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in association with  
Richard Ferguson and Dana Rashti

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## About the Book and Authors

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The authors of this volume analyze and forecast competitive trends among the U.S., Japan, and West European nations with respect to high technology trade with the Middle East. They evaluate the relative success of the various major industrialized countries in capturing market shares of the Middle Eastern oil producers, assess the contribution of Japanese and European governments in promoting the competitiveness of their firms in Middle Eastern markets, and appraise the standing of U.S. firms in this market and the steps that the U.S. government has taken to support U.S. companies. The study is based upon recent trends and an evaluation of key factors that will influence technological trade with the Middle East for the next decade.

James J. Emery served as staff economist with The Futures Group, a research and consulting firm based in Glastonbury, CT, and Washington, D.C., at the time the original research for this study was completed. He is coauthor of *The U.S. Export-Import Bank: Policy Dilemmas and Choices* (Westview, 1984) and is presently working as an independent consultant. Mr. Emery did his graduate studies in international economic affairs at the Fletcher School of Law and Diplomacy.

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Richard Ferguson and Dana Rashti both served as research associates with The Futures Group at the time the original research for this study was completed. Mr. Ferguson subsequently was awarded a Fulbright Fellowship for study in West Germany. Mr. Rashti is now an analyst with Connecticut National Bank in Hartford.

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## Preface

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The research for this book was originally undertaken by the authors at The Futures Group for the Office of Technology Assessment. The project was part of a larger research effort by OTA on the issue of Technology Transfer to the Middle East, in which other individuals and organizations also participated. While the focus of others' work was on specific countries or sectors, The Futures Group study was intended as an overview of the commercial technology trade relationships between the industrial countries and the Middle East. While the selection of specific countries and sectors for close review was determined by the requirements of OTA's project, the result in the case of The Futures Group study was a major examination of technology trade with a broad focus and relevance.

This study assesses technology trade from the perspective of the competing supplier countries. This group was defined to include the United States, Japan, and Western Europe. Six Middle Eastern countries were selected for detailed review: Algeria, Egypt, Iran, Iraq, Kuwait, and Saudi Arabia. In addition, five sectors were selected as the basis for examination of factors affecting technology trade relationships: commercial aircraft support systems, medical services, nuclear power, petrochemicals, and telecommunications. However, we expanded the scope of these parameters where it was necessary for comprehensive treatment. For example, any examination of nuclear power necessitates the inclusion of Libya as a major case. The Soviet Union was not treated directly, except where a Soviet presence overtly affected technology trade relationships between specific countries or in the major sectors.

Anyone experienced in research on commercial relations in the Middle East will be familiar with the difficulties we encountered in securing accurate data that are relevant to technology

trade. Usable data on foreign investment and technology licensing payments were unavailable, and data on contract awards were incomplete. Thus, our attempt to establish a baseline of such data since 1970 to indicate past trends was based largely on trade data. The recent emergence of most of these countries as rapidly developing, their relative state of underdevelopment prior to the oil price increases of 1973, and the political sensitivity of many standard technology transfer indicators all contributed to the paucity of officially published statistics useful in a broad comparative study such as this.

The thrust of our work was to identify and evaluate the factors affecting technology trade and competitiveness in the region. In doing so, we heavily relied on direct industry contacts and the perspectives of informed insiders. While this selective interview approach may be subject to bias, it also is perhaps the only way to glean the substance of doing business in the Middle East. Due to the broad focus of the study, we were unable to develop detailed case studies, but rather compiled the experience of individual firms with publicly available information and our own analysis to form assessments of the factors influencing technology trade relationships.

The original research was undertaken in 1982 and 1983. Since the submission of the original report, we made revisions to reflect recent developments where they were significant. The problem of forecasting future trends has been made no easier by short-term developments over the past year, as this remains an intrinsically dangerous enterprise. Therefore, we have not drastically changed the forecasts in Chapter 3, such as for oil revenues and trade flows, as these intentionally took a long-term perspective. It was our goal to try to look beyond the short-term determinants of technology trade to plausible outcomes a decade or more in the future. As a result, for example, developments in petroleum markets over the past year have been very close to our "low" scenario, rather than our "base" scenario. Yet, the long-term prospects for oil export revenues still remain clouded in uncertainty.

A particular difficulty in making concrete forecasts of future economic trends in the Middle East is the instability in the region and the susceptibility of even comparatively well established commercial relations to politically oriented disruption. The Middle East stands apart in this respect from most other areas in the developing world, and we have emphasized throughout this work the importance of political factors.

The broad scope of the study necessarily resulted in certain areas not being accorded the full treatment their complexity warrants. However, it is our hope that because of this broad

focus the book can provide the overview and synthesis that have been lacking in case studies and more narrowly oriented work, while at the same time raising new issues for more detailed study.



## Acknowledgments

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# I

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## Trends in Technology Trade with the Middle East

### INTRODUCTION

The Middle East region has been the fastest-growing market for Western technology over the past decade. Oil price increases initiated by OPEC in 1973 and by the Iranian revolution in 1978-1979 created a massive transfer of wealth to the oil-producing nations in the region. This transfer of wealth has allowed these countries to begin fulfilling aspirations of economic development, diversification away from petroleum-based economies, and general modernization of their countries. Ambitious development plans have relied on the importation of Western technology and intensive training and education of nationals to provide the basis for rapid modernization. For most of these countries, the base from which they are building--infrastructure, industry, manpower and skill levels--was extremely weak a decade ago. Yet the large-scale importation of the most advanced Western technologies means that the step being attempted is a giant one--from very backward economies to extremely modern ones--in a relatively short period of time.

The competition among industrial nations to supply equipment and technical expertise and to build new development projects in the Middle East has been intense. Faced with massive trade deficits from oil imports beginning in 1974, developed country exports to the Middle East of technologically advanced equipment and machinery, and also sophisticated weapons systems, have been a primary means of reducing bilateral trade deficits with OPEC nations. Industrial countries have relied on traditional ties with Middle Eastern countries, combined with commercial and diplomatic initiatives to create new bilateral relationships. Individual firms have relied on established reputations for the systems and technology they supply, a market

presence and local track record established at an early time, aggressive marketing campaigns and concerted efforts to satisfy special local requirements. The resulting competition among industrial (and recently newly industrializing) countries and their national firms has produced a complex web of carefully nurtured supplier relationships, commercial and diplomatic initiatives, and calculated positioning for major contract awards.

The oil-exporting countries which have been the major markets for Western technology are by no means a homogeneous group. They all differ markedly in basic characteristics such as population size and density, natural resource endowments, infrastructural and industrial base, political affiliation, and financial (oil-related) wealth. Other countries in the region, such as Egypt, are important export markets because of factors other than petroleum, such as a relatively more developed economic base and substantial foreign assistance from the United States. Of the six countries selected for close review in this study, five (Algeria, Iran, Iraq, Kuwait and Saudi Arabia) are major oil exporters and OPEC members. The other, Egypt, has recently developed oil resources in the Sinai, but these will be absorbed in domestic industrial production. Algeria, Egypt and Iran are relatively large, populous countries; Saudi Arabia, Iraq and Kuwait have relatively small populations, although in the case of Kuwait, high population density. Saudi Arabia, Kuwait and Iraq have traditionally been "surplus" countries, unable to absorb all their revenues from oil exports in current expenditures. Recently, however, with a number of large development projects entering the construction phase, lower oil prices, and reduced oil output mandated by OPEC production quotas, even these countries face budgetary limitations.

The other countries of the region covered in this study show even greater diversity. There is an enormous range of resource endowment and wealth, from the extremely poor and less developed Yemen to the oil-rich Gulf states of Qatar, the UAE, and the North African state of Libya. In between are Jordan, Syria, Lebanon and Oman, the latter with modest oil reserves. Several of the poorer countries have been secondary beneficiaries of oil-based wealth in the Arab world through regional aid programs. The primary market for Western technology in these countries remains, however, the oil-exporting group.

Commercial relations with the Middle East are influenced strongly by political factors, perhaps more than in any other region of the nonindustrial world. These political factors include the internal political systems of the countries in the region, the manifestations of the Arab-Israeli conflict, and the nature of bilateral relations with major powers; the foreign policy positions



of the industrial countries toward the region represent the other side of the equation. While the interrelations of domestic political and foreign policy considerations comprise a complex web of factors that determine both Middle Eastern and industrial country actions, a few general observations are useful in laying the groundwork for the analysis of commercial relations in the region. The overriding political influence on the region is the Arab-Israeli conflict and the Palestinian question. Arab unity on this issue has faltered in recent years with Egypt's negotiation of the Camp David Accords, and the rift between moderate, more conservative states and the radical, rejectionist states. European policy has been sympathetic to Arab concerns with respect to the Palestinian question, through actions such as the "European Initiative" of 1979 and direct diplomatic contact with the PLO. The United States, on the other hand, is a major supporter of Israel and has given priority to the reduction of Soviet influence in the region over settling the Palestinian question. The effect of these foreign policy stances on commercial relations is often a subtle one, yet is sometimes specific. What was viewed in the Arab world as the U.S. failure to stop the Israeli invasion of Lebanon is likely to lead to some discrimination against American firms.<sup>1</sup>

The potential for domestic political instability and radical regime change to shatter strong bilateral political and commercial relationships between the West and the Middle East was amply demonstrated by the Iranian revolution in 1978. Current fears over political stability in the Middle East certainly influence corporate decisions on major involvement in the region. This is especially true in countries where bilateral relations are poor or nonexistent, as with U.S. firms in Iraq and Libya. Here the absence of a strong diplomatic presence is compounded by a lack of official support in areas such as export credit insurance, investment insurance, performance bonding, and so forth.

In a similar manner, major bilateral commercial relations also color otherwise unrelated commercial transactions with Western firms. For example, U.S.-Algerian trade relations deteriorated in 1978-1979 with the failure to reach a new agreement on pricing of liquefied natural gas imports. It became increasingly difficult for U.S. firms to win major contracts in Algeria. However, with the goodwill engendered by the Algerian role in the settlement of the Iranian hostage crisis, a push for increased commercial ties was renewed. Thus, Algeria became a major focus of Commerce Secretary Baldrige's trip to the Middle East in 1983. In a dispute over natural gas pricing between France and Algeria, the settlement included agreements on specific types and amounts of French goods to be purchased by Algeria. In a less direct manner, some Middle Eastern countries have shown a