Energy and Development: Understanding the Risks

It is no secret that highly industrialized nations such as Great Britain, the United States, and Japan depend heavily on the oil-rich nations of the Middle East — and increasingly Latin America — for the petroleum products to fuel their economies. On the other hand, this demand has produced sudden enormous wealth in these regions, a situation which inevitably brings political and social, as well as economic, strains. Understanding the interplay of the volatile energy market with the politics, economics, and growth in these areas are thus of vital importance both for the developing areas and the countries with which they do business.

To help monitor, understand, and forecast the changes and risks associated with these critical areas, a group of MIT researchers drawn from several disciplines have combined their expertise in a series of projects under the auspices of the Energy and Development Research Program. And members of the group have developed new and unique methods for producing comprehensive analyses of the economic and political issues in these areas.

Central to the group's success is a set of analytical tools which represent and simulate changes in the world oil market. The International Petroleum Exchange Model, for example, is a comprehensive simulation of the international market, and of the economic causes and consequences of changes of the prices of crude oil. In addition to use at MIT, this package has found application in projects undertaken for such groups as the U.S. Department of Energy, the California Energy Commission, and a major international oil company. The group has also compiled a computerized database of market indicators as well as of political indicators which could affect the market.

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Almost all countries in the region are wooing foreign investment in energy development. The search for capital and for expertise to develop the region’s oil resources has taken a sharp upward swing since the first price hikes in 1973.

Collaborative efforts among countries in the region to develop resources, while still in their infancy, are likely to grow in coming years.

Political and social strains are another consequence of the shifting energy scene in the region. Governments, for example, are struggling to deal with changes in the market by implementing new policies and regulations that can cause social strains. Attempts to curb oil production in Mexico, for example, were extremely unpopular. And the Brazilian government’s first set of policies on tolls, taxes, and increases in oil prices sparked riots in some cities.

In addition, over the last decade, new investment patterns have created new social strains. In Mexico, for example, expansion of investments in the oil sector accentuated shortages of skilled labor and helped weaken agriculture as farm labor migrated to the new sector. A weakened agricultural sector could not then respond as well as it should to the demand for food boosted, in part, by higher birth rates.

Power relations in the societies have also changed as new groups have grown wealthy and others have grown poorer. State enterprises, for example, are now major actors in the political arena, deriving power from control over sources of economic wealth. bureaucrats have blossomed as well, and the major political decisions have become tied to oil production policies, investments in exploration and development, and allocation of oil revenues.

While Latin America’s current energy profile is based largely on petroleum, Dr. Choucri stresses that the region has good prospects for developing alternatives. But the countries in the region must overcome four main obstacles in order to develop these new resources. They must raise the required capital in the face of declining oil revenues, gain access to new technologies, resolve possible environmental problems that develop with increasing resource exploitation, and recruit able managers to implement plans for developing both oil and new energy technologies.

In the long term, Dr. Choucri explains, Latin America’s economic and political outlook will be influenced not only by the price of oil, but by its investments in oil exploration and development as well as investments in alternatives. Today’s prices have considerably reduced incentives in alternatives, and they have even made it unlikely that these nations will launch a major push for investments in conventional fuels. Thus today’s lower prices are limiting the prospects for the alternatives that could lead to substantial changes in patterns of energy consumption.

—David R. Lamp