

# **ENERGY EFFICIENCY and CONSERVATION in MEXICO**

Oscar Guzmán, Antonio Yúnez-Naude,  
and Miguel S. Wionczek

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translated by Glenn Gardner  
and Rodney Williamson

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# Energy Efficiency and Conservation in Mexico

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## About the Book and Authors

In comparing the degree of efficiency in energy production and the uses to which energy resources are allocated in Mexico with those in other countries, this book addresses three basic questions: What are the major reasons for differences in energy efficiency between industrial economies and a newly industrializing country like Mexico? To what extent is energy conservation possible in the Mexican economy? And what are the social and economic benefits of more efficient use and conservation of energy in comparison with their costs? Using the history and operations of two state-owned energy agencies, PEMEX and the Federal Electricity Commission, as case studies, the authors explore the patterns of energy use in all major sectors of the economy and discuss the prospects for energy-saving policies between the mid-1980s and the end of the century.

Oscar Guzmán is a researcher at the Energy Research Program at El Colegio de México. He is coauthor of Perspectivas energéticas y crecimiento económico en Argentina. Antonio Yúnez-Naude is a professor of economics at the Center of Economic Studies, El Colegio de México. Miguel S. Wionczek is a senior fellow and the head of the long-term Energy Research Program at El Colegio de México. He is co-editor of Mexico's Energy Resources (Westview) and editor of Politics and Economics of External Debt Crisis (Westview).

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## Preface

This book presents the results of a study entitled "Conservation and Efficient Use of Energy in Mexico," conceived and designed with cooperation of the Energy Directorate of the Commission of the European Communities in Brussels in the fall of 1983. According to the initial agreement between El Colegio de México's Energy Research Program and the Commission's Energy Directorate, the study was to undertake the first phase of an analysis of the efficient use of energy and the obstacles and possibilities for more efficient energy use in Mexico. This first phase was to include the design of a methodology for the study, the collection and strengthening of the national data base, and the preliminary and tentative analysis of the data collected for the purpose of increasing the efficiency of energy uses in the country.

In accordance with the project plan, four particular questions, among others, were to be addressed in the study:

1. What are the basic reasons for differences in energy efficiency among industrial and developing countries, given the basic assumption that energy conservation should not be viewed simply in terms of thermal efficiency and even less in terms of oil use?
2. To what extent is energy conservation possible?
3. What are the social and economic costs of energy conservation at the macro and micro levels compared to its benefits?
4. Are analytical methods used in the industrial countries transferable to less developed economies, and to what extent are such transfers of methodologies valid in view of the structural, institutional, and social differences between these two types of societies? For the sake of brevity, the two societies might be described as postindustrial and preindustrial countries; some countries, such as Mexico, would represent borderline cases.

As this book demonstrates, the study's terms of reference, set by mutual agreement and in the project outline, were largely exceeded. The book does not intend to report only on the first phase of an analysis of the degree of efficiency in the use of energy and the obstacles and possi-

bilities in that field in Mexico; instead, it covers these subjects fully and in great detail, with due emphasis on the possibilities for improving energy use and performance at both the macro and micro levels.

Analysis offered by the study was made possible by mobilizing a considerable group of Mexican experts, from both the academic and public sectors, who worked to collect and organize data, which were often extremely scarce, incomplete, and contradictory, on energy uses in the 1970s and the early 1980s in all sectors of the Mexican economy. This coordinated exercise was integrated within the Energy Research Program of El Colegio de México.

This was the first research project of its kind conducted in Mexico and perhaps one of the first undertaken in any developing country. It is hoped that the study will be of considerable use to the country's energy policymakers in the public sector, who, as of late and particularly since the appearance of the official Programa Nacional de Energéticos 1984-1988 in August 1984, have given the highest priority to measures aimed at increasing conservation and the rational use of energy in an economy presently going through serious development difficulties.

The views presented in this book should be considered those of a group of independent researchers associated directly or indirectly with El Colegio de México. Although some participants in the project occupy official positions, both the opinions and the policy-oriented proposals contained in the study should in no way be taken as reflecting the official viewpoints of the publicly owned entities that form the energy sector in Mexico.

The study of energy uses in Mexico required a wide range of technical contributions that would not have been possible without the collaboration of a large group of experts on energy issues from both the public and academic sectors. We would like to thank Jaime Mario Willars and Antonio Souza for their help in analyzing the energy and industrial sectors as well as for their participation in the study of several other branches. Thanks are also due to Fernando Schutz, whose knowledge provided the basis for the quantitative analysis of the electric power, industrial, housing, commercial, and public sectors and who provided overall assistance in organizing the study.

The authors of the final version of the study would also like to thank Juan Francisco Bueno for his opinions regarding the energy sector as a whole; Gerardo Bazán for his participation in the study of the transportation sector; Manuel Betancourt, for his aid in the study of the indus-



trial sector; Jesús Cervantes for his participation in the study of the rural sector; Miguel Angel Cóseres for his research on the sugar industry; Eliut González for his collaboration in the work on the transportation sector; Omar Macera and Marco Martínez Negrete for their contributions to the study of the rural sector; Roberto Mendoza for his efforts in obtaining the information used in the analysis of the housing, commercial, and public sectors; Dolores Nieto for her help in gathering information analyzed in the macro-economic study; Alma Parrilla for her participation in the study of the iron and steel industry; and Gustavo Pastrana for his collaboration in the research on transportation. We would like to thank our two translators, Glenn Gardner and Rodney Williamson, for their care in translating the original Spanish-language manuscript. Last, thanks should be given to the secretarial personnel--Leticia Cabrera, Juana Socorro Cervantes, Elizabeth Caso, and Rosa María Valenzuela--and to the staff of the program's Documentation Center, particularly Blanca Laura Aguirre and Pilar Torres.

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Miguel S. Wionczek  
Director, Energy Research Program  
El Colegio de México

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