

P R O G R A M



**Second International Conference**  
**Desert Development**  
January 25-31, 1987

**CAIRO**  
**EGYPT**

HOSTED BY THE GOVERNMENT OF EGYPT



# **DESERT DEVELOPMENT**

---

## **PART 2: SOCIO-ECONOMIC**

---

### **ASPECTS AND RENEWABLE**

---

#### **ENERGY APPLICATIONS**

---

Edited by  
Adli Bishay  
Harold Dregne

---

ADVANCES IN DESERT AND ARID LAND  
TECHNOLOGY AND DEVELOPMENT  
VOLUME 5

---

**harwood academic publishers**

# **DESERT DEVELOPMENT**

## **PART 2: SOCIO-ECONOMIC ASPECTS AND RENEWABLE ENERGY APPLICATIONS**

*PROCEEDINGS OF THE SECOND INTERNATIONAL  
DESERT DEVELOPMENT CONFERENCE  
HELD ON 25-31 JANUARY 1987 IN CAIRO, EGYPT*

Edited by

**Adli Bishay**

*The American University in Cairo  
Cairo, Egypt*

and

**Harold Dregne**

*Texas Tech University  
Lubbock, Texas, USA*

**harwood academic publishers**

chur • london • paris • new york • melbourne

Copyright © 1991 by OPA (Amsterdam) B.V. Published under license by Harwood Academic Publishers GmbH. All rights reserved.

### Harwood Academic Publishers

Poststrasse 22  
7000 Chur  
Switzerland

Post Office Box 197  
London WC2E 9PX  
United Kingdom

58, rue Lhomond  
75005 Paris  
France

Post Office Box 786  
Cooper Station  
New York, New York 10276  
United States of America

Private Bag 8  
Camberwell, Victoria 3124  
Australia

### Library of Congress Cataloging-in-Publication Data

International Desert Development conference (2nd : 1987 : Cairo Egypt)

Desert development : proceedings of the Second International Desert Development Conference held on 25-31 January 1987 in Cairo, Egypt / edited by Adli Bishay and Harold Dregne.

p. cm. -- (Advances in desert and arid land technology and development, ISSN 0142-5889 : v. 5)

Includes bibliographical references.

contents: pt. 1. Desert agriculture, ecology, and biology --pt.

2. Socio-economic aspects and renewable energy application.

ISBN 3-7186-0526-0 (set). -- ISBN 3-7186-0396-9 (pt. 1) --

ISBN 3-7186-0522-8 (pt. 2)

1. Desert resources development--Congresses. I. Bishay, Adli.

II. Dregne, H.E. (Harold E.) III. Title. IV. Series.

GB611.I5173 1987

333.73 615--dc20

90-4391

No part of this book may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage or retrieval system, without permission in writing from the publisher. Printed in the United States of America.

# CONTENTS

EDITORIAL ANNOUNCEMENT	ix
------------------------	----

PREFACE	xi
---------	----

## PLENARY

Arid Lands Development: Striking a Balance between Economic and Ecological Issues G.W. Thomas . . . . .	1
Desert Development: Is it Economically Viable? D.F. Nygaard . . . . .	19
Solar Energy and Desert Development D. Hayes . . . . .	33

## INTEGRATED APPROACHES

The DDC: From Conception to Realization A. Bishay . . . . .	43
The Contribution of the Jacob Blaustein Institute for Desert Research to the Development of the Desert Nationally and Internationally L. Berkofsky and S. Dover . . . . .	75
Natural Resource Management and Agricultural Development in the Arid Areas of East Africa M.T. El-Ashry and B.J. Ram . . . . .	85
Ground Water, Soil and Renewable Energy Resources: Evaluation of East Oweinat Area H. Kamel and A. El-Ostaz . . . . .	97



Arid Land Development in Pakistan I.A. Qazi . . . . .	115
Experiences in Development in the Bahareya Oasis of Egypt S. Nour El Dine, S. Abdel Razik, M. El-Harras and R. Martello . . . . .	129
<b>ENERGY AND ARCHITECTURE</b>	
New and Renewable Energy Strategy for Egypt (NRSE) T. El Tablawi and A.I. Hegazi . . . . .	139
Solar and Wind Energy Potentials in Jordan H. El-Mulki . . . . .	153
Availability of Wind Energy in a Typical Desert Location in Egypt A. Mobarak, H. Safwat and A.A. Hamid . . . . .	167
Simulation of the Performance of a Small Size Wind Turbine System for Household Loads M.A. Shalaby, A. El-Mallah and M.A. Badr . . . . .	191
Water Yield from Wind Pumps for Desert Development in Egypt A. El-Mallah and A.M. Soltan . . . . .	211
A Bioenergy Project to Reduce Deforestation in Sudan El Tayeb Idris Eisa . . . . .	225
Wind-photovoltaic Hybrid System for Pumping Water in a Desert Environment A.A. Hamid, H. Safwat and A. Mobarak . . . . .	231
Egyptian-Italian Renewable Energy Settlement (EIRES) A. Zuffetti . . . . .	259
Demonstration and Field Testing of Photovoltaic Technologies in Some Applications Having Potential for Use in Egypt R. Botros and P. Borgo . . . . .	273

Availability of Solar Energy with Different Tracking Modes in the Western Oasis of Egypt M.A. Mosallam Shaltout . . . . .	289
A Solar Powered NFT System for Desert Development F. Assabghy, I. El-Bagouri, S.A. Seif and K. El-Kheshen . . . . .	307
A Promising Solar Thermal Collector for Arid Areas G.F. Hamad and M.C. Gupta . . . . .	335
A Modular Polyvalent Solar Dryer for Industrial Purposes A. Chamma, M. Daguinet, J. Randriamorasata and M.H. Gabr . . . . .	351
Nonconventional Energy Plan for Desert Development in Egypt H.K. Abdel-Aal . . . . .	363
Oasis Architecture of the Taklimakan Desert in Western China D. Hanlon . . . . .	385
Using Calpas 3 as a Tool to Optimize the Design of Passive Solar Desert Houses in North Tahrir, Egypt N.V. Chalfoun . . . . .	403
<b>SOCIO-ECONOMICS AND DESERT COMMUNITIES</b>	
The Potential of a Desert Economy P. Jawetz . . . . .	431
Export Cropping and Desert Development J.S. Hillman . . . . .	445
Public Policy Implications of Agricultural Market Performance under Drought Conditions M. Speece, T.E. Gillard-Byers and B. Azrag . . . . .	469
Agricultural Marketing in South Tahrir Area N.T. Habashy . . . . .	481
Comparative Economic Analysis of Desert Farming Systems in Egypt K. El-Kheshen and M. Nasr . . . . .	495

Means and Opportunities for Effective Multinational Agro-Urban Ventures in the Egyptian Desert M.A. Abdel-Latif . . . . .	507
Population, Development and Community of Solution S.Z. Nagi . . . . .	527
Demographic Dynamics among Sedentarizing Pastoral Nomads and Its Planning Implications A. Meir . . . . .	551
Protecting Transboundary Desert Resources H. Ingram . . . . .	563
Technology Transfer through Training: Emerging Roles for the University H.M. Bergsma . . . . .	577
The On-farm Demonstration Activity: A Socio-Economic Perspective S. El Zoghby and H. Baligh . . . . .	593
Women's Perspectives on Living in New Desert Settlements B.M. Wass . . . . .	611
Smallholder Management of Mixed Agricultural Resources in Desert Regions: Problems and Prospects M. Martin . . . . .	627
Variables Affecting Popular Participation in Organizations and Community Development Activities in the New Desert Communities in South Tahrir, Egypt S. El Zoghby and A.R. El-Haydary . . . . .	637



## EDITORIAL ANNOUNCEMENT

Since the initiation of this series in 1979, Professor William G. McGinnies and I have worked together on the identification of important contributions in the field, as well as shared other responsibilities as editors of the series. Recently, however, for health reasons, Professor McGinnies relinquished a number of activities, one of which was his editorial contribution to this series. We are indeed indebted to Bill for his valuable ideas and contacts, which made it possible to achieve a truly international circulation for this series. We wish him long and happy years of retirement.

After a thorough search for an equally distinguished and internationally known scientist, it is now my privilege to announce that Dr. Harold Dregne, Horn Distinguished Professor Emeritus of Soil Science and former director of ICASALS, has accepted to share the editorial responsibilities of the series. Among many of his achievements, Professor Dregne is senior consultant to UNEP, USAID, FAO and other national and international agencies. I have known Harold since 1977 when I invited him to be a plenary speaker at the First International Desert Development Conference held in Cairo in 1978. For the past ten years, we have worked together on a number of assignments, including the chairmanship of the International Desert Development Commission initiated in 1987.

Adli Bishay