Man and Technology in Irrigated Agriculture
Irrigation Symposium 1982
Bensheim/Bergstraße
Federal Republic of Germany

Verlag Paul Parey - Hamburg/Berlin 1983
CONTENTS

1. Contemplative Introduction
K. Lampe, Eschborn 1

2. Organization, Operation and Maintenance and their Financing
Chairmanship and Editing: J. Mock, Darmstadt 19

2.1 Determinants for the Organization of Irrigation Projects
H. Walker, Hohenheim 19

2.2 Evaluation of the Organizational Structure of Management System of the National Irrigation Schemes in Kenya
J.C. Fitter, Nairobi/Kenya 37

2.3 Communications

2.31 Conclusions from Minor and Large Scale Rice Irrigation Projects in West Africa
R. Adelhelm, Eschborn 63

2.32 Socio-Economic Observations on Tenant's Reaction in National Irrigation Board Schemes in the Kano Plains, Kenya
A. Baum, Essen 71

2.33 Experiences of the European Investment Bank with Different Structures for Implementation and Operation of Irrigation Projects in the Mediterranean Region
H. Bergmann, Luxemburg 85

2.34 Water Use Problems in Large Irrigation Schemes
H. Eggers, Bonn 97

2.35 Selected Problems of Different Forms of Levies in Irrigation Projects
W. Manig, Goettingen 113

2.36 Organization-Choice between Self-Determination and Loss of Freedom
H. Schmidt, Frankfurt 121

3. The Rural Family during Transition from Traditional to Irrigation Farming
Chairmanship and Editing: W. Achtnich, Goettingingen 127

3.1 Integration of the Farming Family into Planning and Implementation of Irrigation Schemes
Gudrun Martius von Harder, Eschborn 127
3.2 Le rôle des femmes dans les systèmes traditionnels d'agriculture et leur intégration aux projets de développement de l'agriculture irriguée
Ingrid Donner-Shabafrouz, Heidelberg 139

3.3 Communications

3.31 The Role of Women in Greek Irrigation Projects
Hellmuth and Edith Bergmann, Luxemburg 155

3.32 Mechanization - Substitution of Female Labor
Petra Heintze, Radolfzell 165

3.33 Cultural Change, Required from Families Entering into Irrigation Farming
V. Hoffmann, Hohenheim 169

4. Legal Constraints, Religious and Traditional Practices
Chairmanship and Editing: H. Albrecht, Hohenheim 173

4.1 Conflits de Cultivateurs en Périmètres Irrigués par Rapport aux Bailleurs de Fonds, à l'Administration et aux Techniciens
E. Grosser, Champigny 173

4.2 Irrigation in Arid Areas Its Limitations and Its Rejection by Nomadic Pastoralists
Sabine Schwarz, Nairobi 191

4.3 Communications

4.31 Agricultural Extension Service in Irrigation Projects
G. Diederich, Nordhorn 213

4.32 Possibility of Double Utilization of a Water Source by Humans and Agriculture
Gudrun Martius von Harder, Eschborn 217

4.33 Effets sur les Paysans Voltaïques de l'Introduction des Programmes d'Irrigation
R. Huepfl, Wien 221

4.34 Some Institutional Constraints for the Modernization of Irrigated Agriculture in Al-Hasa-Oasis
H. Pfeifer, Stuttgart-Hohenheim 229

4.35 Development Concept and Reality of Land Use of the Massa Irrigation Project, South Marocco
H. Popp, Erlangen 235
INDEX TO FIGURES AND TABLES

REPORT 2.1

Figure 1: 'Low' participation of water users ('headship') 25
Figure 2: 'Medium' participation of water users ('designated leader') 26
Figure 3: 'High' participation of water users ('leadership') 27
Figure 4: Hypothetical relationships between situation components and the degree of farmers' participation in irrigation organisations 29

REPORT 2.2

Table 1: Goal Systems for the National Irrigation Schemes 40
Table 2: Function, Activities and Action Carrier at the National Irrigation Schemes (10) 42
Figure 1: National Irrigation Schemes: Functional Structure (5) 43
Figure 2: Organisational Structure at Scheme Level (5) 45
Table 3: Comparative Efficiency Analysis of the National Irrigation Scheme (6) 48
Table 4: Profile: Mwea Scheme - Features, Targets and Results (6) 49
Table 5: Profile: Ahero Scheme - Features, Targets and Results (6) 50
Table 6: Profile: Tana River Scheme - Features, Targets and Results (6) 51
Table 7: Profile: West Kano Scheme - Features, Targets and Results (6) 52
Table 8: Profile: Bunyala Scheme - Features, Targets and Results (6) 53
Table 9: Profile: Perkerra Scheme - Features, Targets and Results (6) 54
Communication 2.31

Table 1: Determinants - Minor and Large Scale Irrigation Projects 66

Figure 1: Development strategy for large scale irrigation projects 69

Communication 2.34

Figure 1: Map of Ganges-Kobodak Project - Phase I 100

Figure 2: Organisational Set-up of G.K. Project, Phase I, Kushita, Bangladesh (adapted from Md. O.H. Sarker) 103

Communication 3.31

Table 1: Agricultural Labour and Mechanization in India 165

Communication 4.2

Table 1: Brief description of the projects 194

Table 2: List of Donors 194

Figure 1: Models: A Pastoralists, B Agriculturists, C Famine Relief 197

Communication 4.34

Figure 1: The Irrigation system in al-Hasa (schematic presentation) 230

Figure 2: Optimal field layout within a lateral section 230

Figure 3: Landownership pattern within a lateral section 231

Communication 4.35

Figure 1: The site of the Massa project area 236

Table 1: Land use in the Ait Belf slack sector of the Massa irrigation project 1974/75 to 1978/79 239