a lesser extent, France. Some of this legislation goes back several years because of the Hungarian example of charging forward and having a more liberal framework. The drafters of this legislation picked from many statutes. Some is from other countries of Eastern Europe, some is from Western Europe; very little is from the United States. Most of it is from Germany.

When you look at the taxing statutes, the exchange controls, these sorts of pieces of legislation, they too follow a typical example found throughout the world. Some are more restrictive, some less restrictive. The tax statutes compute income the way we traditionally know it, but with some variations. In some instances you can amortize debt over a limited period of time. Usually amortization of goodwill is not allowed, although the United States and certain countries of Western Europe are now embarking on the process. Withholding taxes and income tax treaties negotiated between the United States and some of these countries are either in place or in

progress. The Hungarian treaty, for example, drops the withholding rate down from the traditional 20 percent to 5 percent. They have put some unusual statutes in place to deal with privatization. They have put some statutes dealing with the treatment of employees in place. By and large they have adopted the at-will termination provisions of the United States but with an European overlay; that is, they require compensation when you discharge. You can discharge at will but frequently they embody a provision that would require one month's pay for every year of service, which can become very sizeable. Some privatization statutes are really quite incomplete. Some do not address major problems; others overdo. For example, just a few weeks ago a World Bank study was engaged and promoted in order to come up with additional privatization provisions for Russia. They even tried to nail down how you value companies, which seemed a little preposterous. But more on the book value concept. Whether that clears through Russia is a matter to be determined, but in some instances they have gone into overkill.

As we get into the privatization process itself you will see that some of it is fairly logical and fairly straightforward. How do you get involved in the privatization process? It's a matter of searching out. It's a matter of using consultants in the particular countries. It's a matter of being there and talking with the minister of industry or the minister of energy. Many of you already know companies that have been doing work, but there is no substitute for going in there and investigating it firsthand. You don't find slick brochures coming out of most countries in Eastern Europe. You have to go there. You call up a gentleman and say, "I'd like to find out more about buying a company in my field. Do you have any information?" He'll say, "You have to come over here and we'll have a meeting with the minister." And so you start sometimes at that level and work from there. Then when you get into the negotiations themselves, into the privatization, you run in to a whole host of problems. And you get the results from extreme areas, such as Poland, where the process has really bogged down politically and has really hampered the full process. The other extreme is East Germany on an intense course to get rid of many of the companies.

In Eastern Germany and throughout the three countries that we are talking about, it is very important to look at this as if you were negotiating a U.S. deal, but to watch out for three special areas. One is the ownership of property and restitution to former owners. The second is how to deal with the employees. Usually there is a cadre of excess employees. Those can be dealt with

in a number of ways, but wholesale firing is not the right approach, of course. When GE bought Tungstam in Hungary one of the last problems that they addressed, which was an immense one, was to cut about 40 percent of the middle management layer. Because this had such great publicity in Hungary, they did not want to do it in a manner that would reflect badly on them. So they negotiated with the government and between GE and the government they subsidized the layoff of up to 40 percent of the middle management, it went through very well; of course it was expensive, but the government too bore part of the burden. The third area besides the ownership problem and restitution and the labor problem is the area of environmental. There are no environmental rules, and some countries are facing immense environmental problems. But the important thing in negotiating is to get a ceiling, some kind of a lid on the total liability. Now that is very difficult because in the first place you do not know the full extent of the environmental impact, and as we all know from regular acquisitions, it is difficult even in this country to find out the full extent of the environmental liability - the cleanup cost, etc. Well, it is much more difficult in the Eastern zone. So a lot of gambling goes on in trying to reach a final solution, particularly with the limits of liability.

Getting down to some of the details on the privatization process, the first one that comes up is valuation. You meet your counterpart and you ask him for a financial statement and of course he does not give you an income statement, he gives you a balance sheet from maybe a year ago that was put together by some people in the government together with some outside auditors, perhaps. None of those figures are reliable. This is not an accusation against the accounting profession; they're doing the best they can, but in many instances there is no historical cost record so they go to a valuation technique. Well what does valuation mean? What is this plant worth? What is this piece of machinery worth? What is this stream of income to this engineering firm that is refurbishing the local utility. Will it continue? All those questions are on the agenda and very difficult to address. It is very difficult to find much security and reliability in those financial figures.

What sort of methods are used for valuation? The accountants have been doing a tremendous amount of valuation work in the three countries that we're targeting here as well as in others and the valuation can be all over the lot. It can be book value. Of course we know the hazards of

that. It can be a discounted cash flow; it can be an income stream. Price earnings is a very difficult concept for them to understand, and you cannot compare it to a Western publicly held company in the same field because the discrepancies and differences are so broad. What is the market? Where will the revenue come from? It did come from Russia. Will the market be in the West? What are the projections? How do you get a discounted cash flow? I raise these questions because there are no easy answers and usually you wind up in a horse-trading situation, taking your risks. And you take risks even when you get as good a deal as has been gotten in Eastern Germany where for one DM you acquire a huge factory full of machinery with 300 employees. They will take over the long-term debt; you just barely have the working capital debt. But you still don't know what you have. The process is full of pitfalls.

I briefly mentioned the restitution claims. Many of the agencies will take over the liability for restitution, that is, the former owner's claim. It is important to do a certain amount of due diligence in that regard to find out how those claims might arise, from whom they might come, and how the government will solve it. In many instances, they will solve it and of course the extreme example is in Germany where they will absolutely take over the liability. And out of the proceeds of sale, if there are any, they compensate the former owners, and if there are no proceeds of sale, they will still compensate the former owner. But it doesn't work that way as effectively in Czechoslovakia or in Poland. There, there can be some residual liabilities beyond a certain amount depending on the claimants and the extent of their claims. There are a few areas that are important in selecting a partner; but many of these are obvious. You would face the same questions were it a domestic acquisition: that is, the strategic fit, the future development objectives, the access to new markets, the innovative technology - and is it really innovative? The R&D facilities (they may have a number of engineers), the technical assistance that must be brought in, the marketing assistance that must be brought in, the restructuring plans, and the management time spent. The management time spent is a very important one. Some companies have found that the management time required by their U.S. executives can be tremendous.

In many instances there is a hodgepodge in these companies. Recently in Czechoslovakia the target company that we worked with not only sold speakers for audio equipment, but they also made pacemakers, and they were also in the real estate business. One of the no-nos is to try to

cherry-pick and say we only want the engineering capability of this firm. We don't want that building that they are in, and we don't like this widget production that they have off on the side where the people work on Saturdays and Sundays. You've got to take the whole shot many times because they want it to continue. That doesn't mean you cannot restructure it and try to sell it off in conjunction with the privatization ministry. But there is a fair amount of structuring analysis in the front end that is necessary.

Instituting training programs has become a very important thing in selecting, negotiating, and concluding a program for investment. What kind of training programs do we set up? What kind of people do we get? Are there search firms to find people? Usually, no. How do you find people? In one instance, it was done by advertising on television; the people flocked to the company's plant. The size of the equity holding, of course, is negotiable, and most of these countries will permit 100-percent ownership. In Hungary, government approval is required to go up that high, particularly in special industries. The question of control is just like you would imagine it here. You buy stock in a company or an interest in a partnership, and the question of control depends on the board, your ability to elect the board of directors, the managers, etc. I might add one note: while many of these companies are in a form of a private company much like the GMBH in Germany, and they want to sell you the shares of this, in some instances it is very effective taxwise to use a partnership because then the initial losses during the first few years can be streamed back against your corporate income tax return here. If you have a typical corporation, on the other hand, those losses are not tax-effective from the early years, at least in the United States.

A couple of things to avoid. One is insensitivity to local issues. It is very important to have local advisers, consultants, or people you trust because of that very thing. Western arrogance is a problem that one has to be very, very careful of. The last point I will make in this regard is in connection with owners' conditions in complex transactions. In the first place, usually even the privatization ministries or the investment bank in Prague do not understand how to do deals and if you make it complicated, you will lose the deal. It might be relatively simple and straightforward from a U.S. perspective or from a U.S. experience mode, but it can be very complex. We had a fairly straightforward transaction up in Lithuania, and it became very difficult to convince

67

the ministries that what we were doing was alright. To try to put through a merger in one of these countries is a rather tedious job because they do not understand the process of a merger and how it works. So any time you can avoid it and go to a simple structure, it is more money in the bank for you.

I'll conclude by going through the transaction process briefly. You would do it much like you would do it here, with local advice on sensitive issues. You discuss strategic objectives. You evaluate the investment opportunity. You submit a detailed proposal; they usually prefer letters of intent to be a prelude to a more tentative contract. You develop a comprehensive business plan with a local company, do the appropriate due diligence, particularly on ownership, environmental, and the extent of the cost of employees. In addition, we have the usual ones, the warranties and representations, but I am talking about something other than what you are familiar with here. And then the negotiation of final agreements and approvals of the various ministries: the privatization ministry and the ministry of industry or energy. I have taken you through some of the experiences that come up. I will end by saying that the whole process can be very exciting. One of the most important things to have is a lot of patience.

# **Intellectual Proprietary Rights**

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**Mr. Ian D. Hughes**  
*Partner*  
*KPGM Peat Marwick*

## IAN D. HUGHES

**Firm Responsibilities:** Ian Hughes is an international tax partner in the Chicago office of KPMG Peat Marwick. He served as national coordinator for "Europe 1992" for the U.S. Firm's manufacturing practice through June 30, 1990. Ian joined the Firm in 1976 in Toronto. He transferred to the Houston office in 1979 and to Chicago in 1981. He was elected to the partnership in 1986 and appointed to an international assignment with KPMG Peat Marwick in Toronto where he was partner in charge of the U.S. tax practice. He returned to the Chicago office in June 1988.

**Relevant Experience:** Ian has provided international tax services to a wide variety of U.S. and foreign based multinational clients. Some foreign based clients he has served include Campeau Corporation during its purchase of Allied and Federated stores, Trans Canada Pipelines, Four Seasons Hotels, and Allied Lyons. U.S. based multinationals include FMC Corporation, Borg Warner, Emerson Electric, JMB and United Technologies. Ian is an expert in the U.S. and foreign income tax effects of cross border transactions including acquisitions of foreign targets and reorganizing the foreign holdings of U.S. based multinationals. He currently serves as International Tax partner on Comdisco, Inc., JMB Realty Corporation, Kemper Corporation and Helene Curtis Industries, Inc.

He has taught the Firm's advanced international tax course and lectured at various Firm seminars on topics including Europe 1992, Maximizing Foreign Tax Credits and FSC/DISC issues. Ian has helped develop and market several of the Firm's tax computer applications including software designed to implement Treasury Regulation Section 1.86-8 and computation of DISC combined taxable income. He has also attended the Firm's in-depth training course on its foreign tax credit planning software FTCPLAN. Ian also assisted in publishing various KPMG Peat Marwick publications including Foreign Sales Corporations and foreign tax credit.

**Education and Professional Activities:** Ian received his Bachelor of Science degree in civil engineering from the University of Toronto in 1970. He sat for the Canadian uniform final examination for Chartered Accountants in 1978, standing thirteenth in the country.

He is a member of the tax division of the AICPA, the Texas and Illinois CPA Societies, the Canadian Institute of Chartered Accountants, and the Institute of Chartered Accountants of Ontario.

Ian has spoken on international tax matters for various professional, educational and civic organizations including the World Trade Institute, the Illinois Manufacturing Association, Chicago Tax Club, Chicago Bar Association, the American Management Association and TEI. He is a member of the Canadian Club of Chicago and the British American Chamber of Commerce. Ian is on the Board of Directors of the Chicago Chapter of the Association of Chartered Accountants in the United States.

# **Sources of Project Financing**

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**Mr. Peter Ridder**  
*Consultant to Coopers and Lybrand*

711

# THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE

## Intellectual Proprietary Rights

By: Mr. Ian D. Hughes  
Partner  
KPGM Peat Marwick

What we are here to talk about today is the real world. Despite some of the more adverse things you may have heard this morning, let's assume for now that you are going to take the bull by the horns and you are going to go into business in one of the three-named countries. One of the things you will find is that what the other side wants, your joint venture partner wants technology and tangible assets. And you say to yourself, "I've got this technology, I want to make money out of it, but I want to make sure that I'm protected, and I also want to make sure that I get to keep most of the money I make out of it." That deals with two major issues. The first is the protection of the intellectual property right; the second is how large a tax whack some government is going to take before you get the money back in the United States. I know you don't want a very long discourse on income tax laws, but, unfortunately, if you are on the leading edge of negotiating these joint-venture type of meetings of the minds, you are going to run right into a wall and discover that our income tax laws here in the United States are not very conducive to doing these transactions. If you do enter into negotiations, the other side really has difficulty distinguishing between matters of form and substance. If you try to inject changes to the agreement after a meeting of the minds because the tax adviser back home has told you can't do that any more, you'll find it very difficult to accomplish those changes.

Let's deal with the protection of individual property rights. We have heard that in terms of legal rights, Czechoslovakia, Hungary, and Poland, are looking westward, toward the power of Brussels and the EC community. That is very important. Brussels has a regulatory power now that is far beyond the immediate borders of the European community. It makes little sense for countries like

Poland, and Czechoslovakia and Hungary, to adopt technical standards that differ dramatically from those in the EC. The three countries have signed association agreements with the EC that provide, for the most part, that the three countries have five years to adopt EC-style protection for intellectual property rights.

The EC itself is not exactly consistent. The treaty of Rome is basically the constitution of the European community. Article 36 allows national governments to restrict the transfer of industrial and commercial property. Article 222 also gives them the right to protect property. But the EC is coming at it a slightly different way. They don't want national governments to use intellectual property protection laws to basically divide the market up again. They have gone through a great deal of trouble to be able to say "we have a single market so you can no longer create national laws to restrict the free movement of goods through protection legislation." There is a draft directive on protection of property rights within the EC that was supposed to have been adopted by all member-states by December 31, 1991.

Previously, what was widely used is the Munich Convention of 1973, which deals in very general terms with the protection of property. It can be very difficult to get your intellectual property protected under the Munich Convention. It says you must have three distinct characteristics before it is eligible for protection. It must be new; it must be capable of being applied to the industrial process; and it must be highly innovative. The last, obviously, is of a very subjective nature and can be difficult to prove. If you can get by those hurdles, you face a choice. You can apply for property protection in each of these countries. You can apply for the European-wide patent under the Munich Convention or you can apply for protection under the Munich Convention in those countries that are signatories. When we compare that to the EC Convention, we start to see some fairly startling differences with what is in existence currently in Czechoslovakia, Poland, and Hungary. The EC directive focuses on protecting both the process and the product, and also the product that is derived from a patented process. In most of the three Eastern European countries, the only protection you have is on the process itself. This is especially true for things like pharmaceuticals, computer software, and things like sound recordings. Each of the three countries to varying degrees has a fairly good reputation of protection of intellectual property rights. Some of them have entered into bilateral agreements. Poland has entered into a treaty with the United

States that provides for specific protection of intellectual property rights. There is an addendum to that treaty that deals with computer software. To repeat, there's the Munich Convention and also the five-year rule under their association with the EC agreement to basically bring themselves up to EC standards. So much for protecting our property.

Let's assume that we've satisfied ourselves that our property right is protected. Now we come to some very difficult issues. One of the things that we have decided to do is to transfer our technology to this new joint venture. The other side is going to produce the utility plant, the manufacturing plant. Then you get into the issue of valuation. Let's say you've decided to contribute your intangible asset, your high-technology product. What are the tax results of that? Why do you care about the tax results? The unfortunate rule in the United States is that if you have an outbound transfer of intellectual property and all you get back for that is stock in a corporation or a partnership interest, you have a taxable event. Now, what's the problem with that? Well, you cannot spend stock in a corporation, especially an Eastern European one and the same thing goes for an interest in a partnership. You have no cash. But you still have to pay the tax. How can you fix that? There is a very easy way to fix that. Instead of giving the technology to your new Eastern European joint venture, you license it to them. But then, they take a step back and say, "Wait a minute, I'm giving you the utility plant; I'm putting in maybe some cash; I'm giving you a work force; I'm giving you some real estate. That's my contribution. Your contribution is the technology - you can't charge me for it. And so we have a basic Mexican standoff - impasse especially if you agree to all these terms up front and then come back because you've talked to your tax adviser in the States. You can talk about a lot of options to them, but they have no experience with this. Say, giving stock dividends on a common or preferred stock investment; this, in particular, they just don't understand because they don't deal very much with dividends, let alone dividends of property. So it's important to negotiate these up front.

Now we get to another unfortunate tax consequence. Let's say you're successful. You go to a European country. You have to negotiate a royalty agreement for your technology. You do that. You feel really proud of yourself and go home and tell everybody, "Look what I've done for you guys." Suddenly you find out that these foreign governments are going to take 25 percent of the gross royalty amount. If you come from U.S. multinational companies, you're going to find that the

CFO is not particularly pleased that you've added to his/her financial statement by imposing a direct foreign income tax on an already overburdened foreign tax credit position.

How can you fix this? Now we turn to the ever-present, ever-pragmatic Dutch. These guys are great. The Dutch have a treaty network that is parallel to none. Particularly in the Eastern European countries. If I setup a Dutch holding company that will hold my royalties, that will hold my intangible assets, the withholding rates from Czechoslovakia, Hungary, and Poland are zero on royalties coming out of these countries to the Netherlands, and it's a zero royalty rate coming out of the Netherlands to the United States. So now you're a real hero. First off, you've avoided paying 34 cents in some imaginary cash transaction for which you never got the money, plus you've got the money out of the foreign country with a zero withholding rate. This is fabulous. You still have to deal with the potential transfer of the technology to the Netherlands because that is still a foreign jurisdiction, and it's an outbound transfer. You license it to the Dutch company, but you don't care here because the Netherlands is obviously a very sophisticated, modern economic power so you have no problem with the protection of your property right. Also, you've avoided this contribution rule because you've licensed it, and we are going to get a license fee back from the Netherlands. The Netherlands really isn't going to tax very much of this because being the pragmatic folks they are, if you give them a relatively minor markup, they're quite happy with that, and you can get a ruling that will give you some certainty. So Dutch holding companies are very important. They also provide for a way of getting dividends and profit repatriation out of these three countries at a relatively low withholding tax rate.

Finally, one of the other issues that we face under our tax code deals with just forming a joint venture, just the straight business of forming a 50-50 joint venture in a foreign country. How can anything go wrong if I just do that? In 1986 some very clever people fresh out of Harvard Law School thought that American businesses were really ripping off the Treasury by cross-crediting foreign taxes from high-tax countries to low-tax countries. So they had to put a stop to it. And they did - a very effective stop to it. One of the things they did was to say if you have ever received a dividend from a company in which you own more than 10 percent but 50 percent or less it goes into its own special little compartment. What does that mean? I don't want to go through the intricacies of how our foreign tax credit system works, but I think you can take the end result of that as

that any taxes you pay in a foreign country that are in excess of 34 percent, it's just the cost of doing business. You will never get that excess back. So how do we fix this? Normally you say you would like to have more than 50 percent; that's usually a problem because they don't want to give you more than 50 percent. They say, "this is an equal partnership - why should you be 51 and me 49?"

One of the discussions or points you heard this morning is to form a partnership because you do avoid that precise problem, and you will find that you can be remarkably flexible in the business entity you choose to operate under. We've heard that the business formation statutes tend to revolve around the German; the AG and the GMBH. The AG is more typical to our U.S. corporation. The GMBH is a very funny animal; it can look like a corporation or it can look like a partnership, and you can control it. So ideally what you would like to do is an exact 50-50-type of transaction. You want to create a partnership out of the corporate structure or the corporate statutes using various articles of incorporation so that you start to look more like a partnership and less like a corporation. And, again, that has two benefits: (1) you have eliminated the policy problem that we have; and (2) with certain limited exceptions, you can deduct those losses on your U.S. return. You are going to have to pay that money back eventually, the U.S. government is not that altruistic, but you still get the immediate use of it.

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**Experience:**

**CONSULTANT** **Washington, D.C.**  
**Public and Development Finance** **1989-Present**  
**National Rural Electric Cooperative Association/A.I.D.** - Designed and developed a financing plan to raise \$20 million in debt and equity for a 15 MW, hydro-electric project to be owned by Costa Rican cooperatives. The plan is currently being implemented. Analyzed the financial feasibility of an Argentine Cooperative Federation purchasing a \$900 million, 600 MW thermal power plant being privatized by the Argentine government.

**The Urban Institute** - Participated in an A.I.D. development project for the restoration of downtown Kingston, Jamaica. Wrote an analysis of potential funding sources.

**National Association of Home Builders** - With a senior policy analyst, wrote an article on the role of state bond banks in financing infrastructure, designed a study evaluating the financial structure of bond banks, and writing an article on Federal infrastructure finance policy.

**DAIN BOSWORTH INCORPORATED** **Minneapolis, MN**  
**Associate Vice-President - Public Finance** **1983-1988**  
Arranged and structured bond financings for state and local governments, non-profit organizations, and corporations. Specific tasks included developing new business, negotiating financing terms, and marketing securities to retail and institutional buyers. Specific accomplishments:

- Developed and structured 14 pooled, short-term and long-term financings for school districts in six Midwestern states at a part value exceeding \$1 billion.
- Coordinated credit review, structuring, and sales for a simultaneous financing by 18 local governments.
- Served as a regional co-manager for the Farmers Home Administration's \$2.8 billion rural housing loan asset sale.
- Negotiated letters of credit and investment agreements with foreign and domestic banks with a value of over \$900 million.

**OFFICE OF U.S. REPRESENTATIVE BILL FRENZEL Washington, D.C.  
Legislative Assistant 1979-1981**

Responsible for all constituent and legislative correspondence, special projects and committee work in four main issue areas: Federal Budget, Transportation, Energy, and the Environment. Specific accomplishments:

- Directed the state congressional delegation's efforts to secure Federal funding for a hazardous waste site in the district.
- Drafted legislation and assisted in coordinating state and congressional efforts to build a second lock at Locks and Dam 26 in Alton, IL.

**THE INSTITUTE FOR ARCHITECTURE  
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**Research Assistant**

Researched and analyzed past and current approaches to urban design and drew plans for proposed large-scale urban projects, e.g. plan for the redevelopment of central-city basin.

**Education:**

**HARVARD UNIVERSITY**

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**KENNEDY SCHOOL OF GOVERNMENT**

**1976-1978**

Master in City and Regional Planning, June 1978. Emphasis in Government Finance and Housing/Community Development. Studies included courses in capital markets and real estate development at the Harvard Business School, and national tax policy at the Harvard Law School.

**BROWN UNIVERSITY**

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**Bachelor of Arts in Urban Studies, June, 1975.**

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Publications**

Other graduate courses: International Finance/Economics, Financial Accounting, Investments and International Urban Development. Traveled extensively in West and Eastern Europe, Latin America, and Asia. Studied German at the University of Munich and Urban Planning in Paris. Article-entitled "Government Equities" appeared in the Summer 1990 issue of *Municipal Finance Journal*.

*References Available Upon Request*

# THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE

## Sources of Project Financing

By: Mr. Peter Ridder  
Consultant  
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Coopers & Lybrand has been retained by A.I.D. to do a study of using loans and loan guaranties for infrastructure projects around the world. We are in the process of doing that and have yet to reach our final conclusions or recommendations. Given that one of our main clients is here today, discretion dictates that we perhaps not get ahead of ourselves and give you the conclusions or recommendations. However, what I can do is describe some of the processes we've been through, some of the findings that we have and give you some of the details of what we have done. To be more specific to today's subject, I will put it in an East European vein.

However, what I'd like to do is start out with a story that I think illustrates what the situation is, particularly for American engineering firms. As part of our task in doing the study we were directed to go around and talk to the American business community, particularly the architects, the engineers, and the contractors, and some of the product people who do work in project finance in developing countries. Many of them told a very similar story. They found a lack of financing by the U.S. government and a lack of financing from government to support the types of infrastructure projects that they wanted to do. From one firm to another the story was fairly similar. But then I went to visit one particular company.

"How is financing going?" I said.

"Financing is no problem at all, we're finding financing," he said.

"Where are you finding financing?" I said.

"We're getting from the Germans, the French, the Japanese, and Spaniards," he said.

"How are you doing this?"

"We're forming joint ventures and subsidiaries with these companies in these other countries to access this money," he said.

What does this say about the situation? It says:

1. The United States is not providing the type of financing for capital projects that other countries are providing;
2. Other countries are providing this type of financing and providing it in the terms and in the maturities that these companies need; and
3. American engineering firms are taking their technology and their knowledge and essentially - through these joint ventures - transferring it to other countries.

These are some of the major conclusions or findings that we get from our study.

Another task we were supposed to do around the world was to see what the other sources of project finance are around the world, and rather than give you a litany of 150 various agencies that there are, let me group them into three major groupings: (1) the competitors; (2) the queen bee and the working bees; and (3) the entrepreneurs.

The competitors are basically the entities that have been set up in our competitor countries: Japan, Germany, and France. There are some in Spain; the Scandinavian countries have some; the Swiss are beginning to do some; Britain certainly has entities. But let me talk about three very briefly. The main behemoth in the bilateral world is OECF (Overseas Economic Cooperation Fund) run by the Japanese. In 1991 they made \$7 billion in loans and loan guaranties, equity investments in essentially infrastructure projects. Much of it in power, telecommunications, transportation, and some environmental, which is a growing area for them. It is funded essentially through government loans, government capital, and almost all the procurement, even though it's set at open bidding, and you can certainly go around the world and find isolated examples of funding going to American firms, or other firms, I would guess 80 to 90 percent of the procurement from these loans goes back to Japanese engineering, Japanese construction, and Japanese architectural firms. All their loans, I would say 95 percent, oddly enough are from

the entity to the government. OECF does very little private sector lending. OECF has done very little in Eastern Europe. They did one project in 1990, but I think as Japanese business begins to go in there, OECF will be behind them providing both concessional financing and market rate financing depending upon what they have to do. The second entity is KFW, kreditanstalt für Wiederaufbau. It is a development finance arm for the German government. They did about \$2 billion worth of loans last year. Again, most of it at concessional rates - 2 or 3 percent. Most of it for long-term maturities, 25 to 30 years. All of these are way under market rates. They are doing infrastructure: power, telecommunications, environmental projects, basically the same thing as OECF. In Eastern Europe their perspective is a little bit different. KFW was essentially set up after the war to make infrastructure loans within Germany. At the moment they are borrowing large amounts of funds in the capital markets to reloan to Eastern Germany. They are probably doing \$10 to \$20 billion a year just in that area alone. In terms of what they're doing in Eastern Europe, my understanding is that they are fishing around for deals and looking for financing, particularly in support of German engineering firms. My understanding is that other countries, such as France, Switzerland, are all willing to support their engineering and architectural firms in Eastern Europe. As I finish up in the bilaterals, a couple of things come clear:

1. There is a very close relationship between the aid dollar that goes in and the trade benefit that comes back for these other organizations for these other countries;
2. They are lending almost entirely at concessional rates and at maturities way beyond the market rate; and
3. The private sector for many of these entities is a growing part of their lending. Most is to the public, but an increasing part is going into the private sector.

Our second group is the queen bee and the worker bees. This is the World Bank and the multilateral entities. There are many multilaterals: the IDB, the Asian Development Bank, but the two that are most important for Eastern Europe are the EBRD, which is a new multilateral, and

the European Investment Bank. Let me go quickly through what the World Bank is doing. They do about \$12 billion in real infrastructure loans each year. Last year they did about \$3 billion in Eastern Europe. In 1988 they did zero. So increasingly they are putting money into Eastern Europe. Most of their infrastructure loans again are going to power, telecommunications, and environmental projects. However, increasingly World Bank is moving away from doing project loans to doing sector-type loans and structural adjustment-type loans. So the traditional, big infrastructure project that the World Bank is recognized for is going to be increasingly less important. And this means that money that's going for infrastructure from the World Bank as a proportion of the lending will actually be less. Their loans are basically market rates that go from the World Bank to the government, who then "on lends" it. One person described this type of lending where the government is the only creditor as a "heads-I-win, tails I-win" process for banking. They're not really on the hook. The World Bank is doing two interesting things:

1. Cofinancing is an area where they are increasingly looking for participants. In our conversations with the World Bank we constantly heard them say, "Where are the Americans in terms of providing cofinancing with us for projects?" They want to do more cofinancing; they are looking to do more with the United States and they are wondering where we are.
2. In the World Bank there is a great deal of conversation about doing private sector loans. It would take a charter change for them to do that.

The last group are the entrepreneurs, and they are really the private sector multilateral entities that lend to the private sector. The International Finance Corporation; IFC, which is the Inter-American Investment Corporation, OPIC, CDC, and the European Bank for Reconstruction Development. Let me just go through the EBRD. They were setup in 1990. Their capital is about \$1 billion. In 1991 they made about one-half billion dollars in loans. Most of it went for infrastructure in Eastern Europe. I think they soon will be one of the largest lenders to both the private and public sectors in Eastern Europe. They are doing studies. They are being very aggressive about what they're doing. The European Investment Bank is a sister organization

again making the same type of infrastructure loans. I think they did about \$200 million last year in this area. In terms of private sector lending, the International Finance Corporation is geared up to make basically market rate private sector loans to developing countries around the world, including Eastern Europe. In 1988 the IFC did no lending to Eastern Europe. In 1991 they did about 13 projects. They have put a new emphasis on doing infrastructure, and they will be lending more both to Eastern Europe and to infrastructure and privatization-type projects.

What does this all mean for the United States in terms of what we do, in terms of infrastructure. What I would like to do is to quickly go through what we do by looking at it from a project finance cycle finance point of view; starting from feasibility to engineering work, to equipment financing, and then project finance. In terms of feasibility and prefeasibility we have TDP (Trade and Development Program); the general agreement is that they do a fairly good job of bringing in projects, making sure that there is a connection between U.S. trade and the project. EXIM does basically equipment financing. The major complaint from most people is that they don't have enough money to do the amount of deals that people would like them to do. EXIM also started a project finance office to specifically finance project finance. They started the pilot program this year. They have not done any projects, although they have looked at six telecommunications and power projects in Asia. The final entity doing this kind of lending is OPIC. They do a small amount, about \$200 million of loans and direct loan guarantees. Their major program is insurance, providing insurance for equity investors and debt providers in developing countries. What you see as you look upon the spectrum is that given what other countries are doing, there is a gap in the U.S. financing arm between the feasibility studies, equipment suppliers, and our insurance program. We are not providing help in terms of direct project finance or certain areas both in market-rate terms and in concessional-rate terms (providing soft loans).

One last sector is the private sector. Many of you know the private sector has been generally unwilling to go into developing countries. My understanding is that they are beginning to get their feet wet, a little bit wet in Eastern Europe, but there is certainly not a great deal of private banking money going into Eastern Europe, as there is not in Latin America. There is some going into Asia.

To conclude, the major financing sources will continue to be development banks and bilateral organizations going into Eastern Europe. The private sector is beginning to get its feet wet. The United States is trying to decide what sort of policy to pursue. Do we want to do trade as our most important objective? Do we want basic human needs as our most important objective? Do we want to support the private sector? And to the degree we make policy choices they will dictate what sort of entity we want to create and what sort of loans and programs we want to set up.



# **The Role of the Engineering Community in Eastern Europe**

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**Keynote Speaker: Dr. Carol C. Adelman**

*Assistant Administrator for Europe  
U.S. Agency for International Development*

**Dr. Carol C. Adelman**  
**Assistant Administrator for Europe**  
**U.S. Agency for International Development**

President Bush reappointed Dr. Carol C. Adelman in 1989 as an Assistant Administrator of the U.S. Agency for International Development (A.I.D.), after President Reagan first nominated and the Senate confirmed her the previous year. A.I.D. is the U.S. government agency that provides \$7.2 billion per year in economic and humanitarian assistance to more than 80 developing countries worldwide.

As head of the Bureau for Europe, Dr. Adelman manages U.S. foreign aid programs in Central and Eastern Europe, including the Baltic states. The bureau also provides humanitarian assistance to the Soviet Union, including a large rehabilitation program following the Armenian earthquake, and medical supplies as part of a Presidential initiative.

Following the revolutions of 1989, Dr. Adelman supervised American assistance to support the first post-war democratic elections in Poland, Czechoslovakia, Hungary, Bulgaria, Romania and Yugoslavia. In addition, the bureau is supporting the transformation to democracy in Albania and the Baltic states of Lithuania, Latvia and Estonia. Approximately \$50 million has been spent in support of democratic political parties, free trade unions, independent media, voter education, election observation, and local governments. Longer-term U.S. aid has gone to set these countries on the path toward free enterprise development.

For more than 10 years (1970-1981), Dr. Adelman was a career Foreign Service officer with A.I.D., developing projects in the Middle East after working in Africa on agricultural, health and nutrition programs.

From 1981 to 1988, while in the private sector, she consulted with business and non-profit institutions, lectured and wrote articles in *The Wall Street Journal* and *Policy Review*. Her book, *The New International Regulatory Order*, dealt with international business and economic growth. Her work with the American Red Cross involved disaster relief and development programs, including help to victims of the African drought.

A native of Chicago, Dr. Adelman has a B.A. from the University of Colorado, two master's degrees--from Georgetown University School of Foreign Service and Johns Hopkins University School of Hygiene and Public Health--and a doctorate in public health from Johns Hopkins.

With her husband and two daughters, Jessica (16) and Jocelyn (14), Dr. Adelman lives in Arlington, Virginia.

# **International Registration and Education**

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**Mr. Harry Parker**

*Executive Vice President, Principal/Partner  
Cullinan Engineering Company*

**J. Harry Parker, P.E. & P.S.  
Cullinan Engineering Co., Inc.  
Principal/Partner  
Executive Vice President**

**EDUCATION:**

University of Florida - 1944  
Northeastern University - 1950  
Massachusetts Institute of Technology - 1952  
Photogrammetry

**REGISTRATION:**

Registered Professional Land Surveyor  
Massachusetts  
Connecticut  
New Hampshire

Registered Professional Engineer  
Massachusetts

**PROFESSIONAL  
AFFILIATIONS:**

American Congress of Surveying and Mapping  
American Society of Civil Engineers  
Boston Society of Civil Engineers Section/ASCE  
Council of Engineering Specialty Boards (CESB)  
National Society of Professional Engineers  
Massachusetts Association of Land Surveyors and  
Civil Engineers  
National Council of Examiners for Engineering and  
Surveying  
Water Pollution Control Federation

**PUBLIC SERVICE:**

Commonwealth of Massachusetts  
Board of Registration of Professional Engineers  
and Professional Land Surveyors

Land Surveyor Member	1975-Present
Secretary	1977/1988-1990
Chairman	1978-1986/1991-1992



National Council of Examiners for Engineering and  
Surveying (NCEES)

Member	1975-Present
Treasurer	1984-1985
President-Elect	1985-1986
President	1986-1987
Past President	1987-1988

Northeast Zone

Secretary-Treasurer	1980-1981
Vice President and Member of the Board of Directors	1981-1983

NCEES Committees

Committee on Land Surveyors - Chairman	1980-1981
Committee on Uniform Examinations for Land Surveying - Chairman	1980-1981
Uniform Examinations and Qualifications	1978-1981
Constitution and By-Law Committee - Chairman	1983-1984
Uniform Procedures and Legislative Guidelines Chairman	1988-1990
Examination Audit	1989-1990
Special Committee on U.S. Engineer	1990-1991

ACADEMIC:

Member

University of Lowell  
Industrial Advisory Committee  
Civil Engineering Technology

Wentworth Institute - Boston, MA  
Industrial Professional  
Advisory Committee (IPAC)

School of Architecture & Engineering

Women's Technical Institute - Boston, MA  
Advisory Committee

Honors

Tau Beta Pi - Eminent Engineer  
Phi Eta Sigma Academic Honors  
Boston Society of Civil Engineers  
Honorary Member  
Ralph W. Horne Award for Public Service

Distinguished Service Awards  
National Council of Examiners for Engineering  
and Surveying  
Massachusetts Society of Professional Engineers  
Eastern Massachusetts Association of Land  
Surveyors (EMALS)  
Surveying Excellence Award

Lecturer

Professional Engineer Examination  
Registration on Campus (ROC) MSPE  
Registration on Site Industry (ROSI) MSPE  
Site Assessment - Oil and Hazardous Materials  
Seminars

Mr. Parker is a Principal and Executive Vice President of Cullinan and has supervised both the Engineering and Land Survey Departments as Director of Operations at Cullinan from 1972-1991. He has over 46 years of technical experience in the civil and survey engineering fields.

## OTHER

J. Harry Parker, the first Professional Land Surveyor to serve on the Massachusetts Board of Registration of Professional Engineers and Professional Land Surveyors, was appointed to the Board by Governor Michael Dukakis in December 1975 and is now serving his fourth five-year term.

Mr. Parker has served the National Council of Examiners for Engineering and Surveying (NCEES) as Chairman and Member of several examinations committees; Chairman of the Constitution and By-Laws Committee; Vice President, Treasurer and President-Elect of the Northeast Zone; President and Past-President. He is recipient of the Council's Distinguished Service Award and Distinguished Service with Special Commendation.

Mr. Parker is also a member of the Massachusetts Society of Professional Engineers and received its Distinguished Service Award in 1985 and Outstanding Service Award in 1988. He was a recipient of the Excellence in Surveying Award from the Eastern Massachusetts Association of Land Surveyors in 1987. He most recently was named as an Honorary Member of the Boston Society of Engineering Section of American Society of Civil Engineers.

Mr. Parker is highly regarded as an Expert Witness in his field and has given testimony in numerous court trials throughout Massachusetts. He has authored several papers on use of examinations and participated on numerous panels on examination administration.

Mr. Parker is in great demand as a keynote speaker both locally and nationally. His audiences run the gamut of the profession, from engineering students to experienced Professional Engineers and Professional Land Surveyors.

210 Lincoln Street  
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U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

BUREAU FOR EUROPE

THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE IN EASTERN  
EUROPE

Madison Hotel, Washington D.C.  
March 5-6, 1992

THE ROAD TO PRIVATIZATION - ENGINEERING ISSUES

INTERNATIONAL REGISTRATION AND EDUCATION

REGISTRATION AND PRACTICE ISSUES

Just as the states and jurisdictions of the United States of America in an exercise of their constitutional powers and obligation to protect the public have adopted statutes and regulations for establishing standards for licensure of persons competent to practice engineering, so too have other members of the international community followed parallel paths to find appropriate standards for engineering practice in their countries. It is not surprising that countries with dissimilar languages and cultures, as well as, social, economic and political structures have developed dissimilar standards. Yet there are threads of commonality in the weave of the fabric cloaking all societies. As we meet at a time of continuing, often cataclysmic, change in the social and political environment in which we as engineers may practice it is not only desirable, but imperative that we examine, explore and evaluate the nature of the engineering environment to reach an understanding of how best to re-focus on the global image to enhance our individual areas of interest.

It is axiomatic that the purpose of any standard is to protect the quality of behavior, of product or of life. Let us look and compare the standards the United States and its international neighbors have developed to protect the quality of engineering practice and thereby protect the public.

Here in the United States those standards have evolved since the 1907 Wyoming Statute for licensure of engineers to a level of uniformity not generally known or understood even by the engineering community. For example, the National Council of Examiners for Engineering and Surveying (NCEES) has reaffirmed its Model Law definition of a Professional Engineer as

a person whose education and experience qualifications and performance on the Fundamentals and Principles and Practice of Engineering examinations satisfies, with minor exceptions, requirements for comity registration.

This definition is for a person:

Having an EAC/ABET engineering degree, or its equivalent;

Passing the NCEES Fundamentals of Engineering (FE) examination, or its equivalent;

Acquiring a minimum of four (4) years of acceptable experience;

Passing the NCEES Principles and Practice of Engineering (PE) examination, or its equivalent; and

Receiving and maintaining licensure as a Professional Engineer.

Even with the nearly unanimous acceptability of these standards for licensure among the states, there are those who may question the applicability of these standards to the international community asking, "Are these standards the most valid indicator of an elusive cut line between competence and incompetence?" To this question one can ask in turn, "Can persons reach the desired level of competence with only an accredited engineering degree i.e., obtain and demonstrate a mastery of necessary knowledges of engineering mathematics, engineering sciences and their application to engineering design from just the accredited degree program; be competent to practice engineering so as not to endanger the public welfare without supervised post-education experience; or demonstrate minimum competence without testing of education and experience by carefully designed national job-referenced examinations such as those used by all of the US registration boards?" While this is our model we shall see that a somewhat different standard for practice exists in Europe.

Without going into detail on the accrediting process for engineering curricula of the various countries and the comparative results in setting high educational criteria for engineering programs and evaluation of their equivalency let us share recent progress toward setting mutually acceptable standards.

Notable in the area of engineering education is the so-called Washington Accord with representative bodies from the United States and Canada, ABET and CEAC, with the Federation of European National Engineering Associations (FEANI). This agreement provides for acceptance by the FEANI members of the equivalency of an ABET accredited engineering curriculum with the

recognized programs in the respective countries provided the person has passed the NCEES Fundamentals of Engineering (EIT) examination. With this step we find commonality between the U.S. engineers meeting the NCEES Model cited before and engineers of our international neighbors in the area of engineering education. It is here that we have come closest to a consensus. It is in the other areas, - experience and examination, that negotiations to date, have achieved negligible results.

For the purpose of our discussion, let us compare the NCEES Model Law Definition of Professional Engineer cited with the minimum standards for the Federation Europeenne d'Associations Nationales d'Ingenieurs (FEANI's) title of "European Engineer" (Eur Ing).

The FEANI register embodies two (2) categories; Group 1 and 2. Group 1 is defined as "those with creative, intellectual qualities, who are capable of developing and applying new technology". Group 2 are "those of a more practical bent who can effectively bring to bear a detailed knowledge of established technology". The minimum standards for Group 1 are in a range from that of a high level of secondary education plus four (4) years of approved engineering education to that of the secondary education plus three (3) years of engineering education plus one (1) year of technical training supervised and approved either by a university or an official national body as part of engineering formation.

The standards for Group 2 are a good secondary education plus three (3) years of approved engineering education either supervised and approved by a technical school, college or similar body, or a combination of education and experience as part of engineering formation.

Only those in Group 1 may apply for the award of the title European Engineer - EUR ING. One must qualify for registration in Group 1 and have responsible engineering experience of at least three (3) years or a total of seven (7) years to be considered for award of the title.

Persons in Group 2 must, undergo additional formation, or acquire education and experience, and proceed to Group 1 before becoming eligible for the award.

Comparing the Group 1 requirements to the NCEES Model of Four Years Education, Four Years Experience plus two eight hour examinations we find the educational and experience requirements to be a close to parity. Post graduate examinations to practice engineering are not generally required.

Moving easterly to the countries under discussion at this conference we find similarity of approach to the recognition of competence to practice engineering. It is my understanding that these countries are in a state of change in this regard. Perhaps Czechoslovakia is a good illustration of the problems of the development or, in this case, re-development of a process to identify engineers.

" The history of engineering societies on the territory of today's Czechoslovakia started in the eighteenth century when the state exam in engineering was required for certain public works.

According to the academician, Nemeč, the title "Authorized Engineer" was established shortly after Czechoslovakia became an independent state in 1918. Requirements for the exam were based on qualification (university diploma), experience, citizenship, irreproachability and others. Knowledge of law and economics was required beside technical expertise. The examining board consisted of professors from universities. An Authorized Engineer could offer consulting engineering services and his work was guaranteed by the state. Bearer of this title used a special stamp with the state symbol.

After 1948, the communist government of Czechoslovakia canceled the established registration methods. There were only certain projects that required so called "Exams of Special Competence". These were repeated every two (2) years with the examining Boards named by corresponding branch ministries. Project Institutes were responsible for seeing that a certain percentage of employees took these exams. Their quality was not comparable with those for Authorized Engineer.

Presently a proposal for "Authorized Engineers and Engineering Chapter Law" is being discussed. High qualification requirements for some engineering work is already included in the new "Free Enterprise Law" recently passed.

The Society of Civil Engineers, active now for two years, has worked in conjunction with the government on preparation of the above mentioned law. The President of Czech Technical University, Professor Stanislav Hanzel is chairman of recently established Society of Mechanical Engineers."

This information is based upon a recent discussion between a colleague, Vladimír Stejskal and the Vice President of the Czech Technical University of Prague, Mr. Jan John.

We are witnessing in Czechoslovakia the genesis of a return to a prominent role for engineering technical associations (societies) and the possibility of a registration law not dissimilar to the United States.

We have then, various titles for the licensed or registered engineer which have acceptance country wide, or region wide as in the European Federation, - Professional Engineer (P.E.) in the United States, P. Eng in Canada, Chartered Engineer in Ireland and the United Kingdom and Eur Ing for the twenty some members of that group as well as the Czech Title of Authorized Engineer in the days of the First Republic. The awarding authorities of those titles must recognize differences in the standards, some minor, some major - between states, between the provinces and the countries leading to the these titles. As noted earlier, the most nearly uniform component is education. The major differences between the systems of registration is in the area of experience and the use of post graduate education and experience examinations to test knowledge and competence. It is in this area that only the Professional Engineer registration standards rely on education, experience and examination evaluation to determine the minimum qualification level for licensure, and the awarding of title.

For the purposes of international practice it can be argued that the Professional Engineer, licensed by NCEES Model Law definition standards, should meet virtually all the standards for the P. Eng, Chartered Engineer or the Eur Ing insofar as education, experience and examination are concerned. Unique requirements in the international arena such as registration of firms, belonging to a national professional association, retaining a local consultant in joint venture or a non-foreign degree restriction are typical issues requiring research and agreement for performance of work in the international arena. Continuing dialogue between the appropriate licensing bodies may at some point in time result in more uniform standards, or at least, a more complete understanding of the requirements.

For example, in the spirit of the United States - Canada Free Trade Agreements, our States must not apply more rigid standards to Canadian applicants for licensure than U.S. Citizens. By the same token the States, having developed over eighty (80) years acceptable standards for measuring competence for licensure to protect the public, will not, in my opinion lower those standards for noncitizens of the United States. These standards are not restrictive - they are reasonable and afford all competent engineers the opportunity for licensure and practice. It is true here in the United States and would seem to be internationally.

How may we then summarize the registration and practice issues which we may face.

Without comprehensive knowledge of each countries' unique requirements one might hope to find in the Eastern Europe Engineering Community (EEEC):

- Acceptance of an ABET Accredited Engineering degree with the passing of the NCEES Fundamentals of Engineering Examination for education equivalence in those countries and the countries signatory to the Washington Accord.
- Acceptance of Professional Engineer status as equivalency for education, experience and examination requirements.
- Professional engineers who may have been licensed by education and experience before the universal use of examinations may find equivalency to required standards.
- That each country may have other requirements not directly related to licensure or registration standards of competence.

In conclusion, we must be prepared to approach registration and practice issues in each country for uniqueness and at the same time commonality as we do with the engineering projects we undertake. We must be prepared to match our credentials to each country's requirements confident but not complacent in the knowledge that Professional Engineers and most Graduate Engineers meet the education and experience standards and Professional Engineers by examination seem to meet all requirements.

March 5, 1992  
BY: J. Harry Parker, PE & PS  
Past-President- NCEES  
Cullinan Engineering Co., Inc.  
Boston, Massachusetts

# **Education, Training and Technology Exchange**

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**Dr. Woodrow Leake**  
*Deputy Executive Director*  
*American Society for Engineering Education*

**WOODROW W. LEAKE**  
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**EDUCATION:**

B.A., Emory University, 1966  
Ph.D., University of Florida, 1973

**WORK EXPERIENCE:**

Mar 1991 - Present: **Deputy Executive Director, American Society for Engineering Education, Washington, D.C.**

As Chief Operating Officer for a 10,000 emember professional society for engineering educators and institutions, work directly with the Executive Director in planning and implementing priorities and projects approved by the Board of Directors in the areas of: publications; member service; faculty programs; expanding interaction with national and international engineering education organizations; and enhancing the capacity of ASEE to assume a greater leadership role in the improvement of engineering education.

Nov 1990 - Mar 1991: **Development Activities Coordinator, American Society for Engineering Education, Washington, D.C.**

Oct 1981 - Nov 1990: **Founder and President, Leake Enterprises, Inc., and Wilson and Lowe, Gainesville, Florida**

Feb 1980 - Mar 1982: **Vice President, Rutherfords, Inc. Gainesville, Florida**

Aug 1978 - Feb 1980: **Director of Human Resources and Marketing, Bromberg & Company, Birmingham, Alabama**

June 1975 - Aug 1978: **Edwin Winship Lawrence Professor of Communication and Chairman, Department of Communication, University of Vermont, Burlington, Vermont**

June 1973 - June 1975: **Director of Forensics and Assistant Professor, Valdosta State College, Valdosta, Georgia**

**RELEVANT PUBLICATIONS:**

*On the Question of Scarce World Resources: The Advanced Study.* Clayton, MO 1975.

*Ideological Rhetoric: Systemic Arguments for War for Peace.* University of Florida, 1973.

# THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE

## Education, Training, and Technology Exchange

By: Dr. Woodrow Leake  
Deputy Executive Director  
American Society for Engineering Education

In addressing the concept of what would we like for A.I.D. to do to help with the educational situation in Central and Eastern Europe, especially as it ties to getting some industrial development and some commercial ventures going in those countries, I see three areas of opportunity.

The first area of opportunity is within the universities themselves. I will touch on five areas within the university focus. We found, and it has been referred to several times today, that there is a tremendous need for simple remediation of the infrastructure of the universities. The physical plants are in terrible disrepair; tremendous efforts could be undertaken there to help bring the very structures of universities back up-to-date, including labs and equipment that need to be replaced or reconfigured in some way. Second, we need to see an update of the support materials with which the professors work. We found in a number of places that on an intellectual level world-class work is being done in Central and Eastern Europe, but that the support facilities, especially in computers, are missing. When Dr. Draper and I were in Russia a few months ago, we found some incredible software programs being developed with no computers to run them on. So the people were far advanced in terms of developing the software, but the computers were 15 generations old; they were not even up to the 286 levels that most of you are probably throwing away by now. Another support material is publications. There is a real dramatic need for journals, publications, magazines, scholarly papers, which will allow professors to stay up with what is going on on the cutting edge of their fields worldwide.

The third item needed in the universities is some kind of standardization of curriculum and accreditation, and transcript forms, if nothing else. In trying to establish exchange programs, it is complicated by the fact that we don't know what a transcript means when we get it from one of the schools. Unless we've had direct dealings with that particular school and know the dean or know the rector and know the levels of courses, very often what we see when we ask for a transcript is a handwritten list of courses with no indication of the level of those courses, with no indication of evaluation of those courses, and quite often with no certification of the legitimacy of the list on the part of the university or the institute. So that's a problem. Fourth, the establishment of professional societies could be of tremendous value. We have found that the professional societies that exist and that are trying to get started are extremely helpful to us in establishing contacts with different universities. They provide an interface between government and industry. The whole time that the universities were under state control, they really were sort of in the middle. They worked very closely with industry, which was a recipient of their products, and they were controlled in terms of their strategies and policies by the state. And so, especially at the higher level within the universities, the rectors and department heads can be valuable. Finally, in the area of universities, is the whole issue of expenses and how to take care of the monetary requirements. Again, now that the universities and the institutes are no longer state-sponsored, somebody's got to pay the bill. The presidents of these universities, even the department chairs and faculty members, are extremely concerned about where the money is going to come from. When you ask a student about paying tuition, he rolls his eyes in the back of his head and looks at you like he doesn't know what you're talking about because it is a foreign concept. Yet, beginning in the next couple of years, somebody has to pay the tuition. In some instances, corporations have sort of bought the cream of the crop by giving an institute 'x' dollars, to pay for a certain number of students to go through, in exchange for being able to come in and get the pick of the graduates. So the monetary issues are extremely serious, especially as they move from a military to a civilian focus, from a command economy to a free market focus, then the question of making the institutes more commercially viable and how those institutes themselves can get involved in commercialization through joint projects and joint ventures is a very strong concern.

The second major area I will address is the concept of exchange programs. These have been going on for years with the countries in Central and Eastern Europe. With the changing economy

101'

and the changing world political scene, however they are becoming even more crucial. One of the things that could be funded by A.I.D., or by some of your companies is exchange programs that have a work component - both directions - so that students or faculty members or postdocs will not simply go into labs and play with machines for six months, but will also come into your companies; do some work; learn how your companies are run; learn some management techniques from you and your people (by the way this is a real cheap and easy way to create your own management staff in those countries when you get ready to operate there); maybe get involved with some of the exchanges going in the other direction; or sponsor some university faculty here to go over there and do some research and also get involved in the industry in those countries. It is a very useful tool and our academic folks, engineering deans council, and other people in the engineering world are having to begin to examine the prospect of the value of these "work-component" exchanges instead of just having people teach a course. Obviously the tie-in with management training is paramount.

Something that is terribly lacking more in this country than in the countries of Eastern and Central Europe is language training. The arrogance of Americans when it comes to language is appalling, and I would encourage all of you to prepare your employees and yourselves for the language requirements that you are going to face. It goes without saying that if we understand a language and if we connect the language training with aculturation so that we understand some of the underlying concepts of the societies and cultures we're going into, we stand a much better chance of being accepted and having some credibility. It's always embarrassing to me when the gentlemen and ladies from other countries have a much, much higher likelihood to have proficiency in English than our delegations to those countries do. I really can't stress enough that A.I.D. could help fund some language training, because it is relatively inexpensive.

Next, in terms of the exchange programs, is the possibility (again on a very low-cost basis) of establishing a clearinghouse for these activities in the form of a central database of what's available; where it's available; what the requirements are, and so forth. This would be very easy to establish with a cooperative effort through professional societies in all affected countries. Along with that would be the possibility of publishing directories of what's available at the institute in

terms of research; in terms of teaching expertise, and even in terms of the production expertise that some of the academic institutes have.

I will begin my third area of discussion on the educational situation and how A.I.D. could help by making a general observation: There is tremendous untapped potential in all of these countries. We found a very high level of work and intellectual ability in all of the institutes we have visited. In many areas cutting- edge technology is being developed that most people in this country don't know about. Beyond that there is also a tremendous desire, because of the changing economic and political climate, to establish these joint ventures. Someone said last evening, "There is a real cry for involvement. It's not just saying 'yes, we'll be involved with you,' there is a genuine desire to be involved with the rest of the world now after so many years of being shut-off from the rest of the world in academic and commercial senses." So that desire is there. As I mentioned earlier, it's a tremendous source for you to get your products tested and to tie-in to the industry and government officials that are available to you.

Finally, let me add (and this comes from a meeting that Dr. Draper of NSF and I had with the chairman of the state committee on higher education, science, and technology in Russia, but it's applicable all across the board in Central and Eastern Europe) that when I expressed my surprise at some of the cutting-edge-work I was finding, he smiled very gently, sort of slapped me on the wrist in a kind way, and said, "You must remember that when you don't have money, you have to learn how to think very well." There is a tremendous amount of people power there. Tremendous intellectual strength; a tremendous desire to be involved with the rest of the world. It offers excellent opportunities for all of us.

# **Standards and International Trade**

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**Dr. Stanley I. Warsaw**

*Director, Office of Standard Services  
National Institute of Standards and Technology*

**Stanley I. Warshaw, Sc.D., P.E.**  
**Director, Office of Standards Services**  
**National Institute of Standards and Technology**

Since 1981, Stanley I. Warshaw has been responsible for standards activities at the National Institute of Standards and Technology (NIST; formerly the National Bureau of Standards [NBS]). In his present position, Dr. Warshaw directs the Institute's activities in support of industry and trade relating to technical standards, standards policy, and conformity assessment including laboratory accreditation. He is a United States delegate to several international organizations, and currently serves on the principal councils of the Electronic Components and Certification Board (ECCB) of the Electronic Industries Association (EIA), the Institute of Electrical and Electronics Engineers (IEEE), the United States National Committee (USNC) for the International Electrotechnical Commission (IEC), the American Society of Mechanical Engineers (ASME), and Underwriters Laboratories (UL). He is also the Chairman of the Federal Inter-agency Committee on Standards Policy, and serves as the U.S. Representative to the United National Economic Commission (UNECE) for Europe's Government Officials Responsible for Standards Policy.

Dr. Warshaw received his B.S. in Engineering with honors from the Georgia Institute of Technology and the Doctor of Science degree from the Massachusetts Institute of Technology. In addition, he completed the Advanced Management Program at Harvard Business School.

A licensed Professional Engineer, Dr. Warshaw's career has been with the Raytheon Company, where he was a Senior Research Scientist, and American Standard, Inc., where he held a variety of positions leading to that of General Manager of Development and Engineering. He joined the National Bureau of Standards in 1975, as Director of The Center for Consumer Product Technology.

# THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE

## Standards and International Trade

By: Mr. Stanley I. Warshaw  
Director, Office of Standard Services  
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On the subject of standards, I use *standards* in the broadest context; I'm referring not just to the documentary standards that describe products and materials and specifications, but I am also including methods of conformity assessment, that is, means of attestation to the conformance of products to specified standards using methods such as testing, certification, and quality registration. We have had a lot of discussion on this general subject in Washington in the past couple of years, particularly brought about in large part by the advent of the European community's commonization efforts - the new approach that was brought about in 1985 whereby the European community is endeavoring to harmonize all its standards, not only among the 12 members of the EC, but extending it to the six EFTA countries that participate in their regional standards efforts. These standards are being used to characterize and qualify products that are sold within the European market, and that includes most regulated products because the standards are used to describe the product requirements in more detail than are contained in the directives issued by the European community that people spoke to earlier. Now, admittedly, 1992 is kind of a magic number, but it's a dynamic process that's well in place.

I don't mean to overemphasize that effort, but as some others have indicated here earlier today, the Eastern European countries and in particular those with rapidly developing market economies in that area, such as Czechoslovakia, Poland, and Hungary, are looking to Brussels for guidance. They are indeed becoming active in the development of standards within that regional area. They have been invited to participate with the EC. Other third countries, such as us, are not allowed to participate in those regional efforts.

In the past, the U.S. economy, as others have indicated earlier today, has developed pretty well based upon our own internal market needs. We have not been good performers internationally. In fact, we've been pretty lousy performers internationally. Even today we export only some of our gross national product as contrasted to the industrialized countries of Western Europe, which export closer to an average of 20 percent of their gross national product. If we are going to succeed in the global marketplace, then we have to participate more actively internationally. And at the same time we have to discourage the concentration of regional efforts in favor of what might be accomplished internationally. That's what the battle is all about.

Even yesterday, there were public hearings because in the United States we have a standards community that some would kindly describe as being pluralistic and others would describe as being disparate. We have more than 650 entities developing standards in the United States. In every other industrialized country, particularly throughout Western Europe, you have a monolithic structure that is well-coordinated bringing into focus the trade associations and so forth. In Eastern Europe, of course, you've had too focused an effort - and this is where Czechoslovakia, Poland, and Hungary are most anxious to learn from us and others as to how to be effective in the global marketplace because their GOST standard, which was the Soviet Union's program and has now been divided into GOST standard of Russia and GOST standard of Ukraine, dictated to the members of the COMECON countries what their standard requirements would be. The standards organizations that were contained within the Eastern European countries like Czechoslovakia, Hungary, and Poland had been very subservient to what was accomplished in the Soviet Union and pretty much mimicked those activities. They have vertically integrated structures; they are not pluralistic as we are. The testing, the certification, the measurement capabilities - all those things that are required to bring about a product's entry into the marketplace - are accomplished within a monolithic, singular structure. And these structures are not synergistic with other global requirements; they're not synergistic with EC requirements; they're certainly not synergistic with ours. In the United States, we have had a concerted effort by a number of organizations from the private sector, trade associations, and standards organizations, as well as government agencies like the FDA, OSHA, and the Department of Commerce and have held a number of discussions with the European Commission. We encouraged them to go to the international arenas such as CCIT, ISO, and IEC, and all those other alphabet soup

international organizations that I'm sure a number of you are familiar with. And we do have a commitment from the European community that they will do that, providing that third countries, such as the United States, are active participants in that arena, and if, through that participation, we do develop the standards and requirements that they need. Then they would not resort to the development of the regional standards.

This is an opportunity for the United States to do a couple of things: 1) it's certainly an opportunity for the United States to restructure, in some way, how it does its standards business - both within the private and the public sectors - in order to be more effective nationally; and (2) at the same time, we can work closely with developing countries, middle-income countries such as Czechoslovakia, Poland, and Hungary, where they need to develop the sort of standards and requirements that can be accepted globally.

Now specifically, how do you do that? Well, we've had an example of that in the recent past. In fact, that hearing I mentioned yesterday was devoted largely to the effort that has been going on for the past two years in the Gulf States. The National Institute of Standards and Technology, which I'm from, has, for example, coordinated the placement of a private sector standards expert in Saudi Arabia, which is leading the standards organization in that area. He communicated to us and we, in turn, to the other 650 entities, as well as industries and trade associations, the needs of that community. He then received the technical advice and expertise that is contained within all these entities in the United States, got that back there, and indeed effected an influence. More than 200 standards were developed in that area in the past two years. The Gulf area is perhaps not of such significance in terms of trade, as let's say, the European community with its 12 countries that account for about \$113 billion; this is only an \$8 billion market. But the United States lost some \$2 billion of activities in the Gulf State region in the past 10 years because we had not made the commitment, due to our disparate structure, to devote the resources to the need: to bring about the kind of standardization that would be useful for trade purposes both from their perspective as well as ours, as well as globally. Our effort has actually resulted in a recovery, in a gain from what slipped from about \$8 billion in trade to \$6 billion, to the present time when trade is again approaching \$7 billion. It's a significant example of a

modest effort. I think that it is the kind of thing that A.I.D. could do with respect to Czechoslovakia, Hungary, Poland, and other Eastern European nations as well.

We have had many exchanges with standards entities throughout the Eastern European nations. They are anxious to have resident expertise to act as intermediaries to translate back to their home countries the needs of those countries for standards, testing, and a certification and to give them appropriate technical advice and counsel. It would be very useful to us to do that, and I think that the Saudi Arabian or Gulf States project is an excellent example. Let me point out that other nations, other third countries with respect to Europe, such as Japan, have actually placed people in the standards, testing, and certification entities within these countries and are also having some influence within the European community. The UK, France, and Germany, in particular, have stationed one, two, three, or four people in the standards, testing, or certification entities in these countries just in order to ensure that what they're developing is synergistic with the climates of that region. This is the sort of thing that I think A.I.D. could be very constructive in because it would help those countries to gain better opportunities in the global marketplace - if not at the same time perhaps serve our own selfish needs in terms of participating more actively in international trade.

The other thing in terms of standards, is redundant conformity assessment requirements - double testing, double certification, quality registration. The ISO 9000 series, which I'm sure many of you are familiar with, is a means of attesting to quality management, quality systems, and quality assurance practices in manufacturing and management. These are endeavors that are winning global acceptance. We need to have actual exchanges of data packages and testing and proficiency testing and round-robins with the testing labs and certification entities in these countries in order to build the sort of confidence that allows us to establish mutual recognition agreements so that the test and certification results from a laboratory can be accepted in another national or international market. The cost associated with redundant testing and certification is not only significant in terms of the actual test, it is often more significant to business in terms of the time delay that is associated with having to go through that repeated cycle in order to enter that marketplace.

In summary, my recommendations would be that we establish a program that allows for the exchange of resident expertise with the nation's standards and testing entities, and also allow the exchange of test data, measurement, and calibration efforts that will ensure the acceptance of conformity assessment measures from any given qualified lab irrespective of its location, and therefore, reduce nontariff trade barriers. Czechoslovakia is a signatory to the General Agreement on Tariffs and Trade (the GATT), and the GATT, as you know, is currently under renegotiation under the Uruguay Round. The standards code that is an integral part of the GATT, and has been in there for more than 10 years, is being addressed in these discussions. It's being altered in these discussions to take into consideration what has been an expressed concern by the European community and other industrialized countries about the need for a government-to-private interface, a partnership structure of oversight over what goes on in standards, particularly with respect to activities in the United States. This is an area that is changing in the United States, and if we don't get in there and reflect the need to do this on an international level, and participate actively with other nations, then all our own industries are going to suffer.

# **Quality and Productivity: A Manufacturer's Point of View**

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**Mr. Mark Miller**

*Director Central and East Europe  
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Mr. Miller is responsible for marketing McDermott's products and services in Central and Eastern Europe. With an emphasis on environmental cleanup in an area that relies heavily on the burning of coal, he has been promoting the Environmental Equipment, the Energy Services, and the Power Generation divisions of Babcock & Wilcox, a McDermott company. Of particular interest are projects which require the engineering and installation of equipment to reduce SO<sub>2</sub> and NO<sub>x</sub> emissions from coal-fired boilers. Additionally, life extension and modernization projects at utility and industrial power generation facilities as well as at district heating plants are being evaluated.

Mark also works with U.S. government agencies whose programs promote private sector involvement in the region and who may assist in providing financial assistance, i.e., A.I.D., TDP, Eximbank, etc.

Mr. Miller has been with McDermott for over 10 years and is located in the company's Washington, D.C. office.

**THE ROLE OF THE ENGINEERING COMMUNITY IN  
INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE**

**Quality and Productivity: A Manufacturer's Point of View**

By: Mr. Mark Miller  
Director, Central and East Europe  
McDermott Incorporated Babcock & Wilcox

I'm not an engineer and I hope it doesn't become too painfully obvious as we go along. But I have spent a lot of time in Central and East Europe and I think there may be some direct applications for you in what I have to say. For those of you who aren't familiar, it's McDermott Incorporated/Babcock & Wilcox. McDermott Incorporated bought B&W back in the late 70s. McDermott, Inc. manufactures offshore oil platforms and we perform other offshore marine-related services. That's the parent. One of its subsidiaries, but for whom I do most if not all of my marketing in Central Europe, is Babcock & Wilcox. We produce power generation and air pollution control equipment, mainly aimed at coal-fired boilers, both for power generation and industry uses. We range from manufacturing new boilers to the rehabilitation and modernization of old ones. We also run the gamut of the different technologies for flu gas desulfurization.

For a brief background of what I've been doing. I've been marketing in the area for about two years. Most of my time has been spent in Poland; secondly, in the Czech and Slovak Federal Republic, and very little time in Hungary. We focused on flu gas desulfurization because a lot of the plants, both on the power side and on the industrial side, are trying to clean up the emissions coming from the power plants or from the coal-fired boilers. We are currently involved in a consortium that has bid on an A.I.D. project. We have worked with the Trade Development Program. I think I have some practical experience over in the region. But I've also been working with a lot of the institutions here in Washington who are trying to help promote what we are doing. So with that background, I want to identify four of the problem areas that we have found make it very difficult to develop projects in Central Europe.

In each of these four areas, when we hit one of these hurdles, it's very difficult to get over it, and the process slows down to a point where my management at times says, "Why in the hell are you going after this project, it's taken you a year to get this far." And I say, "It may take another." But I also believe that these four problem areas, which I have hit every time I go over to work on a project, have direct applications for the engineering community. These are prime examples of project development where engineers could, with A.I.D.'s assistance, get some work done and get projects done for U.S. companies. I'd like to underscore what several people have said today. The engineers that we've worked with at these plants are excellent; they're well-trained; they're aggressive; they're confident, and they want to solve the problems that they're facing. We talked with plant directors; we talked with technical managers; we talked with production managers - all of whom are engineers. I can't remember talking to someone who has an MBA. They're mechanical; they're electrical; they know how the plant runs and they have hands-on experience in solving problems. However, there are several parts of the business that they don't understand, or they have trouble understanding, or haven't had experience in.

First, there are a new set of regulations, particularly in Poland but also in the Czech and Slovak Republics - maybe in Hungary, I haven't spent time there - that particularly in some of the outer regions of the countries the plant managers and production managers either haven't read, don't understand, or are having difficulty interpreting. For instance, air pollution control. I remember sitting down across the table, I guess it was my second time at this chemical plant. "What we want to do is we want to reduce sulfur dioxide emissions from two 30-MW coal-fired boilers," he said. And I said, "What target do you want to reach - what percent removal do you want to reach on your boilers?" I didn't have anybody that spoke Polish with me at the time. But the production manager speaks very good English. The technical director looked around and he had a discussion for about two minutes and after it was all over, he said, "We think 65 percent." There was more discussion and I said, "Can you be more specific?" He said, "Well, if you want to offer us a solution at 8 percent, we'd be happy to consider that." Now my engineers don't understand that. They want to know what the parameters of the plant are, and they want to know what target they're going to reach. So what we're finding is that there is a set of problems, let's say air pollution control, and a set of regulations that the plants have to meet. The problem is that they're not sure what those targets are. So they can't say they've solved the problem because they

don't know what the target is. That is a major problem for us in preparing a proposal for our customer.

Second, there are a lot of competing technologies these days. Some have been around for a while and have been updated; some are fairly new. But you have the competing technologies on which many of the engineers in some of the plants are not up-to-date. We were talking about some of the journals, papers, and technical publications they don't see. It's a terrible problem. So when we go in to discuss the technology, a lot of times we get to the point where we have a day-long discussion with engineers who are thirsty for this information. And we teach them about some of the technology we've developed - not about the project at hand. And that's okay, but that's a problem and other competitors will come in and they'll talk about a different technology. And so by the time the customer is getting down to the point where he wants to make a decision on getting a project done, he has a variety of technologies - none of which he knows very well - and he has to pick one. And we have found it very difficult to respond to a competitor's claim when we know it's untrue that says (whether it's a U.S. competitor or a German or a Finnish or a Swedish competitor) my technology that will remove 90 percent of your sulfur dioxide. Well, we've been in the business for 125 years. We know it's not true. We can't tell our customer that. So there's a problem with understanding the technologies that are being offered and what will apply to what the plant is trying to accomplish.

Third, most if not all of the plants that we had discussions with have no idea how to write a request for a proposal. We got a letter. It was easy to have it translated because it was in German. It was written by the plant director. It was a request for a proposal. Two paragraphs: one, this is who we are and where we are. Two, we want to reduce sulfur dioxide emissions. Please submit a proposal. I took that to some of our people in our Environmental Equipment Division and they laughed and said, "There's no way we're going to get involved in this." We find that not knowing where to start; changing criteria all the time from one week to the next, sending faxes back and forth to potential customers, we find that the criteria changed nearly each time. Generally, we're going from 65 percent removal to 80 percent removal to 90 percent removal because another competitor has come in and talked to them and given them another technology. I'm not disparaging the customer at all. It's just that they haven't been involved in the process

before, and they want the best they can find for the least cost. I took an engineer from our Environmental Equipment Division with me on my last trip and he was explaining to me the specification documents that come out for an FGD for a utility in the United States and the specs come out this thick, and we write a proposal that's this thick with all the supporting documents. We got one sheet of paper. We submitted a proposal finally for the chemical plant. We only got about 50 percent of the data that we needed from the plant. Because a variety of the questions we asked couldn't be answered. "We don't know." "We can't find the drawings." "We don't know what the heat rate values are or flu gas temperatures coming out of the stack." They can tell us what they should have been when the plant was built. And so that's the problem that we're having. When we go to a utility customer, he or she tells us exactly what those specs are. We don't have to go back and ask those questions, and when we bid this job in Poland we had to say, "This is a budget price. We think we know what's there; we've got a pretty good idea of what's there, but we're going to have to verify not only the information you've given, but we have to come up with all the other data that we don't have." And sometimes it's difficult for them to understand. They'll say, "We got a proposal from a competitor with this technology and this is what it is going to cost." They have no idea if it's true. We gave them a proposal of maybe 20 or 30 pages and included a small financing section, four very basic drawings, and it was the most complete and most exciting proposal they had received. I was pleased that he responded like that, but we need more because our German competitors will come in and our Finnish competitors will come in, see ours, and then one-up us. It would be nice to have a standard for what we're all bidding against. But that comes later.

Whether or not they have the system or have the experience or someone comes in and helps them write requests for proposals, they have no way to evaluate the proposals after they arrive. At another plant that we've been to, five or six different technologies were offered and none of the five was the same - different prices, different technologies. One offered 80-percent removal. One offered 45 percent. The plant wasn't sure what it wanted. They had no idea if a wet flu gas desulfurization system is worth \$20 million or \$120 million. That is a major problem that we face.

So here is what we have: Uncertainty about the regulations. Clients that are unfamiliar with the technologies. No system to prepare requests for proposals. And no system to evaluate the

proposals after they get there. So I've asked a lot of people in our company, "How can we be impatient when it takes a long time for our customer to make a decision at any one point in this process when they're going to make a very large financial commitment to solve this problem under this scenario?" What if we were in their position? Would we go out and spend \$600,000 every six months that doesn't add to our productive capacity based on technologies that we don't know anything about and we don't know if it's even really solving the problem in the first place. They scratch their heads, but they're still a little worried. They spend from \$50,000 to \$150,000 in writing the proposal.

U.S. companies want to develop projects in Central Europe, but our German competitors are going out there and kicking us around. They're a tough competitor. It's not just the Germans. We've got the Swedes; we've got the Finns; we've got the Danish. They're tough, and they're offering some great technologies, and if we expect to compete we've got to go back to our customers and say, "We want to help you with the process. So when you get to the point where you're evaluating proposals; you're evaluating them on an equal basis. For example, the U.S. company had 1,000 points and the German company only had 850 points." Or vice versa. But at least it gives us a chance to compete equally with them. We have the four areas where the engineering community and A.I.D. in some form can get together and come up with a way to start a program. These are four major areas that we go through developing a project. I'm speaking very personally because I assume that the same problems exist in other industries. We must find out what the regulations are and what problem the customer is trying to solve. Generally, we know what problem they need to solve, but the question is how do you solve it and what target you're trying to hit. Second, we need a third party to go in and say, "Look, here are the real technologies that are going to work and here's how much it's going to cost." I've seen proposals for 100-million-dollar jobs that our customer has been told is 20. Someone must come in as a third party and explain that, so the plant personnel understand what they're getting into up front. Third, we need to have somebody go in and help them write the RFP, so everybody's bidding to the same document, like we do in the United States. It sure would help us to compete when it comes to project development in Central Europe. Fourth, you have evaluation of proposals.

117

I was talking to my wife about this last night and I said, "You know, I'm going to be talking to a group of engineers and I'm not one, and it sounds pretty simple. Simple problems, simple solutions." And she said, "Every time you come home from one of these trips you complain about the same things; so if you're complaining about them, lay it out on the table because even though they're simple, they're real." To me these are some of the major problems that we run into, as simple as they may be. But I believe that if we can get A.I.D. working with the engineering community in some way - and we're talking about money because it always comes up - how are you going to pay for it - come in here and have a third party do these different pieces or assist in developing these different pieces; train these engineers how to do it the first or second time. So the next time we want to go back and we want to rehabilitate their plant, they know how to write their RFP. It can be done.

Last but not least, it's very important that this be done on a third party basis with engineering companies. Because what we're going to have to do at the chemical plant is do a detailed engineering feasibility study. We have to come up with about 50 percent of the data that we need. We went to A.I.D. and the Trade Development Program. Both were very interested in helping fund parts of the feasibility study, which would cost us half a million. Then we've got to get financing for the follow-on piece of work - the actual engineering and construction. We went to EXIMBANK and were told, "This is perfect; it's small, air pollution control, privatized company. It fits all of our criteria. However, you've got A.I.D. and TDP involved. We can't fund it. We will not finance the project if A.I.D. is involved or TDP." Why not? It's a mixed credit. What EXIM said is we've got the OECD countries and we've all agreed that there aren't going to be any mixed credits in Central Europe. Bull! I've seen projects that have been given grants; I've seen projects that are 50 percent grant. But that's EXIM's approach and we had to turn about \$385,000 down. And we're going to have to reduce the cost of the feasibility study on this thing because EXIM won't finance if they are involved. If we had a document that was clear for each and every company and we went in and bid, we'd be okay to get EXIMBANK funding and EXIMBANK could fund this part if it's a third party. That's the other reason why it's important.

118

# **Environmental Projects in Czechoslovakia and Poland**

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**Mr. David Burack**

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CH2M Hill International Ltd.*

*and*

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**Education**

School/Specialized Education: University of Michigan, School of Natural Resources  
Degree: Master of Science (Conservation)

School/Specialized Education: Swarthmore College  
Degree: Bachelor of Arts, English Literature

School/Specialized Education: Utah State University  
Studies: Graduate studies, College of Forest, Range, and Wildlife Management

**Professional Organizations:**

International Engineering Committee, American Consulting Engineers Council (Member of Executive Committee)

International Association for Impact Assessment

North American Association for Environmental Education

**Key Qualifications**

Mr. Burack has 20 years of experience in environmental impact assessment and management of complex, interdisciplinary planning projects both nationally and internationally. He has prepared local, regional, and national institutional and organizational studies, environmental statutes, and regulations. He has been the project manager or principal environmental scientist for environmental planning and resource development studies in 16 states and 5 foreign countries. Mr. Burack has been field coordinator for large and small technical teams in environments ranging from subtropical Africa to subarctic Alaska, and has initiated pollution control and agro-forestry demonstration projects in semi-arid, montane, tropical highland, and subtropical regions.

Mr. Burack currently serves as the Washington representative for Denver-based CH2M HILL International.

CH2M HILL International, Ltd. is an employee-owned international environmental consulting firm of engineers, planners, economists, and scientists with in-house capabilities for total project development from planning through design, construction and startup. CH2M HILL was recently ranked eleventh in the Engineering News-Record list of the nation's top 500 design firms and is recognized as the largest U.S. firm engaged primarily in environmental consulting engineering.

# THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE

## Environmental Projects in Czechoslovakia and Poland

By: Mr. David A. Burack  
Director of International Affairs  
CH2M Hill International Ltd.

CH2M Hill is a consulting environmental engineering firm; fairly large, domestically. Two and one-half years ago, it spun-off an independent sister company, CH2M Hill International Limited, to focus on international environmental business in selected markets. We have been in the Central and Eastern Europe game for less than two years. Our philosophy is to build local capability in the countries in which we are going to work. I commend that as a sensible approach. However, in the case of the two studies we are conducting, which are sort of toe-holds for us in the countries of Czechoslovakia and Poland, these are World Bank and U.S. TDP-assisted studies, and much of the staffing has come from CH2M Hill USA operations as far as our participation is concerned. It is reasonable now, but it is not the philosophy on which we hope to extend our work.

Our activity and experience will be relevant to: (1) firms who are interested in working in Eastern Europe; and (2) A.I.D. as it builds impressive new programs in the area. I have two examples. One is relatively hard and the other is relatively soft in terms of the identified export assistance potential and with respect to transactions. We are an engineering firm, but we think that getting in at the study basis on consultancies or feasibility studies is a good way. It gets you network. It gets you into the country. You're paid in hard money. You get to look around, to be known, and to learn of other business opportunities. It is good strategy for U.S. assistance agencies to continue to support that kind of thing. They are small starts in both cases here. We hope that they will lead either directly or indirectly to other projects later on, if there are bigger projects to be gotten in Eastern Europe. And I will just leave that as a big "if." We heard from a number of speakers who

121

inserted notes of realism in our appraisal of what the opportunities are over there and our experience so far backs that up.

The first project was a feasibility study of remedial alternatives for the Chabarovice Waste Disposal Site in Czechoslovakia. It originated from a study of hazardous waste sites in the Czech and Slovak Federal Republic, sponsored in 1990 by TDP, that resulted in a \$300,000 feasibility study that was administered through the Czech Ministry of the Environment. We cooperated closely on this project with Aquatest, a local hydrogeological firm. Often an area of expertise is available locally. It is much more cost-effective to acquire locally and gives you local presence and assistance. The study was carried out from June to November of 1991, and it was completed on time. I will give you a little bit of a picture of the site without getting too technical. We were asked to make some recommendations about Chabarovice "landfill," and I put that in quotes because we mean something more organized when we talk about a landfill in the USA. It was owned by Spolchemi, a large chemical business in Czechoslovakia. The disposal site was shaped like a small, flat volcano. Imagine such an item about 50 m high with a caldera in the center filled with a variety of fluids that had to be characterized. The disposal area is 180,000 m<sup>2</sup> on a 300,000-m<sup>2</sup> site. The estimated volume of waste is 3.9 million m<sup>3</sup>. It is mostly solid wastes. The center of the pile is a caldera, more properly, a lagoon, formed by the disposal of liquid and slurry wastes. Fly ash, clinker, coal dust, plaster, miscellaneous debris, and chemical waste, including drums and other containers, were found on the site. There were 40,000 drums of hexachlorobenzene waste that were stored adjacent to the site in a separate, relatively organized manner. There was suspected subsurface combustion, and very important for this study, there were numerous abandoned coal mines existing below the site. A big strip mine of brown coal is advancing toward the site at about 50 to 60 m per year; it is now about 500 m away. There was the hope, which appears to be proving to be a vain hope, that they might be able to obtain more of this highly pollution-laden coal to burn in their power plants, which presents an environmental consulting firm with a dilemma. We might have made it easier to burn this coal, but it appears that they will not be developing the coal site.

We conducted limited chemical characterizations of the site. I won't go into that. We installed monitoring wells and did all the things that environmental engineers are supposed to do to characterize a site. We looked at heavy metals and volatile and semivolatile organic compounds;

122

common water quality parameters. And then we looked at a range of seven alternatives that involved waste treatment on-site, with suboptions with and without transportation and off-site disposal. Some alternatives involved waste transportation and treatment off-site, or waste transportation and disposal at a new landfill facility and site-encapsulation. We presented the Ministry of the Environment with these alternatives with their technical pros and cons and with the costs associated with each. It was a learning experience for all of us to go through: saying what you have, and what you can afford, and what is feasible. The Ministry of Environment finally selected an intermediate solution, which is site-capping with the removal of the hexachlorobenzene waste materials and then waste consolidation in these lagoon sludges rather than stabilization of them, which also was an option. They have not really decided what to do with the HCBs yet. There were a lot of policy problems regarding that and they are not ready to make a decision on it.

Total estimated capital investment for solving the problem using the solution they selected is something on the order of US \$64 million. And that is in the middle of the range of investment costs. Some of the more pure solutions would involve an order of magnitude greater than that. Discussions are now continuing about whether and how to move forward with even this solution because cleanup of hazardous waste sites are not notoriously big revenue producers. Finding people who will loan you money and assuring them that you will have the wherewithal to repay the loan is more problematic than it is with other sorts of projects; even environmental projects, like water and sewer facilities, which have more assured revenue streams.

Another aspect of this (as a TDP study and for A.I.D.'s new capital project initiatives in Eastern Europe) is the potential for importing remedial technology from the United States or from others. We see that it is likely that U.S. technology has a very good chance of competing. The use of excavation and treatment for remedial action technology is available from the United States, but many of the components or alternatives are available from Europe as well. American firms with European subsidiaries or American firms currently pursuing expansion into Europe could potentially furnish U.S. remedial technologies at competitive cost. So we should keep that as a possible lesson. It does not have to necessarily be pure "Made in USA" in order to be an effective project, money-maker, and have an export potential. There are possibilities for partnership with other firms, with German firms and other people who provide complementary technologies. We shouldn't make it

123

an either/or, black or white situation. Some of the kinds of equipment that are applicable at this site include specialized excavation equipment such as drum grapplers and machines with enclosed cabs; on-site laboratory equipment; portable analytical detection equipment, which are not cheap items; portable incinerators; and fixation equipment.

A significant potential opportunity for American import would be for remedial construction management and specialized training expertise required for either the pile excavation dismantlement or containment. The Ministry of Environment selected a remedial action that involves partial dismantlement of the waste pile. Experienced American remedial construction managers teamed with local contractors could offer a competitive package of overall site remediation services. Similarly, specialized American construction management expertise will also be applicable for implantation of containment, which will require subsurface combustion suppression, and slurry wall installation. The United States probably has a comparative advantage in groundwater investigations, geology, modeling, chemical assessments, laboratory, the development of protocols, quality assurance, quality control, and so forth. Our firm and a number of other U.S. environmental firms have spent a long time during the past decade or so with EPA evolving that expertise and I think we have an advantage in that area. So services in addition to products should continue to be considered an advantage of American firms. I would include in that, as has been mentioned earlier, managerial management experience, training of another sort, of the soft side of project development. There is a whole area, especially in hazardous waste, of applying the technologies by interweaving them; a little of this and a little of that, that a particular vendor of a piece of equipment might not be so anxious to do. Whereas an American consulting firm would be able to bring those possibilities forward, and those are often the most-effective solutions. They may need soil removal and overseeing the construction of the remediation design itself. I would also add that large U.S. contractors probably have an advantage at complex sites like this compared to European companies and others. There are 10 different technologies, so there is all kinds of potential there.

I will touch just briefly on the Poland project and then go to a couple of conclusions. The Poland Environment Management Project of the World Bank had a component called the Industrial Efficiency and Environmental Reviews. It is a long-term plan. A goal of that component is to help the Poles determine if industrial plants in Poland can be operated in a way that is safe to the

124

environment and still yield products that will be competitive on the world market. We have a discipline within CH2M Hill that's very well-trained and experienced in developing procedures for minimizing waste from industrial plants. In areas where there are really serious inefficiencies to start with, you may be able to give life to the statement that environmental improvement and economic development are not incompatible and in fact may be reinforcing. New plant equipment will very possibly produce cost savings as well as reduce emissions. We are a major subcontractor in this job to a joint venture of the Danish firm and a Swedish firm. Two small Polish subcontractors are also on the team. Our work will be accomplished by conducting audits, reviews of 25 or 30 plants in six industry groups; and there will be a mix of preliminary, half-day, two-day reviews, and so on, carried out in each industry grouping. Multidisciplinary teams have been formed; each team will review several plants. We will also have Polish engineers, people from the plants, visiting us. The teams are composed of professionals from all five companies and the organization of the project is intended to be a model that can be emulated after we leave and can be continued by the Polish engineers and technical people in the industries. So training is a very important part. This is a softer project, but I really believe will have the longest-term benefits, both in terms of improving the environment in Poland and in terms of the potential for increased use of U.S. goods and services. We are just beginning this project, but if we do this job well, we are going to generate a lot of goodwill. A lot of people will be familiar with how a U.S. company operates. Our engineers will benefit. We'll learn how the rest of the world operates. Many of us are afraid to admit that we are not very sophisticated about what goes on outside of our shores, even though we know the technology well, so this kind of a project can be very beneficial in the future.

Now, for the lessons that stem from our experience. The first principle we have learned is not to spread resources, stay focused. This applies both for the assistance agencies, as well as for contractors and consultants. We've concentrated on the hot three - Poland, Hungary, and Czechoslovakia - we are expending our efforts there. We have turned down what looked like very interesting targets of opportunity, in the Baltics, Bulgaria, and other places, in order to go about getting positioned in these three countries. The second point to bear in mind is don't undersell the services component of "goods and services." American management as well as our technical expertise is in high demand over there, and it is gratefully received. That will lead to infrastructure

investment in the longer run. Third, starting out small like this seems to be a good way of going. You can make big money on big projects, but you can make big mistakes on them as well.

As far as how U.S. assistance is programmed, although I'm a planner and I like to see things done systematically as engineers do, in this case where we are in new territory, flexibility and an experimental approach is okay. Let's limit our number of projects to be sure that we get success stories, not necessarily trying to be too systematic. Let's find something that looks like it's going to work, has a chance of success. One area that we could really use some help in is leveraging a study like this into a full-fledged construction project; by that I mean one that includes not only the design phases, but the financing and the legal and regulatory assistance in putting together a package. The United States does lag behind our Japanese and German and other competitors in terms of really coming on with the total project package; not necessarily a turnkey, although the world is going in that direction. But at least with a complete project package from soup to nuts, starting with these feasibility studies, going through the design, showing that you can muster the financial resources to implement the solution, and also have capability either through engineering consulting firms or management consulting firms for dealing with the legal, regulatory, and the political problems that always face putting together a large project, environmental or otherwise. I will end my discussion here by saying that it is very important to be there; you really have a hard time finding out how to do business in Eastern Europe attending conferences in Washington, which are now occurring at the rate of about two a month by my calendar. I will qualify that by saying that you need to have a long-term horizon. So whether you start small or start large you must be prepared, as is true with any client in the engineering area, to go with them for the long run.

104

Comments by: Timothy Van Epp  
Technical Manager  
Industrial/Hazardous Waste  
CH2M Hill International Ltd.

I think it's notable that both the Czech project and the Polish project had nonenvironmental origins in nonenvironmental objects. In the case of Poland, the main concern is making these industries in Southern Poland competitive on the world market and along with that comes in energy efficiency and protecting the environment, which are also valid goals; but one of the driving forces there was "should we close this plant down altogether and start over again, or can it be retrofitted." The people that we are sending over to do these audits or reviews are process engineers for the most part. We also have environmental media specialists, control engineers, wastewater treatment engineers, and so forth, on the teams, but the core of it is the process engineer. In the end, their U.S. investment may be process equipment and possibly pollution control equipment. Maybe not so much design or construction or anything like that. In the case of the Czech project, I have only one small correction. It was low-sulfur brown coal, and this strip mine was a major source of revenue for that region of Czechoslovakia. They sold this coal outside of Czechoslovakia, so it did not benefit locally by low-sulfur coal except at the chemical plant. It was also a source of a lot of jobs and it came down to a large, state-run coal company battling with a large, state-run chemical company over the fate of that particular site. That's what gave it the highest-priority ranking of all the TDP project opportunities in Czechoslovakia. It was not so much cleaning up the site, as "get it out of the way or leave it there."

127

# **Budapest Office Acquisition and Ownership Transfer**

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**Mr. Stephen C. Mitchell**  
*President and Chief Operating Officer*  
*Lester B. Knight and Associates, Inc.*

**Stephen C. Mitchell**  
**President, and Chief Operating Officer**  
**Lester B. Knight & Associates, Inc.**

Stephen C. Mitchell is President and Chief Operating Officer of Lester B. Knight & Associates, Inc., a Chicago-based international, professional services holding company. As a technical professional, Mr. Mitchell is involved in project development, design and management on a wide range of engineering, architectural, and management consulting assignments. He is currently principal-in-charge of the Advanced Photon Source for Argonne National Laboratories, a \$456 million synchrotron radiation light source. The firm provides engineering, architectural, and management consulting services through 25 offices in 15 countries. It employs over 800 persons.

Mr. Mitchell has been very active in his primary professional society, The American Society of Civil Engineers. He has served on numerous committees for the Illinois Section, as well as serving as Director, Treasurer, and President of that Section. At the national level, he has served on the Committee on Younger Members, Member Activities Executive Committee, and was Contact Member to the Committee on Minority Programs.

Mr. Mitchell was elected District 8 Director to the Board of Direction for the term of 1984-1987. Mr. Mitchell's activities as Director included the Publications Committee, Technical Activities Committee, Strategic Planning Committee, Board Contact Member to the Task Committee on Technologist and Technicians, and the Task Committee to Improve Board Operations.

He was elected Zone III Vice President of the Society for 1987-1989. Responsibilities included Executive Committee, Task Committee to Implement Trial Use of the Manual of Professional Practice, Vice Chairman Professional Activities Committee, The Task Committee of Public Policy, The Committee on Society Honors and Vice Chairman of The Education Activities Committee.

Mr. Mitchell was Chairman of the Professional Activities Committee, 1990-91. He Co-Chaired the Task Committee on Civil Engineering Career Guidance. He serves as ASCE's delegate to the Committee on Federal Procurement of Architect Engineer Services; is a member of the International Affairs Committee; and is chair of the ASCE Task Committee on Design-Build.

Mr. Mitchell is a Fellow of ASCE and a member of The Society of American Military Engineers, in which he has served as a Director and President of the Chicago Post.

Mr. Mitchell was member of the Illinois Task Force on Science and Technology and Served on the Governor's Commission on Science and Technology for the State of Illinois from 1983-1989. The Commission was charged with developing plans and programs in the field of education, government, and industry that would lead to long term economic growth for the State of Illinois.

Mr. Mitchell was appointed to the Governor's Science Advisory Committee in 1989. This Committee is responsible for advising the state government on key science issues that impact the

state's future. In addition, the committee is responsible for the evaluation of science initiatives submitted to the state for funding under an annual multi-million dollar funding program.

Mr. Mitchell is a member of the Economic Club of Chicago and the Commercial Club of Chicago. He is a member of the Board of the United Cerebral Palsy of Chicago, and the Advisory Board of the Robert R. McCormick School of Engineering and Applied Science at Northwestern University. He is a member of the Construction Industry President's Forum. Mr. Mitchell serves on the U.S. Department of Commerce Federal Advisory Committee on Codes and Standards for EC 1992.

Mr. Mitchell has an undergraduate degree and graduate degree in Civil Engineering from the University of New Mexico. He holds an MBA from the University of Chicago. He is a registered professional engineer.

**THE ROLE OF THE ENGINEERING COMMUNITY IN  
INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE**

**Budapest Office Acquisition and Ownership Transfer**

By: Mr. Stephen C. Mitchell  
President and Chief Operating Officer  
Lester B. Knight & Associates, Inc.

In order to talk about my subject I need to talk a little bit about my firm. This is not a commercial for my firm, but it will help to put our approach in Eastern Europe into the right perspective.

Knigh is a international professional service firm. That's the important part. We are engineers and architects but probably more importantly from our move into Eastern Europe is that we are management consultants in the area of operations, industrial operation, industrial engineering, maintenance, and productivity improvement - those types of areas. The firm was founded in 1945 in Chicago and we took our first overseas projects in 1947. So we have been doing work internationally for quite a while. We opened our first international office in 1962. We've continued to build our overseas operation until today we have 26 offices in 14 countries, and about 50 percent of our volume of professional fees is generated from projects outside of the United States and through offices outside of the United States.

We have always approached our overseas office development in the same way - from the very first office, which was in Zug, Switzerland. In 1962 we opened Knight Engineers in Zug by employing a local Swiss engineer. A year later we merged that small firm with another very small, two-person firm to form Knight Meganstein, which has been the basis for our growth in Europe. From that base we have grown to a network of offices out of 14 countries, 10 of the countries are in the European theater. Our key has always been, from the very beginning, to hire local nationals only. Americans that we employ are local. We feel that is a very important

131

approach. It is one that Les Knight himself developed and felt was extremely important. In Germany, we're German; in France, we're French; and in Switzerland, we're Swiss, etc. Also, we have usually dealt from a single professional, not by acquisition. We have found that acquisitions result in some trouble. Trying to move two firms in together and integrate them causes a lot of problems. This is a slow process, but we have usually been profitable early on using this approach. Our mix of work is unique also. We have a good balance worldwide between public sector work and private sector work. And we believe this is true and possible because of our local content. We are not Americans trying to take government contracts from the German Government or the Swiss Government; but we're Swiss in there competing as locals.

Let's take a look at Eastern Europe and what we've done there. In 1987, our board directed our European company to look East with respect to a permanent office. We were already working on a number of projects in the eastern area as Swiss or German firms, and we felt that we saw considerable change coming up. We saw a significant opportunity for growth in selected economies as this East liberalized and became more market-oriented. Our first target country was Hungary, and we spent late 1987 and early 1988 looking at the various structural impediments to opening a company in Hungary, evaluating the market, and, most importantly, identifying the potential principals from people we had met in the local economy. Again, back to our basic philosophy that we wanted to hire high-quality, local people. In late '88 we chartered a new company of which we owned 30 percent; the government through a local bank owned 40 percent; and a local professional whom we had identified and brought out of one of the universities was given another 30-percent ownership. During 1989 the office grew with a number of government and international-development-agency-funded projects, as well as a couple for private German industry. In late 1989, we were offered the 40-percent government share, and we moved to a 70-percent control of the company. In 1990 we increased our ownership to 90 percent, leaving 10 percent in the local professional's hands. Again, that's been a part of our approach; we always leave a small minority interest in the local peoples' hands, so they feel like they are working for themselves and not just for somebody from Chicago.

132

What we did to get the office started is important. We contributed a lot of things to that office from our perspective and from the perspective of the local managers and professionals who are running it. We put up initial seed capital and cash flow management by managing the whole cash flow through our office there. We sat down with them and explained what a business plan is and how to put together a solid business plan based on market conditions. We did management training. We offered operations assistance on things like what overhead is, how to charge chargeable rates - that type of thing that had not been fully developed in Hungary. We provided marketing sales training. We provided technical training in areas where we thought it was necessary. We did selective project staffing from other offices, but not from the United States; again, from our Swiss or German offices. We felt that those people at that time were better accepted, particularly from a language perspective. We found a lot of the Hungarians could speak German and not necessarily English. That was our finding in some of the agencies or ministries we were dealing with. We provided quality control. Every report or assignment produced was brought back to Zurich, to our main office in Europe, and thoroughly examined for quality control, to make sure that the product we were turning out was correct.

Another thing was extremely important: we gave a lot of moral support and constant attention to the managers and technical professionals. They were invited to our company meetings; we paid for them to come. We made sure that they felt like they were part of a team that could work together and not just an isolated group. We have found that the professionals we have interviewed and those that we ended up employing are all top-notch, excellent people. There is no lack of good technical staff in these countries.

Today the office is successful. It has good people. It has good projects. We have a relatively good backlog, which in today's economy anywhere is pretty good. We are making a profit, which is always good. Some examples of projects that we have done: a glass industry competitiveness study - looking at how well the Hungarian glass container industry competes on a worldwide basis. We did a foundry industry study for the Hungarian Government to assess the competitiveness of its foundry industry. We did a reorganization study for the Hungarian National Railroad; it's been one of our expertisms in Europe. We have worked with all the major government-owned railroads in Europe through the years. Currently a principal

assignment that is keeping everybody busy is a study to reorganize the Kerris Bus Company. Kerris is a bus manufacturing firm in Budapest that is reorganizing to be able to compete in the European market, to sell its buses West instead of East.

We feel that our formula for success overseas worked in this case because we used what has been a proven technique, which is to hire good, excellent people, support them, and help them be successful in their own economy. Since that time, we have opened an office in Eastern Germany, which is nothing exciting now that Eastern German is part of Germany, but at the time we opened it, it was still Eastern Germany. In Lidice that office is off to a good start. We are in the final stages of evaluating of a Prague presence and how we are going to approach that market. We may not be the largest or most aggressive in our move East. We are taking it very slowly and very carefully. But we are there. We are profitable. We have a growing reputation for excellent consultancy in a difficult environment. And, in conclusion, we see a big future in Eastern Europe and the NIS.

# **Telecommunications Engineering and Planning Project in Poland**

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**Mr. Mark Burke**  
*Marketing Director, Eastern Europe*  
*Teleconsult*

# **THE ROLE OF THE ENGINEERING COMMUNITY IN INFRASTRUCTURE-RELATED TRADE AND INVESTMENT IN EASTERN EUROPE**

## **Telecommunications Engineering in Central and Eastern Europe**

By: Mr. Mark C. Burke  
Marketing Director, Eastern Europe  
Teleconsult

Teleconsult has been involved in telecommunications projects in Central and Eastern Europe since 1989. Projects have included Sector Reform Regulatory Development Studies, Demand & Market Forecasts, Network Design & Development Studies, and Manufacturing Assessments. Work has taken place in Poland, Hungary, Bulgaria, and Czechoslovakia.

An example of recent experience is the Feasibility Study for the Expansion and Renovation of the Polish Telecommunications Network and the Implementation of Technology Transfer for the Production of Telecommunication Equipment. This work was done for the Polish Ministry of Posts and Telecommunications. It was funded by a grant from the U.S. Trade and Development Program and it involved the following tasks:

### **Part A. Polish Telecommunications Network**

1. Demand and Market Forecasts
2. Network Development Strategy
  - a. Topology and Technical Structure
  - b. Traffic Engineering, Routing
  - c. Updating of Fundamental Plan
  - d. Development of Synchronization Plan
  - e. Development of Maintenance and Operations Plan
  - f. Technical Performance Standards

136

3. Feasibility Study Methodology - Long-Term Financial Planning
4. Strategy of Financing
5. Regulation and Management Policy

#### Part B. Polish Telecommunications Industry

1. Review of Polish Telecommunications Equipment Market
2. Technology Transfer Restrictions
3. Assessment of Polish Production Possibilities
4. Procurement Policy

The effort included the participation of government, academia, industry, and the technical community in Poland. The project required the procurement and staffing of an office in Warsaw, as well the retention of local vendors and subcontractors. Because of its broad scope and wide involvement, it serves as a good test case of performing engineering and related operations in the region.

The telecommunications infrastructure of Poland is well behind Western standards, with a penetration rate of only eight lines per 100 (8/100) population, and call connectivity rates below 10 percent. The Polish government realizes that reliable communications is critical to economic development and a cornerstone of restructuring to a market economy. Not only will poor communications inhibit trade, but it also will prevent the much-needed foreign investment in other industries. Additionally, it is recognized that widely available reliable communications will enhance democratic development in the political structure. For these reasons, the Polish government established improved telecommunications as one of its highest priorities.

The goals of development that the feasibility study addressed were expansion of penetration to 32/100 and call connectivity to 90 percent by the year 2000. These goals were laid out and addressed by the study with incremental milestones and investment schedules.

The study results yielded investment requirements of more than \$30 billion and recommendations for significant regulatory reform to attract the capital investment. Additionally, the project offered keen insight into the practical workings of the telecommunications sector in Poland.

You must take some special considerations into mind when operating in the region.

Experience has shown that to be successful, an engineering firm must have adequate local input. Methods of decision making and processes of evaluation are not apparent in the region. Much of the recorded technical data is not valid because of peculiarities of the previous centrally planned structures. Additionally, the fraud and corruption that exist in all areas of the world also are resident in this region. Therefore, appropriate local personnel support is critical to acquiring and successfully completing engineering projects.

The logistics of operating an office are difficult. Although improving at a rapid rate, business facilities are in short supply or of poor quality. Office space is rare. Supplies and services such as communications and printing facilities are difficult to arrange and require patience and persistence.

A.I.D. has a significant opportunity here to assist U.S. business and trade.

In all of the countries of the region, the governments have placed a high priority on telecommunications development. This development, however, requires resources that are beyond the ability of domestic sources. Multilateral lending institutions, such as the World Bank (IBRD), and European Bank for Reconstruction and Development (EBRD) etc., are involved in providing limited loans for structural development. In addition, a great deal of investment from private organizations and corporations is available if the appropriate regulatory and statutory structures were in place to encourage such investment.

This offers A.I.D. considerable leverage in technical assistance and program development. A.I.D. has the opportunity to provide resources where the development banks and private sources are not active. These are areas to improve confidence and reduce perceived risk while securing the

keystone that will enable private investment to augment development programs. Such telecommunications areas are:

- Sector reform;
- Regulation;
- Foreign participation;
- Specification development;
- Investment strategies and schedules;
- Technical planning and system design;
- Tender development and evaluation;
- Management training;
- Implementation support; and
- Enterprise development.

The benefit to U.S. trade and business interests will be securing adequate penetration in one of the largest telecommunications markets of the future.

12/1

**Breakout Sessions:  
Specific Recommendations to A.I.D.**

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# **Engineering**

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## **Moderator**

**J. Harry Parker, P.E., P.S.**

*Principal and Partner  
Cullinan Engineering Company*

## **Reporter**

**Woodrow Leake**

*Deputy Executive Director  
ASEE*

MARCH 6, 1992

DRAWING ROOM I

Breakout Session No.1: **Engineering**

- Mission Objectives:
1. Identify the engineering issues facing the USEC in assisting the EEEEC.
  2. Develop specific engineering-related recommendations to A.I.D. which encourage U.S. involvement in Eastern Europe.

Discussion Areas:

- Level and Capability of talent in the EEEEC
- Current Activities and Degree of Linkage between the USEC and EEEEC
  - Training and Certification Programs
  - Development of Professional Societies, Engineering Academies, Technical Institutions
  - Information Networks: Publications, Exchange Programs, Conferences, Source Databases
  - Technology Policy Development
- Development of Engineering/Technology Activities into Private Sector Enterprises
- Constraints/Difficulties in Nurturing and Furthering Linkages
- Commercialization of Engineering Research

Invitees:

**Moderator:** Mr. J. Harry Parker, P.E., P.S., Principal and Partner, Cullinan Engineering Company

**Reporter:** Mr. Woodrow Leake, Deputy Executive Director, ASEE

Mr. George L. De Feis, Director of International Affairs, ASCE

Mr. Albert A. Grant, Chairman, ASCE

Mr. Richard J. Hesse, Harza Associates of D.C.

Ms. Janet Hunziker, Staff Officer, National Academy of Engineering

Mr. James Y. Oldshue, President, Oldshue Technologies International, Inc.

Mr. Glenn Schweitzer, Director of Office for Central Europe and Eurasia, Nat'l Research Council

Mr. David J. Soukup, Director, International Affairs, ASME

Mr. Robert M. Sprinkle, Executive Director, AIPT

Dr. Stanley I. Warshaw, Director, Office of Standards, National Institute of Standards & Technology

## **Legal/Financial**

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### **Moderator**

**Roger Feldman**

*Partner*

*McDermott, Will & Emery*

### **Reporter**

**Harry Tollerton**

*Director, International Affairs*

*AAES*

MARCH 6, 1992

DRAWING ROOM II

Breakout Session No.2: **Legal/Financial**

- Mission Objectives:
1. Identify the legal and financial issues facing the USEC in business development in Eastern Europe.
  2. Develop specific legal- and financial-related recommendations to A.I.D. which encourage U.S. involvement in Eastern Europe.

Discussion Areas:

- Laws and Regulations Governing Development of Projects in Energy and Infrastructure
- National Policies and Infrastructure Agreements
- Local Currency and Foreign Exchange Availability
- Financing: Governmental Lending, Commercial Bank, Equity
- Taxation
- Insurance, Risks, Security
- Joint Ventures
- Ownership/Leasing/Partnership

Invitees:

**Moderator:** Mr. Roger Feldman, Partner, McDermott, Will & Emery

**Reporter:** Mr. Harry M. Tollerton, Director, International Affairs, AAES

**Mr. Glen Burg, Vice President, SEC Donohue, Inc.**

**Dr. Hanka S. Chryssafopoulos, President, HSce, Inc.**

**Mr. Brian T. Harris, Senior Vice President, DMJM International**

**Mr. Andrew J. Parker, Jr., P.E., President, ACEC**

**Mr. Lee A. Francis, Senior Vice President, J.M. Montgomery Consulting Engineers**

**Mr. Peter Ridder, Consultant to Coopers and Lybrand**

**Mr. Robert H. Staplin, Senior Vice President, Harza Engineering Company**

**Mr. Eric Sumner, 1991 President, IEEE**

144

# **Energy**

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## **Moderator**

**Henry H. Chen**

*Vice President*

*Harza Engineering Company*

## **Reporter**

**Mark Miller**

*Director Central & East Europe*

*McDermott Incorporated*

MARCH 6, 1992

DRAWING ROOM III

Breakout Session No.3: **Energy**

- Mission Objectives:
1. Identify the issues facing the USEC in assisting EEEEC in the energy sector.
  2. Develop specific energy-related recommendations to A.I.D. which encourage U.S. involvement in Eastern Europe.

Discussion Areas:

- Energy Demand/Supply Situation Analysis by Country
- Energy Resource Assessment: Coal, Oil, Gas, Hydropower
- Energy Efficiency: Production, Transmission, Distribution, Industrial
- Environmental Issues
- U.S. and Other Country Roles
- Privatization
- Co-generation

Invitees:

**Moderator:** Mr. Henry H. Chen, Vice President, Harza Engineering Company

**Reporter:** Mr. Mark W. Miller, Director Central & East Europe, McDermott Incorporated

Mr. Michael J. Akins, Manager, Power Technology Int'l., Gilbert/Commonwealth Int'l., Inc.

Mr. Fred I. Denny, Vice President, Eng. & Fossil Fuels, Edison Electric Institute

Ms. Alice E. Grady, Vice President, Black & Veatch International

Mr. Carlos R. Guerra, Director, Energy Systems Technology Division, Burns & Roe Company

Mr. Michael L. McKimmey, V.P., Mgr. Business Development, Perini International Corporation

Mr. R. John Miner, Resource Management International, Inc.

Mr. A. David Rossin, President, Rossin and Associates

Mr. Barry K. Worthington, Executive Director, USEA

# **Infrastructure**

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## **Moderator**

**Robert N. Janopaul**  
*President - Infrastructure Group*  
*ICF Kaiser Engineers, Inc.*

## **Reporter**

**Christopher V. Oot**  
*Vice President*  
*Camp Dresser & McKee International, Inc.*

177

MARCH 6, 1992

DRAWING ROOM IV

Breakout Session No.4: **Infrastructure**

Mission Objectives: 1. Identify the infrastructure issues facing the USEC in assisting EEEEC.  
2. Develop specific infrastructure-related recommendations to A.I.D. which encourage U.S. involvement in Eastern Europe.

Discussion Areas:

- Current Situation in Infrastructure: transportation, telecommunications, water, waste
- Needs and Opportunities for Assistance by U.S. and Other Developed Countries
- Environmental
- Privatization

Invitees:

**Moderator:** Mr. Robert N. Janopaul, President-Infrastructure Group, ICF Kaiser Engineers, Inc.

**Reporter:** Mr. Christopher V. Oot, Vice President, Camp Dresser & McKee International, Inc.

Mr. Fredric Berger, Vice President, Louis Berger International Inc.

Mr. David Burack, Principal Environmental Specialist, CH2M Hill International Ltd.

Mr. Mark Burke, Marketing Director, Eastern Europe, Teleconsult

Dr. Nicholas Chryssafopoulos, P.E., Vice President, HSce, Inc.

Mr. James Dannenbaum, President, Dannenbaum Engineering

Mr. Trent Duffy, Assistant Director Federal Affairs, Parsons Brinckerhoff, Inc.

Ms. Kathy Knutsen, Parsons De Leuw, Inc.

Mr. Jacques Perret, Regional Mgr., Business Development Operations, Harza Engineering Co.

Ms. June Schoenfeld, Consultant, Metcalf & Eddy International

**WORKSHEET #1  
Issues Identification**

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Please list all identified issues, problems, concerns, and/or needs identified by your break-out session participants in your topic area:

A.

B.

C.

D.

E.

F.

G.

H.

I.

J.

Name of Break-Out Session: \_\_\_\_\_

Reporter's Signature: \_\_\_\_\_

**WORKSHEET #2  
Ideas for USEC/A.I.D. Involvement**

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For each issue identified on Worksheet #1, please list all ideas/possibilities identified during your session's brainstorming exercise for USEC/A.I.D. involvement that would address, eliminate, mitigate, or respond to the issue:

Issue ( ): \_\_\_\_\_

Ideas/Possibilities for USEC/A.I.D. Involvement:

- 1.
- 2.
- 3.
- 4.
- 5.

Name of Break-Out Session: \_\_\_\_\_

Reporter's Signature: \_\_\_\_\_

**WORKSHOP #3  
Prioritization of Issues/Ideas**

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Please list, in priority order, the issues/ideas for USEC/A.I.D. involvement identified on Worksheet #2 for each issue:

- I. Issue ( ): \_\_\_\_\_  
Idea ( ): \_\_\_\_\_
- II. Issue ( ): \_\_\_\_\_  
Idea ( ): \_\_\_\_\_
- III. Issue ( ): \_\_\_\_\_  
Idea ( ): \_\_\_\_\_
- IV. Issue ( ): \_\_\_\_\_  
Idea ( ): \_\_\_\_\_
- V. Issue ( ): \_\_\_\_\_  
Idea ( ): \_\_\_\_\_
- VI. Issue ( ): \_\_\_\_\_  
Idea ( ): \_\_\_\_\_
- VII. Issue ( ): \_\_\_\_\_  
Idea ( ): \_\_\_\_\_
- VIII. Issue ( ): \_\_\_\_\_  
Idea ( ): \_\_\_\_\_
- IX. Issue ( ): \_\_\_\_\_  
Idea ( ): \_\_\_\_\_
- X. Issue ( ): \_\_\_\_\_  
Idea ( ): \_\_\_\_\_

Name of Breakout Session: \_\_\_\_\_

Reporter's Signature: \_\_\_\_\_

**WORKSHEET #4  
Specific Recommendations**

\_\_\_\_\_

Priority Issue Idea ( ): \_\_\_\_\_

\_\_\_\_\_

For each of the 5 to 10 priority ideas for USEC involvement listed on your prioritized list on Worksheet #3, please provide detailed information about the recommendation:

Idea for USEC Involvement (*please write a concise description of the idea*):

Idea for A.I.D. Involvement:

Name of Break-Out Session: \_\_\_\_\_

Reporter's Signature: \_\_\_\_\_

# RECOMMENDATIONS OF BREAKOUT SESSIONS

## Introduction

The breakout sessions of the workshop were held the morning of March 6, 1992. The participants were organized into four separate groups of 10 to 12 people as follows:

- Engineering;
- Legal and financial;
- Energy; and
- Infrastructure.

Each group was assigned to address the relevant issues and recommend programs that could be funded by A.I.D. for the USEC to undertake in achieving the overall objectives. The process that was used to lead to the recommended programs involved:

- Identifying and defining the issues and problems;
- Developing ideas for USEC/A.I.D. involvement;
- Prioritizing the issues and ideas; and
- Defining the recommendations.

Breakout session worksheets that outlined this process are found at the end of this section. Three hours were available for the breakout session process as opposed to the one to two days normally allocated for similar programs. The groups were therefore encouraged to arrive at recommendations and eliminate much of the reiteration that normally occurs in more structured brainstorming sessions.

While each session had its own list of issues and agenda, the recommendations often are complementary and at times they coincide and are presented with only minor editing for purposes of this report.

## Engineering

The engineering group identified the following priority issues:

### Priority Issues

1. Access to engineering information;
2. Stronger business alliances;
3. Need for international standards in testing and certification;
4. Development of professional and technical societies;
5. Human resource development; and
6. Sponsorship of research and development of technology.

These priority issues were further developed to include the following recommendations.

### Recommendations

#### 1. Provide Access to Engineering Information

- Support U.S. professional/technical societies in carrying out courses and seminars in EE;
- Establish ongoing system of distributing technical publications, books, and videos. This could be done in cooperation with USIA, the Commerce Department, and individual U.S. engineering/technical societies. Utilization of electronic transfer should be studied;
- Establish and strengthen the transfer of USEC subscriptions to libraries and institutions;
- Support exchange programs to attend U.S. conferences and train in U.S. industries and universities;

- Support and strengthen accreditation program; and
- Support the transfer of educational information for curriculum development.

**2. Establish Business Alliances**

- Mandate the use of EE professionals, establishing percentage requirements for their participation;
- Strengthen technical/trade associations and their linkages; and
- Support industrial societies.

**3. Assist EEEEC to develop International Standards in Testing and Certification**

- Establish product and materials standards specialists in the standards organizations in EE;
- Establish/test prototypes upgrade; and
- Develop testing/training facilities to demonstrate U.S. interests.

**4. Assist in Establishing and Maintaining Professional and Technical Societies**

- Train association management;
- Support U.S. societies to provide training in EE in RFP/proposals, project management, peer review/evaluation;
- Support alliances among societies in EE; and
- Support information transfer among societies.

153

## **5. Assist in Human Resource Development**

- Develop new exchange programs that focus on administrative skills, management practices, and curriculum reform; and
- Develop programs in language training, especially in technical English.

## **6. Support Research and Development of Technology**

- Encourage and support private and public cooperation on R&D for applied technology and technology transfer from lab to production line and commercialization;
- Involve private companies in training process from R&D to management production and marketing; and
- Support USEC technology transfer to EEEEC.

This group summarized its overall solutions in five points:

1. Establish regional training centers in EE;
2. Transfer U.S. personnel to study needs analysis;
3. Assign embassies and A.I.D. missions to identify business opportunities;
4. Encourage professional societies to get involved; and
5. Translate needs assessment into viable programs.

## **Legal and Financial**

The legal and financial group identified the following priority issues.

### **Priority Issues**

1. Need for premarketing efforts to identify potential U.S. investment;
2. Lack of partnering between U.S. organizations and EE interests;
3. Need for mixed funding support and leveraging of projects;
4. Need for promotion of U.S. service industry in EE; and
5. Need for monitoring of legal risks and changes in public priorities to assist U.S. firms concerned about entering the EE Market.

These priority issues were further expanded to include the following recommendations.

### **Recommendations**

#### **1. Promote Premarketing Efforts to Identify Potential U.S. Investment**

- Aid in the early identification of potential markets for each country;
- Link experienced engineers (possibly retired engineers) to foreign commercial service;
- Fund visits by teams of engineers to become acquainted with business needs followed by broad dissemination of findings; and
- Assess whether there is a market for the training of U.S. engineering service companies to conduct business in EE.

## **2. Assist in Matching Interested U.S. Organizations with EE interests**

- Coordinate between A.I.D. and the Commerce Department to enhance databanks on service opportunities involving a single point of responsibility between A.I.D. and the Commerce Department for the activity;
- Retain a private service organization to take responsibility for gathering and disseminating information on service opportunities; and
- Measure the performance of the partnering activity by measuring the volume of transactions and the creation of trade. A.I.D. should consider retaining a private organization for this purpose. This will inevitably require coordination and assistance of existing governmental bodies engaged in these activities.

## **3. Promote Mixed Financing of EE Projects**

- Segregation of A.I.D. funds to be made available to the World Bank and EBRD for small engineering studies on feasibility, which would lead to larger opportunities for U.S. firms;
- A.I.D. could co-finance the engineering portion of a World Bank-funded project;
- U.S. Government should promote application of international funds to environmental problems in EE where engineering services would be applicable and workable; and
- A.I.D. should provide a clearinghouse for available funds from both U.S. and international agencies.

## **4. Promote U.S. Service Industry in EE**

- Establish a public relations program that emphasizes U.S. services in EE, stressing the user-friendliness of U.S. engineering firms and their acceptability in EE. This program should be linked to the "partnering program" discussed under Recommendation 1.

108

**5. Assess and Monitor Legal Risks and Changes in Public Priorities To Assist U.S. Firms Concerned about Entering the EE Market**

- In addition to general/commercial surveillance, U.S. intelligence networks should provide current intelligence on changes in EE public priorities that affect engineering service markets; and
- Assist EE governments to communicate current legal arrangements in all aspects relevant to engineering service company participation. (This effort could be coordinated through the American Bar Association).

## Energy

The energy group identified the following priority issues.

### Priority Issues

1. Lack of national integrated energy planning based on new and changed conditions;
2. Inefficient generation and utilization;
3. Serious air pollution due to low-grade coal and insufficient generation;
4. Nuclear plant safety;
5. Lack of focus on priority projects by U.S. government agencies;
6. Lack of expertise in organization, management, economics, procurement, construction management, and training;
7. A.I.D. programs not competitive with other countries providing "tied funding"; and
8. Review of transmission and distribution efficiency and reliability. This should be coordinated with Recommendation 1 (below).

### Energy Overview

Much work is needed in the energy sector in the EE countries, and the United States can help through the USEC. The U.S. assistance would be visible and permanent with the development of successful capital projects that are desired in the host countries and supported internationally. The United States would benefit most if such projects were initiated and led by the United States and were leveraged financially with the participation of the World Bank and other country donors such as Canada and Japan. Ideally an important U.S.-funded project would be found in each EE country.

Projects with high returns and other environmental benefits, such as efficiency improvements and emissions controls should receive high priority (as the United States is already doing).

Specific energy recommendations follows.

**Recommendations:**

1. Fund a U.S. private sector review of overall energy planning for each country;
2. Select one coal-fired plant for repowering in each country, utilizing different emerging technologies to permit comparison;
3. Develop an overall program to coordinate and implement ongoing individual programs directed at nuclear plant safety;
4. Evaluate alternative emission controls for the industrial and district heating sectors;
5. Provide training in management, organization systems, economics of engineering decision making, competitive procurement procedures, and sales and marketing;
6. Evaluate alternate clean coal technologies under development in Eastern Europe; and
7. Follow-up the institutional/regulatory development process from an engineering standpoint.

## **Infrastructure**

The infrastructure group identified the following priority issues.

### **Priority Issues**

1. Need for improved in-country coordination and communications;
2. Lack of data, baseline survey, and master plans;
3. Lack of clearly communicated in-country programs;
4. Need for a mechanism to promote U.S. technology;
5. Inadequate A/E procurement policies and practices;
6. Lack of enforcement of established regulations; and
7. Need for U.S. donor coordination.

These priority issues were developed to the following recommendations.

### **Recommendations**

#### **1. Promote Information Exchange, Both Internal and External**

- Provide infrastructure information systems to the EEEEC of the host countries;
- Provide trade journals, newsletters; and membership information to the EEEEC and government of the host countries;
- Support exchange of technical professionals;
- Educate government officials about the importance and utility of information exchange through the use of seminars and exchanges. Show how EPA and the Department of Energy share information between the agencies and with the local authorities;

- Describe how U.S. regulatory bodies on the federal and local levels communicate;
- Provide regular descriptions of what A.I.D. is accomplishing in each of the host countries to the other countries of the region;
- Provide already developed public domain information systems, i.e., E. Mail, databases on infrastructure history and hire appropriate USEC to install the systems; and
- Provide technical journals and texts to the relevant government agencies and academia.

**2. Initiate an Ongoing Master Planning Process, Including Baseline Surveys and Needs Assessments**

- Collect and study existing infrastructure information to formulate a master plan;
- Conduct an updated master plan process through coordination of the USEC and host country engineering talent;
- Introduce U.S. engineering practices for adaptation to host country needs and social values; and
- Evaluate the separate inputs by country governments and engineering practices to develop and fund appropriate A.I.D. programs.

**3. Finance Missions to Assist Local Agencies in Establishing Defined Country Programs and Priorities**

- Assemble a panel of experts from each of the infrastructure fields to be available to A.I.D. to provide advice or review services as required;
- Identify the major infrastructure constraints to each country's development in transportation, telecommunications, water, and waste. Identify all agencies involved;
- Set up host country interagency meetings for overall infrastructure planning;

163

- Educate host country in the planning process by bringing missions to U.S. public agencies responsible for infrastructure development; and
- Fund the hiring of experts to be located in host country agencies responsible for infrastructure planning.

#### **4. Serve as Catalyst for Providing Complete U.S. Infrastructure Project Packages**

- Market comprehensive U.S. infrastructure project packages. These "packages" would include:
  - a) Complete definitions of project requirements;
  - b) Solutions to operational and institutional constraints, such as employment and environmental issues;
  - c) Term/rate-competitive, creative, total financing packages;
  - d) Reverse trade missions to demonstrate the advantage of U.S. capital goods;
  - e) Management training in construction management, start-up, and operations; and
  - f) USEC training sessions in host countries on conducting business in EE.

#### **5. Provide Technical Assistance in Implementing a Procurement Process**

- Support individual contacts with host country officials to alert EE on procedure processes, stressing the benefits of competitive bidding;
- Distribute FDIC or IBRD procurement documents to missions and agencies;
- Conduct seminars on the procurement process and identify in-country agents to attend these seminars;
- Assign a U.S. procurement officer on a project-by-project basis to work with host country officials in a supervisory role; and
- Support on-the-job training.

16/

## **6. Provide Assistance in Enforcement Methodologies**

- Familiarize EEEEC with U.S. zoning and other regulations. Provide written materials to EEEEC on examples of U.S. codes and regulations;
- Provide assistance to EEEEC in the development of institutions and programs to assure effective enforcement of existing and future regulations by drawing on U.S. experience along with A.I.D. experience in other countries; and
- Develop specific examples and promotional materials to illustrate the specific benefits associated with the enforcement of regulations.

## **7. Promote Interagency Cooperation for Project Implementation**

- Monitor infrastructure projects in the host countries and report on the effectiveness;
- Conduct semiannual review of projects, plans, and expected results;
- Open dialogue with other agencies to leverage projects allowing flexible participation and interagency cooperation; and
- Contract an independent facilitator from the nonprofit engineering agencies to support cooperation between agencies in infrastructure project.

165