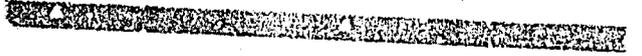


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**The Atlantic Council of the United States
1616 H Street, NW
Washington, DC 20006**

ENERGY SUPPLY AND USE IN DEVELOPING COUNTRIES

**A Fresh Look at Western (OECD) Interests
and U.S. Policy Options**

**Report by the Joint Working Group of the
Atlantic Council of the United States and the
Member Committee of the United States,
World Energy Conference**

John E. Gray, Chairman
W. Kenneth Davis, Co-Chairman
Gary J. Fagliano, Rapporteur
Joseph W. Harned, Project Director

Washington, DC
April 1986

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**The Atlantic Council of the United States
1616 H Street, NW
Washington, DC 20006
Telephone: (202) 347-9353**

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FOREWORD

It is in the interest of the United States and the other industrialized nations that the economic well-being of the developing countries be enhanced. Adequate supply and effective use of energy at reasonable cost are a necessary underpinning for economic development. The impact of energy costs has been especially severe on the economic growth of the developing countries, and their rapidly rising energy demand, compounded by increasing debt burden and the consequent problem of capital formation, means that significant constraints on growth will continue even if oil prices decline, as they have recently.

The developing countries need assistance in assessing, planning, financing, and implementing energy supply programs based on development of indigenous resources as well as imports. Such assistance must address the private energy and industrial sector as well as the government. Unfortunately, there is a serious shortfall in addressing these issues, although they are critical not only to the economic growth of the developing world but also to the financial and economic well-being of the industrialized nations.

Starting from the recognition that more and new ways are needed to expand private sector activity in strategic and tactical planning, financing, and implementation of the energy programs and projects in developing countries, the Atlantic Council's Energy Policy Committee joined with the Member Committee of the United States of the World Energy Conference to examine the issues and options related to energy supply, use, and financing in developing nations. To do so, we formed a joint working group which we have had the honor of co-chairing and whose members were carefully chosen from among the constituencies of the Atlantic Council and the World Energy Conference to provide appropriate representation from the private sector, the financial community, and the key national and international institutions. In addition to the 65 joint working group members identified in the following pages, observers from the U.S. Agency for International Development, as well as case study authors from the People's Republic of China, South Korea, and Taiwan participated in our work. The World Bank was represented on the working group and participated substantively in the project.

Our intent has been to consider the intersecting interests of the developing nations, the newly industrializing countries, and the industrialized democracies, in order to develop recommendations addressed to the U.S. Administration and Congress, to the private energy sector and the related financial community, as well as to the appropriate international organizations. Specific-

ally, we proposed to identify actions to be taken by the governments, financial communities, and private sectors of the OECD countries which would enhance the economics of energy supply and use in developing countries as well as advance both public and private interests in the OECD nations. In the course of five plenary meetings over the last year and a half, numerous consultations and correspondence, the working group fashioned its consensus into the present Policy Paper.

As it turns out, our approach, findings, and recommendations anticipated in substantial measure Secretary of the Treasury James Baker's initiative in Seoul earlier this year. It has also proved relevant to World Energy Conference (WEC) interests and will be considered by private sector energy leaders and government officials from industrialized, newly industrializing, and developing nations at the WEC Congress in Cannes, France in October 1986.

This project has been made possible, as are all Atlantic Council projects, by the support of institutions and individuals. We especially thank the World Energy Conference, Gulf Oil Corporation, Bechtel Power Corporation, CRA Limited (Australia), Mitre Corporation, Baltimore Gas and Electric Company, Southern California Gas Company, Westinghouse Electric Corporation, and China Airlines, as well as the U.S. Agency for International Development and the U.S. Department of Energy. However, the views and findings contained in this Policy Paper are those of the joint working group and should not be construed as an official U.S. government position, unless so designated by other official documentation.

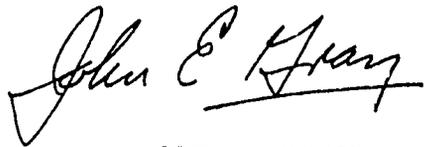
The joint working group worked hard and well to produce from diverse experience these collegial policy recommendations. Given the breadth of the issues and range of the options, it is with gratitude to all members and participants that we conclude our work with substantial consensus. We are most appreciative of the opportunity to have worked within a group of highly knowledgeable people willing to contribute their time and expertise in such a constructive manner.



W. KENNETH DAVIS

Chairman

Member Committee of the United States
World Energy Conference



JOHN E. GRAY

Chairman

Atlantic Council Energy
Policy Committee

LIST OF PROJECT PARTICIPANTS

CHAIRMAN

John E. Gray, President, ERC International Co., Chairman, International Energy Associates Limited (Washington, DC). Chairman, Atlantic Council Energy Policy Committee.

CO-CHAIRMAN

W. Kenneth Davis, Consultant, Bechtel Power Corporation (San Francisco). Chairman, Member Committee of the United States, World Energy Conference.

RAPPORTEUR

Gary J. Pagliano,* Specialist in Energy, Congressional Research Service, Library of Congress, and Non-Resident Senior Fellow, Atlantic Council (Washington, DC).

PROJECT DIRECTOR

Joseph W. Harned, Executive Vice President, Atlantic Council (Washington, DC).

MEMBERS

John C. Aoram, Chief Executive, AEA International Ltd.; former Chairman of the Board, Southern California Gas Company (Los Angeles).

Sergio Barabaschi, Director for Research and Development, ANSALDO S.p.A. (Genoa, Italy).

David J. Behling, Vice President, Energy Economics Division, Chase Manhattan Bank (New York).

W. J. Bowen, Chairman of the Board, Transco Energy Company (Houston).

Harrison Brown, Professor (Albuquerque).

Emilio G. Collado, Consultant (New York). Former Executive Vice President, Exxon Corporation, and Executive Director, the World Bank.

D. S. Carruthers, Executive Director, CRA Limited (Melbourne, Australia).

Edwin A. Deagle, Jr., Director, International Relations, the Rockefeller Foundation (New York).

Thibaut de Saint Phalle, Chairman, Saint Phalle International Group (Washington, DC).

Jean-Loup Dherse, Vice President, Energy and Industry, International Bank for Reconstruction and Development (Washington, DC).

William O. Doub, Doub and Muntzing (Washington, DC).

Joseph P. Downer, Vice Chairman, Atlantic Richfield Company (Los Angeles).

Joy C. Dunkerly, Senior Fellow, Resources for the Future (Washington, DC).

Sherwood L. Fawcett, Chairman, Battelle Memorial Institute (Columbus, OH).

* The views presented here do not represent the findings or view of the Library of Congress or the Congressional Research Service.

Leonard W. Fish, Senior Vice President, American Gas Association (Arlington, VA).

Henry H. Fowler, Senior Partner, Goldman, Sachs and Company (New York).

R. H. Gordon, Chairman and President, Gibbs & Hill, Inc. (New York).

Lincoln Gordon, Guest Scholar, Brookings Institution (Washington, DC).

S. William Gouse, Senior Vice President and General Manager, The Mitre Corporation (McLean, VA).

Donald L. Guertin, Senior Adviser, Public Affairs Department, Exxon Company (New York).

Dixon B. Hoyle, Director, International Nuclear Energy Affairs, Westinghouse Electric Corporation (Pittsburgh).

Cordell Hull, Executive Vice President and Chief Financial Officer, Bechtel Power Corporation (San Francisco).

Gordon C. Hurlbert, GCH Management Services, Inc. (Pittsburgh). Immediate Past Chairman, Member Committee of the United States, World Energy Conference.

R. Tenney Johnson, Zuckert, Scoutt, Rasenberger & Johnson (Washington, DC).

Donald M. Kerr, Senior Vice President, EG&G, Inc. (Wellesley, MA). Former Director, Los Alamos National Laboratory.

William C. King, former Vice-President, Corporate Planning, Gulf Oil Corporation (Pittsburgh).

Milton Klein, Vice President, Electric Power Research Institute (Palo Alto, CA).

Allen V. Kneese, Senior Fellow, Resources For The Future (Washington, DC).

Pedro-Pablo Kuczynski, Co-Chairman, First Boston International (New York).

John W. Landis, Senior Vice President, Stone & Webster Engineering Corp. (Boston).

Ulf Lantzke,[†] Consultant (Bonn, Germany). Former Executive Director, International Energy Agency.

Renato Lanz, Director General, CESEN (Genoa, Italy).

Roger W. LeGassie, Vice President, Consulting Services, Pyros Inc. (Gaithersburg, MD).

Clement B. Malin, General Manager, Strategic Planning Department, Texaco Inc. (White Plains, NY).

George V. McGowan, President, Baltimore Gas and Electric Company (Baltimore).

Robert M. McIntyre, Chairman of the Board, Southern California Gas Company (Los Angeles).

William F. Miller, President, SRI International (Menlo Park, CA).

B. W. Moore, Chairman and President, Moorco International Inc. (Houston).

John Nassikas, Squire, Sanders, and Dempsey (Washington, DC).

Keichi Oshima, Vice Chairman, TECHNOVA Inc. (Tokyo, Japan).

Joseph A. Patrina, Senior Vice President—International Division, Combustion Engineering, (Windsor, CT).

[Alternate: **William H. Clayton**, Vice President, External Affairs, International Division, Combustion Engineering.]

[†] Served until his untimely death in February 1986.

Alex Radin, Executive Director, American Public Power Association (Washington, DC).

John B. Rhodes, Vice Chairman, Booz, Allen, and Hamilton (New York).

Marcus A. Rowden, Fried, Frank, Harris, Shriver, and Kampleman (Washington, DC).

Martin Scholl, Associate Technical Director, Energy, Resource, and Environmental Systems Division, the Mitre Corporation (McLean, VA).

Samuel Schwartz, Group Senior Vice President, Conoco Inc. (Wilmington, DE).

George M. Seignious II, President, Atlantic Council (Washington, DC).

Roger J. Sherman, Ebasco Services Inc. (New York).

Gorman Smith, Executive Director, Member Committee of the United States, World Energy Conference (Washington, DC).

Frank A. Southard Jr., Consultant (Washington, DC). Former U.S. Executive Director, International Monetary Fund.

Chauncey Starr, Vice-Chairman, Electric Power Research Institute (Palo Alto, CA).

Thomas E. Stelson, Vice President for Research, Georgia Institute of Technology (Atlanta).

D. J. Stephens, President, Gilbert/Commonwealth International, Inc. (Reading, PA).

[Alternate: **Robert A. Dickie**, Vice President, Gilbert Associates Inc.]

Maurice Strong, President, Stovest Holdings Inc. (Vancouver, BC).

Gregory S. Vassell, Senior Vice President, American Electric Power Service Corporation (Columbus, OH).

Mason Willrich, Senior Vice President, Corporate Planning, Pacific Gas & Electric Company (San Francisco).

Lawrence M. Woods, former Executive Vice President, Planning and Economics, Mobil Oil Corporation.

Frank G. Zarb, General Partner, Lazard Freres & Co. (New York).

Charles Z. Zraket, Executive Vice President, the Mitre Corporation (McLean, VA).

CASE STUDY AUTHORS

KunMo Chung, Vice Chairman, Korea Energy Forum (Seoul, Korea); former Chairman and President, Korea Power Engineering.

Guo-cang Huan, Visiting Senior Fellow, Atlantic Council.

Ricky Tung, Scholar, Institute of International Relations (Taipei, Taiwan).

EX OFFICIO MEMBERS

Steven B. Shantzis, Staff Director for Development, Atlantic Council (Washington, DC).

Job Dittberner, Staff Director for Projects and Programs, Atlantic Council (Washington, DC).

PROGRAM ASSISTANT

Eliane Lomax, Assistant Staff Director, Projects and Development, Atlantic Council (Washington, DC).

OBSERVERS

Patricia Koshel, Social Science Analyst, Bureau of Policy and Program Coordination, Agency for International Development (Washington, DC).

James Sullivan, Deputy Director, Office of Energy, Agency for International Development (Washington, DC).

Jack Vanderryn, Agency Director for Energy and Natural Resources, Bureau for Science and Technology, Agency for International Development (Washington, DC).

EXECUTIVE SUMMARY

Adequate energy supplies at reasonable cost are critical to economic growth. Many developing countries face serious problems in addressing their need for more domestic energy, as well as improving the utilization of their current energy consumption. Domestic development of energy and its efficient utilization can reduce the high costs of energy imports and provide a stimulus to local economies, such as increased opportunities for local business and the development of infrastructure. However, lack of adequate domestic energy coupled with other prevailing factors—such as coping with large financial debt and prospects for sluggish economic growth in the industrialized world—adversely impacts projected economic growth both for developing countries and the OECD nations.

Accordingly, the Energy Policy Committee of the Atlantic Council of the United States and the Member Committee of the United States for the World Energy Conference formed a joint working group to take a fresh look at Western (OECD) interests in energy supply and use in developing countries. The resulting report examines the problems, issues and options related to economic energy development and utilization, considering the needs and capabilities of the developing countries as well as related interests of the industrialized democracies, generally the OECD countries. The roles of the various relevant institutions—private, national and multilateral—are also analyzed, in seeking to identify actions which could enhance the availability and efficiencies of energy in developing countries as well as advance both public and private objectives of the OECD countries.

The major issues addressed are as follows: 1) What are the factors that will encourage foreign private energy investment in developing countries, that is, the opportunity to invest with assurances of an ability to earn and to repatriate a fair return on investment? 2) What factors must be stressed if the institutional structure in developing countries is to be made more effective in addressing their energy problems? 3) Should the energy financing and development role of the World Bank and the regional development banks be expanded? If so, how? 4) Can the United States and other OECD governments do more to encourage energy development in developing countries? 5) What can be done to encourage commercial banks and other private institutions to invest energy development in developing countries?

Conclusions

The working group came to the following conclusions:

1. To enhance economic development in developing countries there should be a significant increase in participation and direct investment in energy development by OECD private-sector institutions. This should be supported by OECD governments and the international multilateral institutions.

2. External investments are more likely to be made in response to opportuni-

ties in economies which are increasingly market-oriented. Such investments require a favorable policy environment, under which the prospect of returns on investment flow from a mutuality of interests on the part of both domestic and external institutions.

3. Additional actions can be taken by the developed and the developing nations, along with key international institutions, to facilitate the structuring and functioning of market-oriented decision-making in the developing world, thereby promoting new opportunities for energy investment.

Recommendations

From the above conclusions, the working group makes the following recommendations:

1. Developing countries are urged to undertake a systematic review of their national economic and energy policies, engaging in a program to enhance market-oriented decision-making, and to identify and promote private investment opportunities in the energy and related sectors. Special emphasis should be placed on market pricing, strategic economic and energy planning, institutional relationships, resource evaluation, supporting infrastructure, and the potential for direct investment by OECD private and public sector institutions and multilateral institutions in particular energy projects. To support these reviews, energy investment teams should be assembled, led by the World Bank. They should consist of representatives from other multilateral institutions, OECD governments, and major private companies and financial institutions, and work closely with appropriate national public and private institutions in the developing countries.

2. Developing countries desirous of direct foreign investment in energy projects should encourage greater equity ownership by private enterprise. In those countries where there are insufficient domestic or foreign qualified private sector investors, government corporations would initially have to fill this role. In such cases, there should be opportunities for private companies to purchase the equity at any time from the government company. Both foreign and domestic companies should make a reasonable contribution of their own funds in purchasing equity participation, giving them a vested interest in identifying and managing a sound project. In conjunction with their investments, foreign investors should contract to provide on mutually satisfactory terms the needed technology, supervision, and training of host country personnel.

3. Every effort should be made to meet the aspirations of the developing countries with transnational companies offering in good faith to transfer their energy technology for a fair price as part of a working relationship between the developing country and the company. It should be recognized that an industrial firm's continuing technological progress can often be enhanced by creative work on specific projects by their associate, licensee, or subsidiary in a developing country and that world-wide sourcing of manufactured products is ongoing, with world-wide management of technological development increasingly just ahead. As a result, good faith efforts in this arena would be very beneficial in encouraging foreign equity investment by developing countries.

4. The energy planning process of a developing country should integrate

socio-economic development (determined by economic, industrial, financial, political, and demographic conditions) with market pricing of energy supply and use, environmental impacts, and its institutional structure. Planning emphasis should include a strategy of energy technology transfer and rural energy promotion.

5. In order to attract risk capital, particularly in the form of equity investment, developing countries' investment policies must provide assurances that investors would have the prospect of earning a suitable return and be permitted to repatriate those profits. Whether or not investors will be able to earn a suitable return will depend to a large degree on the commercial risk taken and on the host country's policies concerning pricing, taxes, required equity contributions, share of project revenues, access to markets, repatriation of earnings, and currency convertibility.

6. The OECD countries should continue giving high priority to consideration of national-treatment issues and striving to achieve a comprehensive multilateral agreement on national treatment which would include both developed and developing countries. In addition, OECD countries should stress the importance of adequate arrangements to settle disputes and to provide protection from expropriation. Two such measures are: to continue efforts to negotiate Bilateral Investment Treaties, and to participate in the World Bank's new Multilateral Investment Guarantee Agency which will provide insurance of non-commercial risks.

7. The United States Government, in addition, should expand its effort to promote a greater private sector investment in developing countries. One way is to expand the international energy assistance program in the Agency for International Development (AID), particularly its Office of Energy and Bureau for Private Enterprise. The United States Government could also strengthen its export finance programs in the Export-Import Bank and other agencies to focus on technical assistance and feasibility studies which can play an important role in facilitating the development of energy projects in developing countries.

8. OECD countries and multilateral institutions should encourage commercial banks to invest in energy projects in developing countries. OECD countries should support the efforts of the multilateral institutions to stabilize the economies of the developing countries and to foster economic development, so as to create a more favorable investment atmosphere. These efforts should include increased assistance from the International Monetary Fund and World Bank expansion of its structural-adjustment loan program and its program of issuing partial guarantees to commercial lending to developing countries.

A. INTRODUCTION

Solving the energy problems of many developing countries has become increasingly difficult. Prospects for financing needed energy projects are not encouraging because of domestic capital formation problems compounded by the fact that due to a lack of investment opportunities, the flow of foreign capital to developing countries has also sharply declined. Capital has been flowing out of some developing countries rather than into them. Their economies are burdened with debt, which to a significant degree was generated by the cost of energy imports and the high interest rates of the late 1970s and early 1980s. They face financial stringency, the possible reduction in needed energy development coupled with sluggish economic growth, and burgeoning protectionism in the industrialized countries. All of this threatens to reduce projected economic growth potential in developing countries, diminish their world trade position, and perhaps endanger even their political stability.

The economic well-being of developing countries is vital to the United States and the other industrialized countries of the world. Western economic and security interests are more interrelated with those of the developing world than ever before. Significant numbers of jobs in the West depend on free trade with developing countries. For example, North American exports of manufactured goods to developing countries are as large as those to Western Europe and Japan combined; the same is also true for Western Europe's manufactured exports (see Table I below). From 1980 to 1984, the United States lost an estimated \$18 billion in real export earnings and more than one million jobs because of declining exports to the developing countries.¹

In addition, Western financial institutions have made large commitments there, having been the main source of funding for the developing countries' external debt, which in 1985 totaled \$865 billion.² And finally, Western security is bolstered significantly by key developing countries.

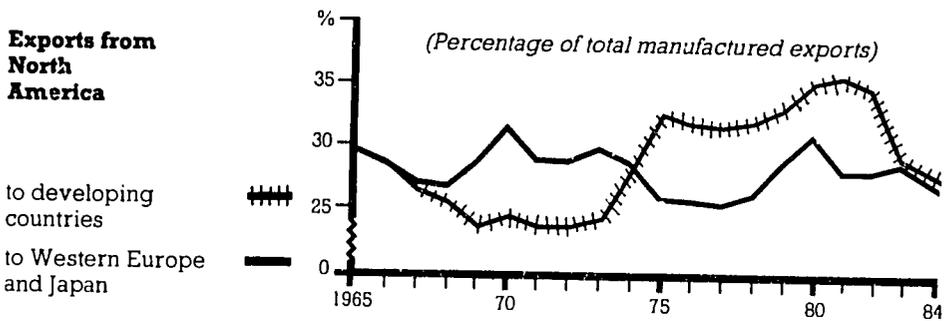
History shows that adequate supplies of energy at reasonable cost are critical for economic development and growth. Since some form of energy is needed in all sectors of an economy whether it be industry or agriculture, freight or passenger transportation, residences or commercial buildings, greater energy use has been not only a necessary ingredient for, but also a major consequence of, a country's expanding economy. This pattern exists in industrialized, newly industrialized, and developing countries alike.

As energy-use technology has evolved, economic productivity per unit of energy input has increased and the amount of energy required per unit of economic output has decreased. The significant gains made in energy efficiency over the last decade in Western countries as well as in some developing countries have demonstrated the economic advantages, such as in the reduction of oil imports and of the foreign exchange drain, of conserving energy through pricing, technical advances, and information transfer. Conversely, in develop-

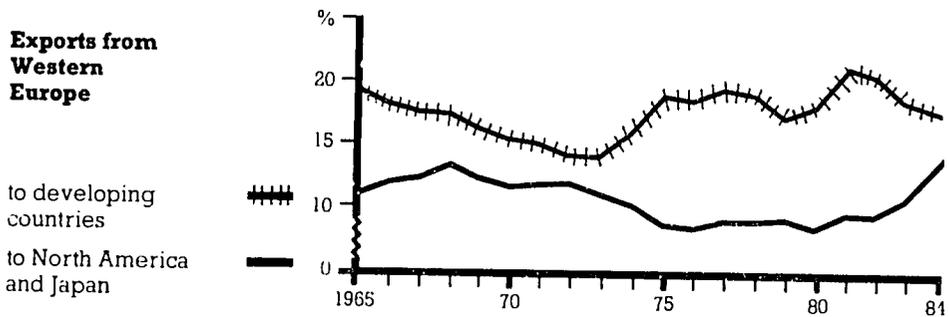
¹"Solving The Third World's Growth Crisis," *Business Week*, August 12, 1985, p. 36.

²*World Economic Outlook*, IMF, October 1985. The estimate for 1986 is \$896 billion.

Table I: Developing Countries are Major Markets



North American exports of manufactures to developing countries are as large as to Western Europe and Japan combined...



... Western European exports of manufactures to developing countries are consistently higher than to North America and Japan combined...

Source: GATT, "Trade Policies for a Better Future", p. 16, from U.N. Statistics. Used with permission.

ing countries the amount of energy required to produce additional output is much higher than in developed countries, and failure to provide it can stifle otherwise feasible and desirable developments.

Many developing countries are aware of their energy supply and use problems, but face formidable domestic and international obstacles in addressing them. The industrialized countries have their own set of concerns that could be improved upon to expand a mutually beneficial energy trade relationship with the developing countries.

Accordingly, the Energy Policy Committee of the Atlantic Council of the United States and the Member Committee of the United States for the World Energy Conference initiated a joint project to focus on the energy problems in developing countries. The report is designed to examine the issues and options related to economic energy development and utilization, considering the needs and capabilities of the developing countries as well as those of the industrialized democracies, generally the OECD countries. The roles of the various institutions—private, national, bilateral, and multilateral—are also analyzed in seeking to identify actions which enhance the availability and efficient use of energy in developing countries as well as advance both public and private objectives in the OECD nations. However, the report does not include a technical assessment of the resource bases in the developing countries.

B. DIMENSIONS OF THE OVERALL PROBLEM

The developing countries with few exceptions face complex problems in order to develop a greater domestic capability to produce and use more energy and use it more efficiently. The need to do so should not be underestimated. Developing countries as a whole still import about 40 percent of their commercial energy needs. Oil imports consumed, on the average, 17 percent of the export earnings of the net oil importing developing countries in 1984. When the foreign debt position of many of these countries is taken into account, the issue becomes all the more urgent. With oil demand projected to increase in the future, import costs could force critical choices between energy imports, particularly oil, and imports of essential foodstuffs, raw materials, and spare parts to keep industry going, resulting in economic slowdown and even greater financial problems.

The Energy Dimension

The situation today varies among the developing countries. While some, such as Brazil, have made progress in expanding their domestic energy industries and reducing imports, many have problems in identifying their resource base, acquiring technology, developing the necessary infrastructure, policy planning and implementation, and utilizing energy efficiently. Problems are often less severe for the middle-income countries, since they usually have conditions present, such as a more solidly based economy, larger resource base, and larger domestic market for energy consumption, which are positive factors for commercial investment and development. It is generally the economically poorer countries with smaller resource bases where energy development problems are most acute.

Commercial energy projects (oil, natural gas, coal, and power projects—hydropower, nuclear, and fossil fuel) present a number of major obstacles for most developing countries. They require large amounts of capital and technical expertise, four- to six-year lead times (and sometimes more) to bring the project into production, an adequate level of infrastructure, and definition of domestic resources with commercial potential. The up-front investment needed to develop a single oil field, for example, can easily exceed \$100 million and can be greater if the discovery takes place in remote areas, because of the additional infrastructure required. Large-scale power projects can require even more up-front investment and often have long payback periods, depending on the economics and financing of the project.

In addition, many developing countries are experiencing serious shortages of non-commercial or traditional energy sources—fuelwood, agricultural, and animal wastes—which are used throughout the developing world, particularly in the rural areas. This is serious because, first, there seems to be no immediate solution in sight, and second, the impact on forests and agriculture is far-reaching. Deforestation, particularly in the semi-arid and mountainous areas, is causing erosion, siltation, and desertification. As fuelwood supplies are exhausted, animal and crop residues are burned, depriving the soil of valuable nutrients, lowering crop yields, and aggravating foreign exchange problems through increased agricultural imports.

To help address the fuelwood problem, most developing countries are attempting to reforest, introduce trees into farming, and improve their use of renewable energy resources such as solar and biomass. These activities range from major investments to uncoordinated demonstration projects. A few countries have developed a full range of policy commitments, institutions, and technical skills for renewables. But many others have little or none of these because of the lack of capital, access to technology, and trained personnel to create and manage the needed programs.

Energy efficiency problems are most closely linked to energy subsidies, a lack of information, and shortages of technical and managerial expertise and equipment. Energy subsidies usually exist to accommodate a country's lower standard of living and a belief among its citizens that low-cost energy is a national birthright. Providing energy consumers with conservation information which is culturally acceptable is necessary but lacking in many countries. Shortages of technical expertise and equipment exist because of the lack of trained personnel and capital, with the latter problem being particularly important.

External Capital Formation and the International Economic Situation

The lack of adequate capital for the energy sector or any other sector of a developing country's economy is among the most pressing problems the developing world faces today. It is also one of the most complex, since capital flows from a variety of domestic and foreign sources, each subject to different factors that together determine the general investment environment. The international economic situation has had an impact on all sources of capital, particularly on external sources which must be looked to for a significant share of the capital needed for future energy development in the developing countries.³

The international economic situation contains a number of factors which are working against the efforts of many developing countries to acquire adequate capital for energy development. First, the existing world market conditions of oversupply and declining real prices for fossil fuels have reduced profit margins for existing energy projects and hardened attitudes of investors to developing new projects. Energy projects will be more difficult to develop with foreign private capital than was the case in the period 1974-82 when energy prices and profits rose at impressive rates. Declining oil prices will also shorten the required payback period for investment in capital-intensive energy conservation equipment.

Second, many developing countries are in a difficult international debt situation which is unlikely to improve in 1986. The increase in indebtedness projected for 1986 (to \$896 billion for capital-importing developing countries) in large part will result from new loans to assist debtor countries to service debt, and from the capitalization of deferred interest and amortization.⁴ The

³World Bank. *The Energy Transition in Developing Countries*. Washington, D.C. World Bank. 1983. p. 69.

⁴Table 45 *World Economic Outlook*. IMF. Washington, D.C. October 1985. p. 100.

increased burden of debt has clouded the creditworthiness of a large number of the developing countries with consequential reluctance of most creditor banks to make new loans unrelated to debt renegotiations.

Central to creditworthiness is the ability to expand export earnings so as to be able to service external debts without seeking new borrowing for that purpose. With the revival of economic growth in the United States and, to a lesser extent, in other industrial countries, the exports of some of the developing countries have increased with consequent substantial reductions in their trade deficits. The combined trade deficit of the indebted countries fell from \$95 billion in 1980 to \$43 billion in 1985 but is projected to increase to \$46 billion in 1986.⁵

However, there are further threats to those past improvements: lagging economic recovery in the industrial countries of Europe, the possibility of reduced economic growth in the United States, and an increase in the network of trade restrictions imposed or threatened by the industrial countries, all of which would adversely affect the level of exports of the developing countries.

Third, when the value of the U.S. dollar increased substantially from 1980 to early 1985 relative to other leading world currencies, it increased the local currency costs of imports into most developing countries, especially of oil imports, since to a great extent such imports are priced and paid in U.S. dollars. Also, as the greater part of international debt is U.S. dollar-denominated, a higher-valued dollar substantially increased the local currency cost of foreign debt. Efforts in late 1985 to readjust exchange rates have resulted in an increase in Japanese and Western European currencies against the dollar, but have left the dollar at very high levels against the currencies of developing countries.

Fourth and related to the third point, inflation rates have been high and local currencies have been devalued in many developing countries. This has additionally increased, often very sharply, the local-currency cost of external payments, whether to meet debt service or for the transfer of profits arising from foreign direct investment, and has provoked capital flight, often on a large scale. While some recent progress has been made, curbing inflation still further would arrest the outflow of capital and improve the environment for the inflow of investment funds from abroad.⁶

Dealing with the energy investment environment, and energy development problems in general, largely depends on a range of institutions—private, governmental, and international. A change in policies will most likely be needed in order to address more successfully the energy problems in the developing countries, and the roles of these institutions and their relationships with each other need to be examined, along with the associated policy issues.

⁵*Ibid.*, p. 79.

⁶*World Economic Outlook*, April 1985, *op. cit.*, p. 57.

C. THE ROLES OF THE PRIVATE SECTOR, GOVERNMENTS, AND INTERNATIONAL ORGANIZATIONS: STATUS AND PROSPECTS FOR CHANGE

A number of institutions and their policies determine the process of energy development in developing countries. They include private sector companies and financial institutions in industrial and developing countries, as well as governments and their policies at the unilateral, bilateral, and multilateral levels. And finally, there are the key international organizations that include in their mandate assisting developing countries in their energy development. These include: the World Bank, the regional development banks, the United Nations, the Organization of Petroleum Exporting Countries (OPEC), and the International Monetary Fund (IMF).

The International Private Sector

Today the structure of energy development in developing countries is significantly different than it was just a few years ago. Two main changes have taken place. First, there is less direct foreign participation in developing countries by the private transnational energy companies whose role has been primarily replaced by State-backed companies, and more indirect participation in the form of supplying technology, certain key managerial services, and international marketing capabilities. One consequence has been less direct foreign investment in developing countries and more local control of domestic energy industry operation. And second, in the international capital markets the third-world debt situation has sensitized foreign commercial banks to such a degree that their current role in financing projects in developing countries is only a fraction of what it was five years ago.

Historically, foreign private investment has played a crucial role in developing energy in the developing countries. Until the late 1960s, foreign direct investment from transnational and independent energy companies predominated in the industry's investments in these countries. But desires of the host countries to exercise control over a basic natural resource industry and to participate in energy ventures led to new forms of investment, such as production-sharing contracts, service contracts, joint ventures, and risk contracts, which changed the structure of the international energy industry. Most of these contractual arrangements included little foreign equity participation. One exception was the joint venture which contained substantial amounts of foreign direct investment from both State- and privately-owned energy companies, with the host country usually retaining majority ownership.

The transitional energy companies have also felt the effects of the changing international market conditions for energy. They are now operating under different circumstances than in 1980 when energy prices and profits were high. Declining profits coupled with uncertain world financial and economic condi-

tions have led some transnational energy companies to reduce activity and investment in energy.⁷

If there is to be greater foreign participation of private energy companies in the developing (host) countries, non-commercial risks to these companies will have to be reduced and the potential for exportable profits increased. With many host countries in financial difficulty and experiencing energy supply and use problems, private energy companies with their technical and managerial expertise and equipment, as well as large capital resources, offer a promising alternative for further development.

However, transnationals will have to make every effort to adapt to the culture of the host country. This can include: first, mandatory in-depth language and cultural training for all expatriates and their spouses who will be located in the host country; second, admonitions to their expatriate managers to live in the host countries' native communities rather than in foreign enclaves and careful selection of employees for foreign service who are sensitive to cultural differences; third, a policy of developing native replacements for expatriate managers and technicians; and fourth, participation in educational institutions in the host country. A high priority should be the foreign investors' desire to encourage developing countries' managers to strive for promotion to home office positions.

Host Country Policy

Host country energy policy has significantly changed over the last twenty years. Many developing countries asserted domestic control over their natural resources by nationalizing industry, renegotiating existing contracts, or creating state enterprises. Private ownership in the power sector was virtually eliminated in many countries. New energy institutions were formed in a somewhat uncoordinated manner or not formed at all because of a shortage of trained personnel. These trends continued during the oil price shocks of the 1970s, and the foreign debt explosion of the 1980s.

In the aftermath, a number of patterns have emerged. For example, much of the commercial energy development and its accompanying institutional structure that has taken place in developing countries has been for concentrated use in a few urban zones. This was largely due to the industrialization policies which were popular at the time, but which, as it turns out, were at the sacrifice of capital and manpower requirements of rural areas of the developing countries. The consequences have been a neglected agricultural sector and food shortages (particularly in the urban areas), with increasing populations and continued low incomes in the rural sector.

Other institutional problems in the energy sector of many developing countries have continued.⁸ Institutional difficulties exist in planning, investment, and pricing decisions, and overall integration with other energy pro-

⁷One participant suggested that there should also be an acknowledgment of the reluctance of international energy (mostly oil) companies to develop resources merely for internal use in countries, where the deposits seem relatively small and insufficient to support large-scale exports. Yet from the host country's viewpoint such developments may be of great importance.

⁸Sankar, T. L. "Institutional Aspects of Energy Planning and Plan Implementation." *Energy Planning in Developing Countries*. Oxford University Press, 1984. pp. 125-133.

ducing and consuming sectors. A major shortcoming on the supply side in some countries is the lack of any agency to plan and manage traditional energy resources, such as fuelwood and animal wastes. Forest departments were not equipped to regulate the production and use of wood for fuel purposes; and improved utilization of animal wastes and the development of new energy sources usually do not receive the priority attention they deserve, especially when they are managed by the government ministries with more general areas of responsibility.

In many developing countries, the finances of the electric power sector have deteriorated because the sharp increases in fuel prices and borrowing costs of the late 1970s have not been matched by increases in utility tariffs or rates. Ensuing reliance on government financing of power investment has meant that investment had to be curbed when pressures on government budgets became severe. As a result, inability to raise domestic financial resources has delayed investment in the power industry in many countries, leading to power shortages and heavy economic losses due to such disruptions.

A World Bank study defined key problems in the power utilities as well as in the other energy institutions of developing countries.⁹ In the power sector, the problems include: 1) low power tariffs which impair the operating revenues of utilities and force them to undertake additional borrowing that imposes a heavy debt service burden in later years; 2) operational inefficiency, which is evidenced by heavy losses in distribution of power, bad metering, and poor collection of bills; and 3) slow government capital funding, which results in utilities borrowing short-term money at high interest rates.

Subsidized pricing of other types of commercial energy has caused major problems. While many national oil companies in developing countries have characteristics of a commercial company, they must sometimes sell oil and gas domestically, at prices regulated by the government and held below costs. Losses incurred on subsidized domestic marketing and refining operations have a direct impact on these companies' overall profitability, and therefore on their ability to generate investment capital. Often, exploration and production expenditures are the first to be affected by overall profitability and liquidity problems.

However, while some developing countries continue to maintain inadequate economic policies, others have re-examined their policies and are taking corrective action. Several countries have increased efforts to privatize some state-owned enterprises and to improve the investment and general business environment, in order to attract domestic and foreign investment.

The policies of developing countries related to attracting foreign investment and other forms of participation in their energy and industrial development are closely linked to how these countries perceive the role which their own domestic private sector should play in this process. If national energy companies, public or private, are subjected to uncertain governmental energy policy, a negative atmosphere for foreign investment will most likely result. In addition, while asserting an interest in private foreign investment consistent with national development plans and laws, some governments have maintained

⁹World Bank. *The Energy Transition in Developing Countries*. Washington, D.C. World Bank, 1983. pp. 76-78.

a combination of incentives and disincentives that offer little to attract potential foreign investors.

OECD Policies

Most OECD governments encourage direct investment flows to developing countries, aimed at a positive contribution to the host country's economy, and benefits for the investing country, including improved export opportunities, preferential access to natural resources such as energy, and positive international economic interdependence and trade. By the 1950s and 1960s, the United States, the United Kingdom, Germany, Japan, and France had established incentive schemes which offered a broad range of facilities to investors and industrial vendors in developing countries. Since the early 1970s, other OECD countries have adopted such incentive measures and also become members of the Development Assistance Committee (DAC) of the OECD.

Investment incentives used and measures taken by DAC countries to ensure equitable treatment of capital invested abroad, and income derived from it, can be grouped as follows: 1) investment guarantee facilities covering political rather than commercial risks outside the investor's control; 2) information and promotion activities; 3) official financial support for private enterprises investing in developing countries; and 4) activities of public corporations which have a dual function as investment banks and development institutions, with considerable leverage in mobilizing other foreign and local capital.

A number of DAC countries have concluded bilateral investment promotion and protection agreements with developing countries. The agreements are designed to provide protection against discriminatory action by the host country, as between locally-owned enterprises and those with foreign ownership. Foreign investment covered by the agreements is usually not exempt from expropriation or nationalization, but the host country agrees in such cases to provide adequate, prompt, and transferable compensation. Most investment protection agreements contain arbitration clauses for cases of litigation, often by reference to the rules of the International Centre for the Settlement of Investment Disputes (ICSID) established under the aegis of the World Bank.

In an effort to strengthen cooperation among DAC governments, members adopted the Declaration of International Investment and Multinational Enterprises in June 1976. It includes a set of guidelines for multinational enterprises, principles concerning "National Treatment" of foreign-owned enterprises, and principles regarding the use of investment incentives and disincentives. The policy of National Treatment could become a model not only for OECD members, but also for governments of the developing nations in an effort to improve the international investment climate.

United States Policy

The U.S. Government has established a number of official development assistance (ODA) programs and agencies aimed at improving the investment climate in the developing countries. Guidelines for the future course of U.S. development assistance specify that: 1) development assistance should promote private sector activity in open and competitive markets in developing countries;

2) developing countries should have access to appropriate technology in order to improve their economies and living standards; 3) U.S. assistance should focus on promoting institutional capacities of developing countries to enhance long-term development; and 4) U.S. assistance should be provided to countries having appropriate national policies which encourage and stimulate economic development.¹⁰ These new guidelines will set the tenor for U.S. participation in such assistance both in its bilateral domestic programs and in its role in multilateral institutions.

Within this policy context, the principal domestic programs and agencies to enhance the investment climate in developing countries include the following:

Bilateral Investment Protection Agreements: The United States has recently begun a program to negotiate a series of bilateral investment treaties (BIT) with selected developing countries. A draft treaty has been developed, based mainly on language drawn from United States Friendship, Commerce, and Navigation treaties and other countries' existing bilateral investment agreements. Key elements of the U.S. draft include: most-favored-nation treatment for foreign investment; recognition of international law standards for expropriations and compensation; free transferability of capital, returns, compensation, and other payments; and use of international arbitration procedures (normally at the International Centre for Settlement of Investment Disputes) for settlement of a specified range of host government-investor legal disputes. In September 1982, the first BIT was signed with Egypt. Negotiations have been concluded with several countries and preliminary negotiations are underway or expected to begin shortly with several other developing countries. The United States has also completed 114 bilateral investment protection agreements with developing countries, which provide procedurally for the operations of the U.S. Overseas Private Investment Corporation (OPIC).

The Overseas Private Investment Corporation: OPIC encourages the participation of United States private capital and skills in the economic and social development of developing countries. Its primary programs are: 1) political risk insurance against losses due to expropriation, inconvertibility, and war damage; and 2) investment financing through loans and loan guarantees. The Corporation operates on a self-sustaining basis, and takes into account the economic and financial soundness of the project, its contribution to the development of the host country, and its consistency with U.S. balance of payments and employment objectives.

The Agency for International Development (AID): AID helps developing countries deal with their energy problems by providing assistance to accomplish the following objectives: 1) reduce economic instability caused by overdependence on imported oil; 2) ensure availability of energy for sustained development; and 3) foster private enterprise energy development and management.

The assistance provided by AID includes expanding fossil and renewable

¹⁰*Budget of the United States Government, Fiscal year 1986.* U.S. Government Printing Office, February 4, 1985, p. 8-21.

indigenous resources; increasing energy productivity; satisfying basic energy needs for household as well as agriculture and rural industries; promoting policy reform to improve functioning of energy markets; building local private sector capabilities; and increasing the flow of technical and financial resources from the U.S. private sector.

AID is currently attempting to increase private sector participation and investment by the U.S. and host-country business communities in energy projects, as well as leveraging investments by the World Bank and other capital funding sources. This approach is based on early collaboration with the business sector, the World Bank, and others in defining the terms and creating the conditions that will stimulate private sector participation. The AID approach includes:

1. *Identifying Promising Energy Solutions:* The most promising conventional, renewable, and conservation technologies and systems are identified that have the greatest potential for alleviating energy problems in developing countries by increasing use of indigenous energy resources and improving efficiency of energy use. An example is the cane-to-energy concept that would be supported by substantial private sector investment and is currently being tested in Jamaica. This concept has replication potential in several dozen other countries.

2. *Establish Core Teams to Develop "Bankable" Projects:* For each candidate energy solution, AID intends to form a core technology transfer team. This team would be comprised of a limited number of U.S. industrial firms, academic and financial institutions, and international organizations that have experience and interest in the candidate energy concept and are willing to participate technically and financially in implementing a project concept in interested countries. Working with AID, the team will explore the interest and commitment levels of the host government and local businesses, and determine barriers to application of the candidate project. Should the project concept be attractive to all parties, then the team will assist in defining and implementing a private sector-oriented AID energy project in the interested country.

Energy is no longer a key priority for AID, and total energy funding has declined. Several points should be stressed: 1) AID's energy budget represents only 4 percent of the Agency's total budget and is increasingly concentrated in very few countries; this compares with approximately 25 percent of the World Bank's budget allocated to energy; 2) other bilateral donors devote larger fractions of their official development assistance to energy, recognizing its fundamental importance to economic development; 3) increased energy inputs are key to AID's priority agriculture program; reliable sources of energy are required for irrigation, fertilizer, processing and transport; and 4) the central Office of Energy is projected to have its budget reduced significantly, making it increasingly difficult to provide Agency-wide technical and policy coordination and leadership and backstopping to field missions.

Export-Import Bank: To aid in financing and facilitating U.S. exports, the Eximbank's authority and resources are used to: assume commercial and

political risks that exporters or private institutions are unwilling or unable to undertake; overcome maturity and other limitations in private sector export financing; assist U.S. exporters to meet foreign officially-sponsored export credit competition; and provide leadership and guidance in export financing to U.S. exporting and banking communities and foreign borrowers.

In late 1985, the Eximbank became more active in helping U.S. exporters meet foreign officially-sponsored export credit competition by being given an additional \$300 million, which supports an additional \$1 billion in low-cost financing. Attention is focused on use of the "mixed credits"—combinations of conventional export credits with outright foreign-aid grants, designed to reduce the customers' carrying costs—which tend to discourage American exporters from bidding on certain foreign projects.¹¹ The Reagan Administration's negotiating objective is to end the abusive use of mixed credits by requiring that they include at least 50 percent foreign-aid grants, rather than the present internationally agreed 25 percent. This would discourage the use of mixed credits by making them too costly.

In addition to these programs, the U.S. Government as well as governments of other industrial countries support energy development in the developing countries through contributing a significant percentage of the funding for the multilateral development institutions and their programs.

Multilateral Institutions

The role of many multilateral institutions became more important during the 1970s, because the financial and technical resources available to them increased significantly. They tended to act as financial institutions, providing technical assistance, making loans, and issuing grants for energy as well as non-energy projects in the developing world.

Their commitments are shown in the table below. Energy projects as a percentage of the total operations of these institutions have ranged from 34 percent of the Asian Development Bank to 27 percent for the Inter-American Development Bank, 25 percent for the World Bank—International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA) and the International Finance Corporation (IFC)—15 percent for the Organization of Petroleum Exporting Countries (OPEC) Fund, and 9 percent for the African Development Bank.

Because of difficulties in the funding of multilateral programs, including energy, a process of review is taking place within individual agencies, as well as among the donor countries which provide the bulk of their resources, and in the international community at large. Prior to this review the multilateral agencies had followed these energy financing patterns in the developing countries: First, most of multilateral borrowing went for the development of electric power (90 percent of it in 1975-80), while the bulk of oil and gas development was financed by export-related credits and commercial capital. This pattern reflects the long history of oil and gas financing by the private sector.

Second, low income countries were and remain heavily dependent on

¹¹"The Ex-Im To Foreign Governments: Back Off." *Business Week*, November 18, 1985.

Table II: Loan and Grant Commitments By Multilateral Agencies

Commitments Agency	\$ Million													
	Concessional							Non-concessional						
	1970	1978	1979	1980	1981	1982	1983	1970	1978	1979	1980	1981	1982	1983
IBRD	-	-	-	-	-	-	-	1 508	6 548	6 939	8 282	8 768	9 480	11 647
IDA	594	2 859	2 676	3 784	3 522	2 832	2 963	-	-	-	-	-	-	-
IFC	-	-	-	-	-	-	-	113	446	310	745	728	377	594
IBD	440	683	776	824	569	792	412	192	1 106	1 249	1 424	1 868	1 892	2 541
African D. B.	-	-	-	-	-	-	-	11	206	274	297	323	399	574
African Dev. F.	-	186	228	273	311	358	344	-	-	-	-	-	-	-
As. D. B.	40	388	424	477	531	546	703	212	778	855	958	1 147	1 185	1 190
Car. D. B.	-	40	49	27	39	22	15	-	9	39	(14)	16	29	28
EEC/EIB	93	1 149	1 655	1 570	1 496	1 800	1 558	(2)	171	574	517	443	411	287
of which: Grants	92	883 ^a	1 248	1 117	1 294	1 473	1 298	-	-	-	-	-	-	-
UN, grants	499	1 730	2 214	2 487	2 848	2 755	2 739	-	-	-	-	-	-	-
IFAD	-	118	385	396	377	340	279	-	-	-	-	-	-	-
Arabe OPEC Funds	-	333	354	428	537	621	451	-	178	466	515	709	531	720
of which: Grants	-	23	23	37	77	67	19	-	-	-	-	-	-	-
Total	1 666	7 486	8 761	10 266	10 230	10 066	9 464	2 038	9 442	(10 686)	12 752	14 002	14 304	17 581
of which: Grants	591	2 636	3 485	3 641	4 219	4 255	4 056	-	-	-	-	-	-	-

^{a/} Including STABEX

Source: OECD, "Development and Cooperation: Efforts and Policies of the Members of the Development Assistance Committee", p. 215. Used with permission.

multilateral and concessional bilateral capital flows for the external financing of energy projects—drawing from them 79 percent of their total public external borrowing for energy during 1975-80. In contrast, middle-income countries obtained about 80 percent of their external borrowing for energy in the form of export-related and privately-financed capital.

Traditionally, commercial financial institutions have lent almost exclusively to the middle-income countries, as they are more capable of servicing external debt on market terms. As the international orientation of commercial banks is also influenced by the activities of their major corporate clients, these banks tend to lend more for oil and gas in projects where international oil companies are involved. In contrast, multilateral agencies and bilateral concessional capital flows to low-income oil importing countries account for about 30 percent of these institutions' total energy lending to developing countries.

On the whole, new commitments from export credit agencies and private financial institutions are now severely restricted by the degree of creditworthiness of the borrower. The same consideration may also restrict a developing country's ability to attract direct foreign investment. For middle-income countries whose creditworthiness is in question, as with most if not all low-income countries, expansion of multilateral and bilateral energy lending will be necessary if energy investment in these countries is to be expanded.

Expanded funding prospects for multilateral agencies in the future are mixed. Funding of the United Nations programs increased in 1984, the first increase since 1979, and then increased again in 1985. Funding of the African Development Fund was increased by 50 percent for the period 1984-86, reflecting the donors' concern for the problems of sub-Saharan Africa. But the Inter-American Development Bank's funding, which has evolved in the direction of growing cooperation with the private sector, has remained about the same. However, in the case of the Asian Development Bank, the United States has lagged behind in fulfilling its pledged contributions, a key factor in the Bank's "soft loan" fund being underfunded. The U.S. situation is a result of the Reagan Administration's concern that the private sector be more involved in recipient countries.

Funding for the World Bank and its affiliate, the IFC, looks secure, while funding for its IDA programs is uncertain. The energy commitments in the IDA program, which lends to the poorer countries, is about 16 percent of the total World Bank energy commitments. However, the World Bank has recently given notice that although its lending for energy projects will remain 25 percent of all bank lending, it is increasing its role as an analytical, policy, and technical advisor and a catalyst for new funds for energy projects from non-Bank sources. In addition, the IFC in its latest five-year plan (1984-88) is expanding its role as a mobilizer of private capital for energy projects by increasing its commitments from \$20 million to \$100 million over this period—still a small sum relative to the requirements of the overall situation.

Indeed, if funding of energy projects is maintained by the multilateral institutions, or even slightly expanded, potential funding from the multilateral institutions will still not come close to compensating for the negative factors that will retard external and domestic capital formation for energy projects in the developing countries. Even this could be overly optimistic, particularly in the case of the OPEC funding because of current oil market conditions. This portends a significant capital shortfall for any domestic energy development plans the developing countries might have for the future.

D. IMPROVING THE ENERGY SITUATION OF DEVELOPING COUNTRIES

A number of issues must be addressed if developing countries are going to be able to expand their domestic energy supplies and improve the efficiency of energy use to meet future needs, while at the same time avoiding further exacerbation of their balance-of-payments situations. These issues are affected by the evolving world economic and financial environment.

For example, some direct investment will be focused on the newly industrialized countries in Southeast Asia for the foreseeable future because of the projected high rate of economic growth in the region. Latin America, however, could receive less direct investment because of the current debt overhang, among other factors. Putting it another way, the countries in Latin America will have to make their investment terms at least as attractive as those in the Asian countries in order to lure foreign investment capital, that is, by providing credible assurances of their ability to repay loans and permitting the transfer of profits through the generation of foreign exchange.

These issues are also interrelated and interdependent. Addressing one issue successfully can mean the energy situation in the developing countries would improve, but not necessarily if the other issues are either not addressed or worsen. Such an issue not specifically addressed in this policy paper is the geological potential of a developing country's resource base—how it varies and its implications for the country.

An underlying objective is assumed in the treatment of the included issues—to encourage greater private sector participation, particularly foreign investment, in improving the energy situation in the developing countries. Critical factors point in this direction: 1) private market forces have a proven record of reacting to incentives created to stimulate energy supply development and greater efficiency of energy use; 2) the private sector in the OECD countries often has available capital and the necessary technical expertise; and 3) a number of OECD governments, especially the U.S. Government, are urging that greater emphasis be placed on private sector participation in official development assistance programs.

Thus, the key tasks ahead are first, to discern how the host government and bilateral and multilateral agencies can best support and encourage such private sector participation in appropriate energy projects; and second, how best to elicit greater involvement of the OECD private sector in the development of energy supply and efficient use in the developing countries.

1. Issue: What are the factors that will encourage foreign private energy investment in developing countries, that is, the opportunity to invest with assurances of an ability to earn and repatriate the return on investment?

A key factor is the willingness of developing countries to allow free market forces a greater influence over the development of their energy sectors. This would have a positive effect on attracting risk capital (equity capital) which is particularly important for projects in the exploratory and early developmental

phases. Attracting equity financing would provide needed capital as well as the credit support necessary for commercial financing of projects. In order to attract equity investment, developing countries must provide more assurances that investors have the potential to earn an adequate return. Whether or not investors will be able to earn their return will depend on the host country's policies concerning pricing, taxes, required equity contributions, participation in management and decision-making, share of project revenues, access to markets, repatriation of earnings, and currency convertibility.

In addition, there are a number of factors that should be considered in light of the current state of agreements and contracts in each of the energy sectors.

Oil: There is no single ideal agreement or contract for development of oil resources. Each contract needs to be tailored to the specific situation and conditions at hand, in light of the desires and needs of all parties. Oil companies have come to terms with the new contractual forms, and have developed ways of operating under production-sharing and service contracts to earn a reasonable return on investment. Some desirable features for such contracts include:

- Provisions that prevent double taxation in the host and home country (requires coordination with legislative and tax authorities);
- Designation of one government entity or "lead agency" to deal with regarding all areas of operation;
- Careful spelling out of each party's rights and obligations, disposition and pricing of production, and arbitration and resolution of disagreements;
- Adequate cost-recovery provisions;
- Reasonable work programs/commitments.

A contract should be carefully structured in order to be applicable to other results in addition to "the most likely outcome." This may allow the economic development of even small, high-cost fields. A contract that is structured to handle the optimistic scenario will be more likely to be judged fair in the eyes of the host country and therefore less likely to be subject to abrogation.

Increasing competition among developing countries to attract exploration spending by the transnational oil companies is prompting a growing liberalization of tax and investment regimes. Some countries, for example, are shortening the period of cost amortization, or are offering to share the risk capital by way of a joint venture arrangement.

Natural Gas: Recent gas agreements by Brazil and Pakistan illustrate the ingredients of gas policies being formulated by developing countries. It is perhaps too early to determine whether these agreements provide the right answer. The approaches are summarized below:¹²

¹² "Incentives Are the Key to World Gas." *Petroleum Intelligence Weekly*, New York, July 9, 1984, p. 5.

- Under Brazil's new *service contracts*, a foreign investor finding gas stands to recover costs and receive a cash reward from the start of commercial output. The amount is set by a formula that takes into account international market prices, competing supply sources, and alternative fuels or feedstocks.
- Pakistan's *conventional tax and royalty regime* now provides negotiated prices on both "old" and "new" gas, aimed at achieving various discounted cash flow rates of return on investment (and raising some of the world's lowest gas prices). "New" gas could eventually reach 90 percent of fuel oil parity.

It is seen as indispensable that developing nations assure contractors they can sell gas at realistic competitive values, and that a precise methodology for gas pricing be spelled out in the overall petroleum exploration agreement. Where commercial finds exceed local needs, exports must be allowed, or the state or others should be sold the excess. By contrast, most agreements now result in gas associated with oil simply being flared or sold to the state at cost, while non-associated finds are sometimes taken over by the state without compensation.

Coal and Geothermal: Major coal contracts in recent years have been negotiated with China and Colombia, and are nearing completion in Botswana, Madagascar, and Tanzania. These contracts tend to delegate management responsibilities to the mining companies and contain economic incentives, and are generally protected by stabilization guarantees against later changes.¹³ Colombia's arrangement with the mining companies is different because the state enterprise shares a substantial amount of the project's financial burden in exchange for a significant portion of the project's revenues.

Investment contracts in geothermal energy have taken place in the Philippines and, most recently, in Indonesia. The essential issue in these agreements is the sale of the energy produced. Indonesia uses as a pricing mechanism a combination of a fixed price, an inflation escalator, and a mechanism tying petroleum price developments to geothermal energy prices. The government committed itself to purchasing the energy produced and allowed the companies involved foreign exchange privileges for the generated revenue.

Power Plants: New foreign investment resources have come primarily in the form of public financial flows, such as official bilateral or multilateral loans, often at concessional terms. Although some of these loans have been undertaken in conjunction with private foreign investment in the extractive industries, rarely is it found in public utilities. However, when private foreign involvement is found, it is usually as party to either a turnkey or technical assistance contract.¹⁴

Turnkey contracts have been important in the development of nuclear power plants in a number of developing countries such as Brazil. These contracts

¹³ Walde, Thomas. "Third World Mineral Development in Crisis." *Journal of World Trade Law*. Volume 19, Number 1, January/February 1985, p. 11.

¹⁴ Oman, Charles. *New Forms Of International Investment In Developing Countries*. OECD, Paris, 1984, p. 64.

have also been used extensively as the basis of major infrastructure investments in a number of oil-exporting countries, notably in the Gulf region where firms from countries like Korea and Brazil have been successful in bidding for contracts. Technical assistance contracts have gained considerable importance in public utilities and infrastructure investments in many developing countries. One reason is that these contracts have often been used in projects involving official loans, and are required by the lenders.

Turnkey and technical assistance contracts can involve an investment of the contractor's equity, although they usually just supply the capital equipment and technical assistance.¹⁵ It is the official lenders, notably the World Bank and the regional Banks, that often play a leading role as suppliers of capital.

Energy Conservation Projects¹⁶: Undertaking energy conservation measures in developing countries is often limited by the inability or the reluctance of energy consumers to finance such measures. Some commercial or industrial firms may have had access to energy-efficient production technologies, but lacked sufficient internal cash, or an ability to raise capital. Other firms able to raise capital were reluctant for reasons which include: competition for available capital between energy-related investment opportunities and investments required to maintain or expand market share and production output level; and a lack of tax-related incentives needed to achieve an adequate return on an investment in conservation measures.

When the industrialized countries were confronted with such disincentives, innovative investment approaches were created to make energy conservation more attractive. These approaches have the potential for success in the developing world as well. They include: 1) a shared-savings arrangement; 2) a joint-venture arrangement between an energy user and an external investor; and 3) a variable-payment loan.¹⁷

Shared-savings arrangement: This arrangement pairs an energy user unable to finance an energy conservation measure with an external investor willing to finance such a project. In return for providing project financing, the investor receives a share of the value of energy savings and usually any tax-related benefits associated with ownership of the investment.

Joint-venture arrangement: This is essentially a variation of the shared-savings arrangement. The external investor provides most or all of the required capital investment and the energy user provides the site or opportunity for investment. In this case though, the investor and energy user have more flexibility in tailoring the joint venture arrangement to suit their specific risk/return objectives. This flexibility makes the arrangement attractive for the large industrial projects where both the energy user and the external investor wish to control the construction and operation of the project.

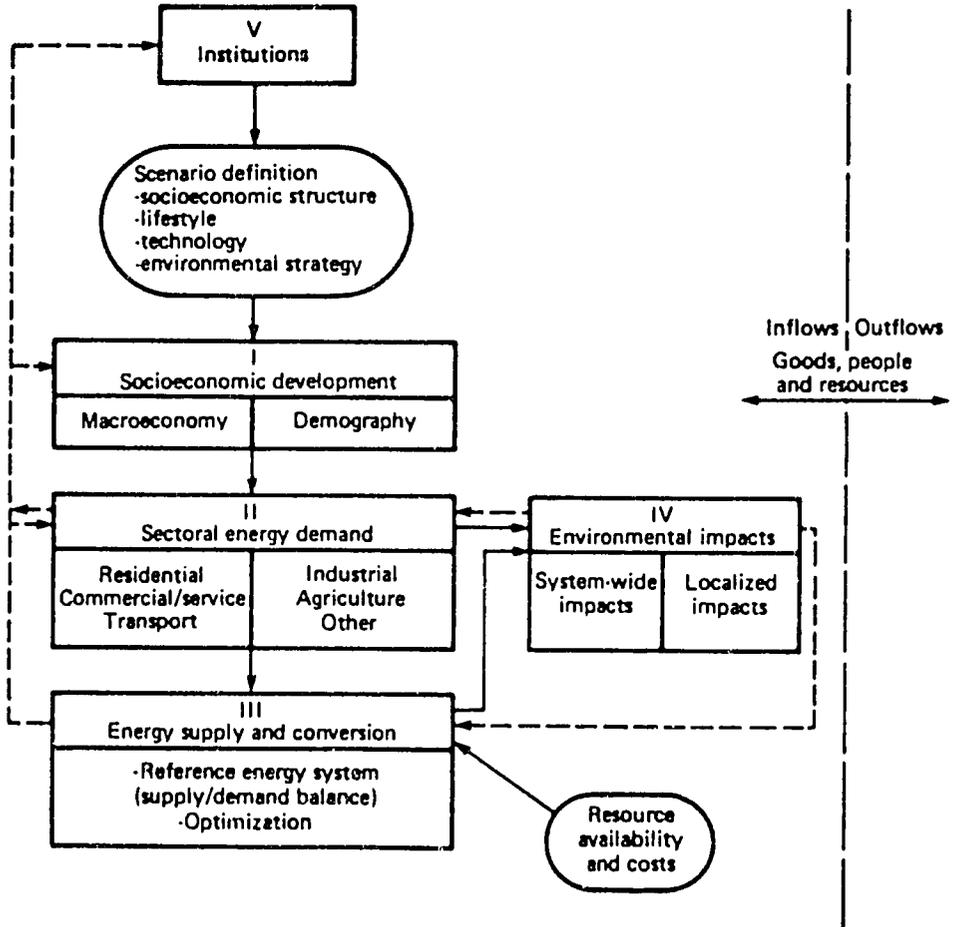
Variable-payment loan: In contrast to the other two arrangements, this one

¹⁵ The newly evolving "enclave" concept would provide for external investment, ownership and operation of power plants; the external owner would sell power to national institutions for the period required to "pay off" this investment, with the power plants then reverting to national ownership.

¹⁶ Some ideas for this section came from: Fisher, Michael D. "Innovative Approach to Financing Energy Conservation Investments in Developing Countries." *Natural Resources Forum*. United Nations, New York, Volume 9, Number 2, May 1985, pp. 97-105.

¹⁷ *Ibid.* p. 98.

Table III: Basic Areas Of Analysis In The Energy Planning Process



Source: Wesley K. Foell, "Energy Planning in Developing Countries", *Energy Policy*, Vol. 13, No. 4, August 1985, p. 351. Used with permission.

entails providing external funds through debt rather than equity-oriented financing, and ownership of the conservation improvement accordingly rests with the energy user. The payment schedule is structured so that the debt payment will probably be less than the value of energy savings during that period. In addition, loan payments can vary directly with the value of energy savings; that is, the higher the cash flow from the savings during a period, the higher the energy user's principal payment, perhaps offsetting lower savings and corresponding debt payment in another period.

2. Issue: What factors must be stressed if the institutional structure in developing countries is going to become more effective in addressing their energy problems?

The experience of the last few years has highlighted the inadequacies of hastily drawn up *ad hoc* measures to meet the energy crisis. Effective management of the energy sector calls for the formulation of a comprehensive national energy plan and its efficient implementation. The long gestation periods of energy projects, their high capital intensity, the trade-offs between producing or importing more energy and lowering the current consumption of energy, and the possibilities of reducing the energy intensity of economic activities over time, all make energy planning a complex process. The implementation of energy plans calls for coordinated and sustained action on many fronts.

Efforts of such complexity and magnitude require appropriate institutional arrangements if they are to be successful. Although institutional arrangements differ in each country, the following are factors that are worthy of consideration for any developing country's institutional structure.

Integrative Analysis: The energy planning process has basic components which individually are subject to analysis; however, how the components interact and affect one another is perhaps even more critical to analyze. Major components of the energy planning process that have to be integrated include: socioeconomic development (determined by economic, financial, political, and demographic conditions); sectoral energy demand; energy supply and conversion; environmental impacts; and the country's institutional structure (see chart below)¹⁵

The Energy Planning Process: A mainstay of integrative analysis is the application of consistent sets of assumptions, such as about lifestyle and technology, across all sectors. Another is that the process should be continuous and iterating among the various components. And third, all the relevant institutions of the country must participate in the planning process and its implementation.

Technology Transfer Strategy: Two questions have to be asked when formulating a strategy for coping with the burden of energy imports. First, is

¹⁵ Foell, Wesley K. "Energy Planning In Developing Countries." *Energy Policy*, Volume 13, Number 4, Butterworth & Co. Great Britain, August 1985, p. 351.

the solution to reduce energy imports, or is it easier to pay for them by instituting a new non-energy policy such as export promotion, utilizing any comparative advantage a country might have in a particular sector of its economy? And second, if increasing domestic energy production is chosen, how should the transfer of the relevant technology take place—by importing the technology, by fostering a domestic capability in the technology, or through a combination of these?

In either of the energy solution cases, most likely foreign licensing (or joint ventures) will be required, particularly if the technology is needed within a short period of time.¹⁹ That is because the alternative to acquiring foreign technology is to invest in research and development (R&D) and design engineering on a scale comparable to that already undertaken by foreign suppliers. Experience shows that successive step jumps in technology generally cannot be mastered without sufficient design and operating experience at each stage.²⁰

However, in cases where there is a desire to develop a technology capability over the long term, and local firms do not have the resources to undertake R&D on a sufficient scale, government assistance may be justified. This is why some developing country governments now sponsor energy technology institutes. The work of these institutes is geared to the requirements of client organizations and local equipment producers, as opposed to strictly scientific objectives which are divorced from industrial needs.

Rural Energy Promotion: The rural energy situation in many developing countries is now considered grave. Traditional energy sources such as fuelwood probably will, for many years to come, continue to supply much of the energy requirements in rural areas. Thus, there is a strong case for increasing this resource base through reforestation, through more efficient production and use, and through better control and management of the dwindling forest resources. In addition, a strong case can be made for the development and increased utilization of new and renewable sources of energy, initially to ease the pressure on traditional energy resources and eventually to shoulder a significant share of the energy requirements in the rural areas.

A number of technologies for the development and utilization of new and renewable sources of energy are already feasible; others are already in use.²¹ Many of these technologies are modular in character and can have long-term advantages for the rural populations of the developing countries. They include solar energy, small scale hydropower, geothermal energy, wind energy, and technologies for biomass conversion. Determining the scale and type of technology needs careful examination such as economic and social analysis and the local capabilities for system maintenance.

Strategies to address the rural energy problem should be evolved as an integral part of national energy and rural development policies and pro-

¹⁹ John Chessire and John Surrey. "Energy Technology Acquisition For Third World Development." *Energy Policy*, Volume 13, Number 4. Butterworths, Great Britain, August 1985, p. 318.

²⁰ *Ibid.*, p. 319.

²¹ Shem Arungu-Olende. "Rural Energy." *Natural Resources Forum*, United Nations, New York, Volume 8, Number 2, April 1984, p. 123.

grams. Institutions and training should be strengthened to identify needs, and then to design, select, and implement programs. To help assure adoption of the most useful, economical, and practical systems, the private sector should be brought in at an early stage in the system selection process. Utilities in developing countries need to become familiar with renewable energy systems, as well as the advantages of private energy generation from decentralized systems, including cogeneration. These actions cannot be implemented without increased levels of financial commitment from the public and private sectors sharply focused on the most appropriate renewable systems for each country.

3. Issue: Should the energy financing and development role of the World Bank and the regional development banks be expanded? If so, how?

The World Bank and the regional development banks can play an expanded role in promoting private sector involvement in developing country energy projects.²² The banks, including the World Bank's International Finance Corporation, can assist the private sector in the formation of government/private sector partnerships and thus increase the role of co-financing with private funding sources. Co-financing can help leverage limited resources as well as attract the participation of commercial lenders and other funding agencies, including export credit agencies, in energy projects.

Although the World Bank is the largest and most active agency involved in energy projects in developing countries, its lending is quite small relative to the investments required in this sector, and will most likely continue to be constrained by funding availability. In reacting to this, and also to the need to improve the investment climate in developing countries in order to stimulate greater commercial flows to them, the World Bank has taken several initiatives. First, it has up-graded its role as an analytical, policy, and technical advisor and as a catalyst for new energy project funds from non-Bank sources. Second, the Bank has revived its earlier proposal for a multilateral investment guarantee agency (MIGA), which was set aside in 1973 for lack of support by member countries.

Multilateral Investment Guarantee Agency: The basic objective of the proposed new multilateral investment guarantee agency is to encourage greater flows of resources to productive energy and non-energy enterprises in developing member countries by guaranteeing foreign investments against certain noncommercial risks: confiscation or nationalization, or exchange restrictions, which prevent or limit the transfer of earnings. The agency will, in addition, furnish information on investment opportunities, prepare studies, give advice to its members on formulating and implementing policies toward foreign investment, and cooperate with other international organizations engaged in related areas. The agency's operations are broadly delineated in its convention, elaborated in its policy rules, and more precisely defined in its contracts of guarantee. This will permit it sufficient flexibility to adjust coverage to

²² See also Issue #5 discussion of the Baker Plan which proposes the role of the World Bank be expanded as one way to encourage U.S. commercial banks to invest in developing countries.

changes in investment arrangements and gradually expand operations as it builds up financial reserves and gains experience.

This version of MIGA differs in many respects from previous proposals in which the agency would have no share capital and would have conducted operations exclusively on behalf of sponsoring member countries. The new features—which include primary reliance upon share capital, a willingness to leverage this capital, and a greater role for the host countries—should give the agency broader scope in which to operate and greater flexibility, thus making it of particular interest to developing countries.

Although the agency would focus primarily on private sector direct investment, eligible investments could include any other transfer of assets. The scope of eligible investments could be expanded as the agency's resources increase and it becomes better able to develop its risk-measurement rules. At the outset the investments covered might include equity participation and equity-type loans; eventually, they could also encompass profit-sharing, service, management and turnkey contracts, arrangements concerning industrial property rights, international leasing arrangements, and arrangements for the transfer of know-how and technology.

The proposal to establish the MIGA was approved by the World Bank's Board of Governors at the Annual Meeting in Korea in October 1985 and has been formally transmitted to member governments for ratification. It will enter into force upon the ratification by five capital-exporting and fifteen capital-importing member countries whose total subscriptions amount to at least \$360 million.²³ While most industrial countries have their own political and transfer risk guarantee agencies, the advantages of a multilateral agency with broad powers, such as co-insurance and re-insurance capabilities, make the World Bank MIGA proposal deserving of full support.

4. Issue: Can the United States and other OECD governments do more to encourage energy development in developing countries?

In establishing its priorities, the United States and other OECD countries could give greater recognition to international investment and help reduce or eliminate measures impeding the free flow of investment worldwide. Income to OECD countries from greater foreign investment improves the balance of payments, enhances export capacity, creates domestic jobs, imports new technology, and improves productivity. Promoting foreign investment could come at the multilateral and bilateral levels. Bilaterally, the United States and other industrial countries continue to make impressive progress on promoting such investment by negotiating bilateral investment treaties.

Multilateral Approaches: Multilateral approaches include encouraging institutions such as OECD and the multi-national financial institutions to

²³*IMF Survey*, October 25, 1985, p. 328.

consider unresolved investment issues, including: 1) technology transfers—ensuring adequate patent protection with an added ability to ensure reasonable returns on research and development expenses; 2) national treatment—over the long term, seeking to achieve a comprehensive multilateral agreement on national treatment which would include developed and developing countries; and 3) nationalization, compensation, and disputes—seeking adequate dispute settlement arrangements and protection from expropriation which are critical elements in the assessment of the investment climate in any developing country.

United States Policy: On the unilateral level, new possibilities exist for the United States to promote private investment in energy. First, programs of the Eximbank and other government agencies could be strengthened to focus more on financing technical assistance and feasibility studies, as a preliminary step toward facilitating the financing of energy projects in developing countries. Expanding these programs could fund “soft currency” transactions, provide export credits in conjunction with aid funds, and perhaps provide tax relief in relation to imports from such projects to help obtain markets for the output of projects. Also the insurance programs of the Eximbank could be expanded to allow contractors to undertake projects in debt-burdened countries that would otherwise present too great a political or commercial risk.

Second, the Bureau for Private Enterprise (PRE) in AID could be upgraded to become more active in the international energy sector. Formed in 1982 to promote the use of private enterprise in development through a revolving loan fund and grant program, PRE has agri-business as its priority. The dual focus of energy and agriculture would be of benefit particularly to the lower-income developing countries where neither problem can be resolved alone. A more active PRE, and a higher AID priority for energy programs could result in greater participation on the part of the U.S. business community in a developing country, an attractive complement to the usual AID policy of dealing directly with the government of the developing country.

5. Issue: What can be done to encourage commercial banks to invest in developing countries for energy development?

Although large commercial banks in the developed countries have the financial capacity and a strong self-interest in helping to deal with the international indebtedness of the developing countries, a considerable slowdown in lending has taken place. Efforts to increase equity ownership by private enterprise will likely increase private commercial bank financing of energy projects. In addition, the World Bank and the International Monetary Fund need to encourage commercial banks to reverse this slowdown by a system of partial guarantees and cofinancing policies.

International Monetary Fund: If the path to better economic performance is to be smoothly managed, continued close involvement of the international

financial community, including the International Monetary Fund, will remain vitally important. In appropriate cases the procedure of enhanced surveillance by the Fund can be a useful technique for providing analysis and policy advice. For some other countries, continued financial assistance from the Fund will be needed to encourage the participation of private lenders in financing a medium-term program of structural change in the country's economy. This is particularly true for the drought-stricken countries of sub-Saharan Africa.

At the Annual Meeting of the IMF in October 1985, it was agreed to set aside \$2.7 billion for a special Trust Fund earmarked to help low-income developing countries, such as the sub-Saharan African countries, promote economic growth. The special fund would be financed by repayments due over the next three to four years on past loans made by the IMF to ease the shock of higher oil prices. The loans will be on concessional terms and will assist countries in making structural adjustments in their economies.²⁴

At the same meeting, U.S. Treasury Secretary James Baker proposed that, in order to link resumed economic development in developing countries with continued efforts to deal with their external indebtedness, a concerted effort be made by the creditor banks in OECD countries, the IMF, the World Bank and other development banks, and the OECD governments. On condition that the debtor countries would continue to redress their financial imbalances with IMF guidance and help, the creditor banks would provide up to \$20 billion in new credits over a three-year period, and the World Bank would provide non-project loans. Efforts are currently being made to carry out that plan.

World Bank Structural Loans and Guarantees: The World Bank could expand its program of structural-adjustment loans to developing countries. These loans are long-term and are considered well-suited to foster economic development in helping countries overcome current account deficits. The loans provide immediate, quick-disbursing balance-of-payments support so that countries can continue to import essential items needed to maintain levels of production and to finish investment projects. These loans also enable countries to expand exports by providing foreign exchange for inputs needed in export-oriented industries. Finally, the loans require that a country outline a broader adjustment program aimed at adapting the economy to the new international conditions. The United States has encouraged the World Bank to apply as much as 20 percent of its new lending to these kinds of loans, which could be worth up to \$2.7 billion annually.

The World Bank also could expand its program of issuing partial guarantees for commercial lending to developing countries. Such a formula was recently tried in a \$1 billion commercial loan to Chile, which was facilitated by a World Bank offer to guarantee \$150 million. If expanded, this approach should give commercial banks more encouragement to lend to the developing world, since their risk would be shared by the World Bank.

²⁴*Ibid.*, p. 305 and 329.

E. CONCLUSIONS

1. To enhance economic development in developing countries, there should be a significant increase in participation and direct investment in energy development by OECD private sector institutions. This should be supported by OECD governments and the international multilateral institutions, such as the World Bank, the regional development banks, the United Nations, the Organization of Petroleum Exporting Countries, and the International Monetary Fund.

2. External investments are more likely to be made in response to opportunities in economies which are increasingly market-oriented. Such investments require a favorable policy environment, under which the prospect of returns on investment flow from a mutuality of interests on the part of both domestic and external institutions. Mutuality of interests can be expressed in terms of:

- realistic economic and energy development plans;
- provisions for repatriation of earnings and service on loans;
- complementary institutional infrastructures;
- supportive national policies and practices;
- mutually acceptable contracting practices;
- protection against non-commercial risks;
- the prospects of satisfactory results in the form of economic, political, and social benefits.

3. Additional actions can be taken by the developed and the developing nations, along with key international institutions, to facilitate the structuring and functioning of market-oriented decision-making in the developing world, thereby promoting the development of new opportunities for energy investment. These actions will add new impetus to energy investment in the developing countries, building on the strengths of domestic institutions of the developing countries, of OECD government institutions, and of the financial and energy institutions in the international private sector.

F. RECOMMENDATIONS

1. Developing countries are urged to undertake a systematic review of their national economic and energy policies, engaging in a program to enhance market-oriented decision-making, and to identify and promote private investment opportunities in the energy and related sectors. Special emphasis should be placed on market pricing, strategic economic and energy planning, institutional relationships, resource evaluation, supporting infrastructure, and the potential for direct investment by OECD private and public sector institutions and multilateral institutions in particular energy projects. To support these reviews, energy investment teams led by the World Bank should be assembled. They should consist of representatives from other multilateral institutions, OECD governments, and major private companies and financial institutions and would work with appropriate national, public and private institutions in the developing countries. Such teams would offer analytical assistance and act as a vehicle to sources of investment capital in the private, bilateral, and multilateral institutional sectors. This principal recommendation is based on the belief that the World Bank's presence and leadership and the catalytic role it has embarked upon could measurably encourage OECD private interests and developing country national interests to respond more constructively to each other.

2. Developing countries desirous of direct foreign investment in energy projects should encourage greater equity ownership by private enterprise. In those countries where there are insufficient qualified private sector companies, government corporations would initially have to fill this role. In such cases, there should be provisions by which at a later date private companies could purchase the equity from the government company. Both foreign and domestic companies should make a reasonable contribution of their own funds in purchasing equity participation. This gives them a vested interest in identifying a sound project and in its efficient management. Foreign investors should contract to provide, on mutually satisfactory terms, the needed technology, supervision, and training of host country personnel.

3. Every effort should be made to meet, when possible, the aspirations of the developing countries with transnational companies offering in good faith to transfer their energy technology for a fair price as part of a total relationship between the developing country and the company. Technology does not stand still, and an industrial firm's continuing technological progress can often be enhanced by creative work on specific projects by the associate, licensee, or subsidiary in a developing country. World-wide sourcing of manufactured products is ongoing; managing world-wide technological development may be just ahead. As a result, good faith efforts in this arena would be very beneficial in encouraging foreign equity investment in developing countries.

4. The energy planning process of a developing country should integrate socioeconomic development (determined by economic, industrial, financial, political, and demographic conditions) with market pricing of energy supply and use, environmental impacts, and its institutional structure. Planning emphasis should include a strategy of energy technology transfer and rural energy promotion.

5. In order to attract risk capital, particularly in the form of equity investment, developing countries' investment policies must provide more assurance that investors will have a reasonable prospect of return commensurate with their investment and risks and be permitted to repatriate those profits. Whether or not investors will be able to earn a suitable return will depend to a large degree on the commercial risk taken and on the host country's policies concerning pricing, taxes, required equity contributions, share of project revenues, access to markets, repatriation of earnings, and currency convertibility.

6. The OECD countries should continue giving high priority to consideration of national treatment issues within the OECD and striving to achieve a comprehensive multilateral agreement on national treatment which would include both developed and developing countries. In addition, OECD countries should do whatever they can to provide adequate arrangements to settle disputes and to provide protection from expropriation for their private sector. Two such measures are: to continue efforts to negotiate Bilateral Investment Treaties; and to participate in the World Bank's new Multilateral Investment Guarantee Agency which will provide insurance of non-commercial risks.²⁵

7. The United States Government, in addition, should expand its efforts to promote greater private sector investment in developing countries. One way is to expand the international energy assistance program in the Agency for International Development, particularly its central Office of Energy which provides the bulk of technical and programmatic expertise and Bureau for Private Enterprise which promotes the use of private enterprise in development through a revolving loan fund and grant program. The Bureau currently has agri-business as its priority; the dual focus of energy and agriculture would be of benefit particularly to the lower-income developing countries where neither problem can be resolved alone. A more active Bureau and AID energy staff promoting private sector initiatives could result in more active participation on the part of the U.S. business community in a developing country.

8. The United States Government could also strengthen the export finance programs of the Eximbank and other agencies to focus on technical assistance and feasibility studies which can play an important role in facilitating the development of energy projects in developing countries, e.g., expanding these programs to fund soft-currency transactions, to provide export credits in conjunction with bilateral aid funds, and perhaps provide tax relief in relation to imports from such projects to help secure markets for the output of projects. Continued U.S. Government efforts to end the abuse of mixed credits by foreign governments is applauded.

²⁵One participant mentioned the possibility of OECD supporting developing country membership in the World Bank and the International Centre for Settlement of Investment Disputes.

9. OECD countries and multilateral institutions should encourage commercial banks to invest in energy projects in developing countries. Efforts to increase equity ownership by private enterprise will likely increase private commercial bank financing of energy projects. OECD countries should also support the efforts of the multilateral institutions to stabilize the economies of the developing countries and to foster economic development, so as to create a more favorable investment atmosphere. These efforts include continued assistance from the International Monetary Fund and the possibility of the World Bank expanding its structural-adjustment loan program and its program of issuing partial guarantees to commercial lending to developing countries. For example, the IMF plan to set aside an additional \$2.7 billion in a Trust Fund for assisting low-income countries to promote economic growth is to be commended. The plan would provide funds with longer pay-back periods.

And finally, the Joint Working Group supports the proposal, introduced at the October 1985, meeting of the IMF and the World Bank in Seoul, Korea, that would first, encourage U.S. commercial banks to increase their lending to financially-troubled developing countries by \$20 billion over the next three years; and second, would call upon the World Bank along with the Asian Development Bank, the Inter-American Development Bank and other multilateral lending institutions, to increase their projected current annual lending rates from \$18 billion to \$27 billion over three years.

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