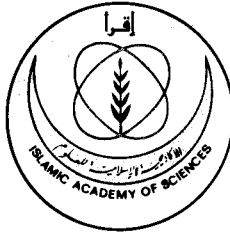


**TECHNOLOGY
TRANSFER
FOR
DEVELOPMENT
IN THE
MUSLIM WORLD**

**Edited by
Fakhruddin A. Daghestani
Arafat R. Altamemi
Mehmet Ergin**

**Published by
The Islamic Academy of Sciences**

TECHNOLOGY TRANSFER FOR DEVELOPMENT IN THE MUSLIM WORLD



Proceedings of the Conference on Technology Transfer for
Development of the Muslim World Held in Antalya, Turkey,
on 19-21 November, 1990

Edited by

Fakhruddin A. Daghestani
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Preface

The Islamic Academy of Sciences was established in 1986 as a non-political, non-governmental, non-profit making, and an independent body comprising top muslim scientists from various countries who are committed to the promotion of science and technology for the development of the Islamic World. The establishment of the Academy was approved by the heads of state of the Organization of the Islamic Conference (OIC) during the Fourth Islamic Summit Conference which was held in Casablanca in 1984. This approval was based on a recommendation for the establishment of the Academy by the OIC Standing Committee on Scientific and Technological Cooperation (COMSTECH).

Since its establishment, the Academy concentrated in its activities on major developmental issues in which science and technology plays a prominent role in the socio-economic development of the Muslim World. Each of the annual conferences held by the Academy concentrated on a major development theme. The first conference was on food security in the Muslim World. This Conference was held in Amman, Jordan in December 1987. The second annual conference, which was hosted by the Government of Pakistan and held in Islamabad in December 1988, dealt with the subject of science and technology policy for self-reliance in the Muslim World. In December 1989, the Kuwait Foundation for the Advancement of Sciences (KFAS) hosted in Kuwait the third annual conference that concentrated on the subject of new technologies and development of the Muslim World. The fourth conference, which is the subject of this proceedings, dealt with the subject of technology transfer for development of the Muslim World. This fourth conference was hosted by the Turkish Scientific and Technology Research Council (TUBITAK) representing the Government of Turkey and was held in Antalya, Turkey, in November 1990.

It has been the policy of the Islamic Academy of Sciences to publish a book including the proceedings of each of these annual conferences. The publication of each book has been sponsored by one of the interested organizations. The first book entitled "Food Security in the Muslim World" was edited by Dr. Subhi Qasem and sponsored by the Kuwait Foundation for the Advancement of Sciences (KFAS). The second book entitled "Science and Technology Policy for Self-Reliance in the Muslim World", which was edited by Dr. Fakhruddin A. Daghestani, Dr. Hani Mulki, and Dr. Mohammad Halaqah, was sponsored by the Higher Council for Science and Technology in Jordan. The third book entitled "New Technologies and

Development of the Muslim World”, which was edited by Dr. F.A. Daghestani and Dr. S. Qasem, was sponsored by KFAS. This book entitled “Technology Transfer for Development in the Muslim World” is sponsored by the Islamic Foundation for Science, Technology and Development (IFSTAD).

The success of IAS conferences in terms of quality of content and participation has encouraged several institutions in cosponsoring these conferences. It is noted that the conference on technology transfer, which is the subject of this book, was cosponsored by IAS, TUBITAK, IFSTAD, IDB, and UNESCO. This is a healthy trend for the further cooperation between the national, regional, and international organizations concerned with the issues of science and technology for the socio-economic development of the Muslim World.

This book has been divided into five parts and an appendix. Part One contains statements and messages presented at the inaugural session of the Conference. Part Two contains the IAS declaration on technology transfer and the recommendations made by the three working groups at the conference.

Part Three includes several papers that deal with the main issues related to technology transfer. The paper by Dr. M.K. Mahmoud deals with the human and institutional infrastructure required for the acquisition, absorption and diffusion of technology. The paper by Dr. F.A. Daghestani elaborates on the role of research in industrial technology transfer and development in Islamic countries. Dr. V. Bhargava from the World Bank elaborated in his paper on the role of governments in creating the proper entrepreneurial environment for promoting real technology transfer. The role of regional and interregional organizations in technology transfer has been elaborated by the paper presented by Dr. M. K. Hussein from UNIDO. Dr. K. Ozal presented in his paper the main aspects of technology transfer. Dr. S. Celikdogan presented in his paper opportunities for technical cooperation with Turkey particularly in the industrial sector. Dr. S.Z. Haider presented in his paper brief remarks on technology transfer and innovation.

Part Four contains papers that refer to experiences of several organizations in technology transfer. These include a paper by Dr. A. Yousef on the role of the Islamic Development Bank (IDB) in technology transfer, a paper by Dr. M. Haddadin and Dr. H. Ibrahim on the strategies adopted by the Arab Company for Drug Industries and Medical Appliances (ACDIMA) for technology transfer in its industrial projects in the Arab countries. Dr. S. Al-Ali elaborated in his paper on the role of higher education and technical institutions in Kuwait on technology transfer. The experience of Salford University in the United Kingdom in transferring R&D results to industry is presented in the paper by Dr. E. Parker. The paper by Dr. Recai Kutun elaborates on the need for further self-reliance in the area of engineering design and consulting services.

Part Five includes several papers on technology transfer presented by representatives of selected industrial firms in Islamic countries. The experience of Indonesia in technology transfer for developing its aeronautics industry is elaborated by Dr. S. Suparlan, Dr. D. Sadjaja, Dr. S. Jenie, and Dr. Yuliswar. The paper presented by

Dr. R. Bin Musa contains in brief the experience of Malaysia in technology transfer for the development of the electronics industry. SABIC of Saudi Arabia includes in its paper the main strategies adopted in technology transfer for the establishment of its petrochemical industries. Dr. A.M. Sallam dealt in his paper with the strategies adopted by Egypt in developing its pharmaceutical industry. Part Five also includes a paper by Dr. I. Jallad and Mr. J. Amira on the development of the fertilizer industry in Jordan. In addition, this Part includes three papers presented by selected industries in Turkey. These are technology transfer in the textile industry in Turkey by Dr. H. Culcuoglu, technology transfer in the glass industry by Dr. A. Yarman and Dr. T. Ates Kut, and technology transfer in the metal working industry by Dr. K. Basan and Dr. A. Olpak.

The Appendix contains information relevant to the conference including the Scientific Committee, the Conference Organizing Committee, Chairmen of Conference Sessions and Working Groups, list of participants, IAS Council members, IAS Fellows, and names of companies and institutions that participated in the technical fair held at the Conference.

It is noted that the Conference was designed to start an ongoing dialogue in technology transfer issues between government officials and decision makers, scientists in research centres and universities, science and technology policy makers, and representatives of a broad spectrum of industries in various Islamic countries. The interaction of these diverse groups has been extremely useful in looking at the various and complex issues of technology transfer as relevant to the development of the industrial sector in Islamic countries.

The editors believe that there are still numerous misconceptions regarding technology transfer in Islamic countries. There is still a confusion between technology trade, which is merely the import of equipment and the execution of development projects on a turn-key basis, and the real technology transfer, which involves mastering the imported know-how and core technologies and the development and generation of technologies utilizing endogenous scientific and technological capacities. None of the Islamic countries have so far adopted comprehensive technology-based development strategies designed to affect the various social and economic sectors. The current mode of planning is bound to increase the technological gap between developed and developing countries, and this in turn increases their technological and economic dependence.

It is hoped that this book can contribute in a modest way towards clarifying some of the complex issues of technology transfer. Needless to say that the dialogue on science and technology policy including policies for technology transfer to and between Islamic countries should be an ongoing activity between the various stakeholders. Although abundant literature is available on *why* science and technology policy is important for development, much work remains to be done on *how* such policies should be formulated and integrated in technology-based development. In other words, Islamic countries still need to develop their own *know-how* in the areas of technology-based development planning of various

economic sectors. It is hoped that the national, regional, and international organizations dealing with science and technology issues can provide further guidelines and publications oriented towards developing the mentioned *know-how*. In this regard, several organizations such as IAS, IFSTAD, UNESCO, IDB, ESCWA, ACA, and ESCAP have an important role in providing such guidelines.

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