

IRRIGATION MANAGEMENT NETWORK

NEWSLETTER

ODI/IIMI Irrigation Management Network Paper 90/3a December 1990

Credits

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NEWSLETTER

Linden Vincent

1. NEWS FROM THE IRRIGATION MANAGEMENT NETWORK

Editor's Note

This is a special edition of the IMN Newsletter in many respects. We have collected a group of papers focusing on problems of resource management in water-scarce regions, which cover policy issues and management interventions, as well as studies concerning cooperation and conflict among farmers. They deal with both scarcity as a result of supply problems, as well as environments of actual physical scarcity. We are also carrying a more general paper on technology issues which nevertheless contributes to the debate on efficient water management in situations of water scarcity. Five papers make it a bumper issue, as befits the last edition under the ODI-IIMI agreement.

Changes will be taking place in the collaboration between IMN and IIMI, when sharing of the joint Network ends at the end of 1990. Older members of the Network will recall that it began in 1975 as one of the Networks operated by the Agricultural Administration Unit of the ODI, with support from the British Overseas Development Administration. The aim of ODFs Networks has always been to pursue research and to facilitate the exchange of information leading to the better management of agricultural services for small farmers in developing countries. Six years ago, ODI invited IIMI to join it in managing the Network, as a co-sponsor, as joint provider of inputs, and to assist in the quantitative and qualitative development of the Network.

IIMI was founded in 1984. Its mission is to strengthen national efforts to improve and sustain the performance of irrigation systems in developing countries through the development and dissemination of management innovations. It conducts this through programmes of research, extension and information. It was therefore natural that IIMI should turn to the Network, both for providing support to it as well as receiving support in the form of an appropriate information vehicle, in its early formative years.

Since January 1986, IIMI provided additional financial support for what became the ODI-IIMI Irrigation Management Network. This has led to

an expanded membership, which increased from 760 to 1800, an improved publication format, and an improved computerised system of library information exchange. Each Newsletter has carried information on IIMI's programmes and publications, and each set of papers has frequently included one by an IIMI staff member. It was at one time envisaged that IIMI might eventually wish to take over the IMN.

The collaboration in its present form ceased at the end of 1990. IIMI, now a little older and with a growing record of research achievements, will focus on the generation and distribution of IIMI research results. ODI intends to maintain the original objectives of the Network, namely as a primary vehicle to produce and convey the results of its own research and interests in irrigation management, and that of its Network members.

Both partners will continue to collaborate and assist each other on informal and individual staff bases, and both institutes will continue to take an interest in each others' work, and exchange information and publications. The recently-launched African edition of the Irrigation Management Newsletter and papers, published simultaneously in English and French, will continue with the support of CTA (Technical Centre for Agricultural and Rural Cooperation, Netherlands). ODI is seeking supplementary funds to cover the on-going costs of the translation, production and dissemination of the Newsletter.

The IMN wishes to thank IIMI for its help with a valuable period of research information exchange on irrigation management.

Network Papers for Discussion

In Lucas Horst's paper, *Interventions Between Technical Infrastructure and Management*, 90/3b, the trend towards automisation of modern irrigation schemes to improve efficiency is questioned. The gap that exists between water diversion technology and management capabilities might be better addressed by adapting the technology if skills shortages persist.

In *Irrigation Allocation Problems at Tertiary Level in Pakistan*, 90/3c, Bhatti and Kijne consider efficiency and equity problems associated with warabandi allocation systems in Pakistan. Warabandi encourages wastage and conflict, and would be better replaced by a more flexible system based on allocation by volume, united with research into social and political rigidities.

In *Sustainable Development of Groundwater Resources: Lessons from [two] Indian Villages*, 90/3d, Tushaar Shah discusses means of improving groundwater management to mitigate overpumping and saline intrusion problems. He recommends a strategy of village level management, combined with legal and policy interventions.

In *The Politics of Water Scarcity: Irrigation and Water Supply in the Mountains of the Yemen Republic*, 90/3e, Linden Vincent examines the practical challenges likely to develop in water allocation decisions, and the difficulties of dealing with disputes and conflict at the local level. Relevant institutional changes to assist the transition to new patterns of use vary in relation to the culture and the type of water management problem.

In *Perspectives on the Middle East Water Crisis: Analysing Water Scarcity Problems in Jordan and Israel*, 90/3f, Richard Sexton examines different perceptions on the cause of water scarcity, and the prospects for different types of institutional change to manage water effectively. He considers that the main cause of water scarcity in Jordan and Israel is the structural overcapacity of irrigation schemes. The existing water administrations evolved as water supply agencies oriented to agriculture, and new powers to steer relevant changes in agricultural water use.

Lunchtime Meetings

Dr Douglas Vermillion (IIMI, Sri Lanka) presented his paper on *The Programme for Privatising Small-scale Irrigation Schemes in Indonesia by Turnover to Farmer Management*, to UK members at a Lunchtime Meeting held at Regent's College on Thursday 22 November.

The Programme aims to turnover small irrigation schemes (which farmers can manage), including headworks and distributaries, and to reallocate operation and maintenance funds to larger, more technically complex projects. Dr Vermillion argued that; (a) government bureaucracies were less effective than water-user associations and non-governmental organisations to manage small-scale irrigation schemes, and are also more of a strain on national budgets, and (b) poor management can cause a negative environmental impact (e.g. soil erosion, waterlogging, salinisation, pollution, etc).

IIMI's proposed three year programme aims to investigate the effects of turnover and privatisation using case studies at implementation and policy levels. This will involve establishing an information exchange system of database, library, networking, conferences and workshops. Network

members interested in this project should either contact Dr Vermillion at IIMI, Sri Lanka.

2 NEWS FROM NETWORKERS

Special Initiatives in Water Scarcity and Allocation

Winrock International has established a *Water Resource and Irrigation Policy Program* which will focus particularly on issues linked to judicious water management of scarce water resources. Topics of interest range across water allocation, water conflict and improving productivity and sustainability of water resources. The Program hopes to (a) raise issues, (b) conduct and support studies, (c) strengthen analysis, and (d) advise in policy formation and implementation. The Program is under the overall direction of David Seckler, backed up by Stan Peabody, but will link in Jack Keller (Utah State University) and Peter Rogers (Harvard University), and actively use membership of Winrock's African and Asian Networks. For more information, write to David Seckler or Stan Peabody at Winrock International, Washington D C Office, 1611 N Kent Street, Arlington, VA 22209, USA.

The East-West Centre, Hawaii, has a long-standing research record in water management and allocation, and on watershed management. For more details of research programmes, and a list of publications, please write to Dr Maynard Hufschmidt, East-West Centre, Environment and Policy Unit, 177 East-West Road, Honolulu, Hawaii 96848, USA.

General

IIMI have launched *IMCD News*, a new newsletter concerning Crop Diversification in Rice-Based Systems. The context for the newsletter is the glut of rice on the world market, and its resulting impact on prices and producers. The concern is not to displace rice, but to find better ways to grow other crops in association with rice, and to encourage exchange of ideas. To obtain the newsletter, write to Dr Senen Miranda, Secretariat Coordinator for the IMCD Research Network, IIMI, PO Box 2075, Colombo, Sri Lanka.

The *Irrigation Management News* has been launched to cover information on irrigation management and training programmes in India. To obtain a copy, write to IMTP, 213 Ansal Chambers II, 6 Bhikaji Cama Place, R K Puram, New Delhi 110066, India.

The *United Kingdom Register of Research on Irrigation, Drainage and Flood Control 1990*, is now available at a cost of £19.50 in the UK and £24.50 elsewhere. It is obtainable from Richard Wooldridge, Overseas Development Unit, Hydraulics Research, Wallingford, Oxon OX10 8BA, UK.

The 4th annual *Compendium of International Short Courses* is now being compiled. Last year's compendium had details of short courses, conferences and workshops from 33 countries worldwide. If you have courses you wish to register, or would like a copy, please write as soon as possible to: Tom Kajer (Winrock International), Louis Berger International **Inc**, 213 Ansal Chamber II, 6 Bhikaji Cama Place, R K Puram, New Delhi 110066, India.

The 3 year *International Programme for Technology Research in Irrigation and Drainage* (IPTRID), discussed in the previous Newsletter, was launched on 2 January, with a programme budget of US\$ 1.5 million. For further details, contact the Agriculture and Rural Development Department, The World Bank, 1818 H Street, Washington DC 20433, USA.

The Agency for Relief and Development are compiling a "living memory" of lessons learned in the field in relief and development efforts in conflict regions. Thus, any researchers, consultants, NGOs, local or international organisations who have field reports, planning surveys, or evaluations of projects are asked to send a copy of their work to the resource centre. In turn, they will have access to the Agency's findings, which will be organised by subject and by region. Not only will this help to assure the same mistakes are not repeated, it can help to assure that successes are duplicated, and provide a link between people working on similar problems in diverse regions. Send your contributions to Kerry Abbott, Agency for Relief and Development, PO Box 20546, East Jerusalem, via Israel.

Bill Moffatt will become the new leader of the Water, Engineering and Development Centre (WEDC) at Loughborough University of Technology, UK. Bill Moffatt has been a faculty member of Loughborough since 1960, and has extensive experience in groundwater development. John Pickford will continue to provide an input to WEDC activities, but is looking forward to spending more time on research and consultancy.

Peter Dempsey, Research Associate with **ODI**, is preparing a Network paper on the conjunctive use of surface and groundwater for irrigation. He would be pleased to hear from anyone who has been working with, or researching conjunctive use irrigation. Case study material is particularly

welcome. He can be contacted c/o The Editor, Irrigation Management Network, ODI.

Kate Morse, an MSc student at Silsoe College has undertaken a project to assess research priorities in small-scale irrigation in sub-Saharan Africa. Kate would like to receive any opinions from workers involved in farmer-managed systems on any future research from which their schemes would benefit. Please send any letters to K Morse at Silsoe College, Silsoe, Bedford MK45 4DT.

Global Consultation on Safe Water and Sanitation, September 1999

The world community has been reviewing the impact of the 'Water Decade' in a series of meetings throughout 1990, culminating in a major international meeting in New Delhi last September. No major new financial plans have been declared for the next decade, with the focus switching to support for programmes specific to individual country needs. The meeting did, however, declare the *New Delhi Statement* summarising the key issues likely to assist improved water services, and shows a new focus on developing water in a wider environmental context. Rural water services would need around US\$ 73 billion to achieve universal coverage even by low cost technologies, but it seems there is little likelihood of finding international aid to assist these loans, nor was there very clear evidence that governments and donors will find or develop the administration and technology required for rapid expansion of, rural services.

The New Delhi Statement

1. Protection of the environment and safeguarding of health through the integrated management of water resources, and liquid and solid wastes;
2. Institutional reforms promoting an integrated approach and including changes in procedures, attitudes and behaviour, and the full participation of women at all levels in sector institutions;
3. Community management of services, backed by measures to strengthen local institutions in implementing and sustaining water and sanitation programmes;
4. Sound financial practices, achieved through better management of existing assets and widespread use of appropriate technologies.

15th Congress of ICID, Water Management in the Next Century, The Hague, Netherlands, 6-11 September 1993

Papers are now invited for the ICID Congress which will study the topics given below. Case studies should be less than 2000 words, and technical/scientific papers less than 4000 words. ICID members should submit their papers through their National ICID Committees or international organisations involved in irrigation and drainage. For further details about topics and procedures, contact your National Committee or the International Committee on Irrigation and Drainage, 48 Nyaya Marg, Chanakyapuri, New Delhi 110 021, India. Potential British contributors should send an abstract by 1 September 1991 to B S Piper, Chairman, ICID Papers Sub-Committee, Institute of Hydrology, Maclean Building, Crowmarsh Gifford, Wallingford, Oxfordshire OX10 8BB, UK.

Question 44s Planning and Design of Irrigation Schemes

1. Relating drainage, irrigation needs and technologies to different crops and climatic requirements;
2. Planning and design for flexibility;
3. Research aspects on irrigation and drainage;
4. Design aspects of sediment control in irrigation, or drainage systems;
5. Possibility and limit in the use of agricultural drainage water.

Question 45: Irrigation and Drainage Systems Management - Institutional and Financial Interrelationships

1. Role of farmers and governmental organisations in managing and financing irrigation and drainage systems;
2. Irrigation and drainage service fee and recovery of dues;
3. Policies and mechanisms for funding operation and maintenance;
4. Irrigation and drainage in the socio-economic and legal environment;
5. Influence of on-farm activities on the management of irrigation and drainage systems;
6. Research and training programmes and their influence on institutional management performance.

Special Session: Irrigation and Drainage in Competition for Water

1. Regional water management strategies;
2. The effects that competition for water is having on irrigation operations and the manner in which the users are coping with it;

3. Case histories illustrating the growth of competition for water, its effects and resolution.

Symposium: The Impact of Real Time Information on System Management

1. Application of management techniques to irrigation and drainage project management;
2. Economics of different approaches;
3. Decision support and expert systems;
4. Obtaining user input and user acceptance/
5. Network design: type, frequency and density of measurement.

3 IIMI NEWS

Colombo-based IIMI has been admitted to the internationally renowned Consultative Group on International Agricultural Research (CGIAR). The CGIAR is an informal association of over 40 governments, international organisations and private foundations that was established in 1971 to support a system of agricultural research and development around the world. The World Bank, FAO, and the UNDP are its co-sponsors. The CGIAR now funds 15 international research centres providing more than US\$ 250 million annually for food crop and livestock research to benefit developing countries.

IIMI was admitted after scrutiny by an external review panel that found IIMFs work contributed greatly to improving food security throughout the developing world.

IIMI's entry into the CGIAR system will help the US\$ 8 million organisation consolidate its funding, increase its international stature and form additional links with other international agricultural research centres working to improve food self-reliance in developing countries. Dr Roberto Lenton, Director General of IIMI, commented "The decision to admit IIMI unconditionally into the CGIAR system is one that we have eagerly been awaiting for some time; it is of great significance both to IIMI and to Sri Lanka". He also added that: "Sri Lanka can be very proud of this decision because it is now one of only four countries in Asia to host a CGIAR centre". The other countries are the Philippines, India and Syria. IIMI's admission to the system "gives us a new sense of identity", stated Lenton. "No longer are we each simply staff members of IIMI; now we are a part of a global system involving over a thousand distinguished scientists who are working together with a common goal of improving sustainable agricultural production in developing countries".

The Institute Appoints a Director for Research

Mr Khalid Mohtadullah has been appointed to the newly-created position of Director for Research. Mr Mohtadullah will commence his assignment at the Colombo headquarters of the Institute in April 1991. The Director for Research is a new position at IIMI. It has been created to provide overall leadership to the Institute's worldwide research programmes, in particular by directing thematic and global research programmes and by advising on country-specific projects. The Director for Research will also provide strategic and programme planning leadership for the Institute. This new post replaces that of Director of Programmes.

A national of Pakistan, Mr Mohtadullah brings to the Institute considerable experience and skill in water resource management. He is currently General Manager (Planning) of the Pakistan Water and Power Development Authority (WAPDA). Previously, he has occupied, over a period spanning 30 years, a variety of positions in the public water and irrigation sector of Pakistan, rising to high positions of leadership in his profession. For a 5 year period in the late 70s and early 80s, he was principal of the WAPDA training academy at Tarbela. Mohtadulla is an alumni of the Massachusetts Institute of Technology with a Master's Degree in Civil Engineering, which he received after completing his Bachelor's Degree at the University of Peshawar. He is also an alumni of the Harvard Business School, where he attended their Advance Management Program.

Talking in Colombo recently, Mohtadullah said that the challenges lie in helping IIMI plan future directions for its research that aim at the heart of issues faced in managing irrigation systems. In particular, research work should be linked with real problems as they are felt, and studies should strive to improve performance without major physical interventions, through institutional change and improved management. "It is the management and the direction which need to be tackled," Mr Mohtadullah states, "the facilities and the infrastructure are there. Within the Institute, I see my role as providing greater coordination between global and country programs, and establishing linkages with scientific research around the world wherever the required strengths lie."

IIMI

Irrigation Management in Latin America (1990), xii + 96p. Price US\$ 13.50 (US\$ 8.50 for developing countries). Also available in French and Spanish.

In Latin America, some 11 million hectares or 8.1% of the total arable area is classified as irrigated. Although the total extent of irrigated agriculture in Latin America is small compared to that of Asia and represents less than 5% of the total worldwide irrigated land, the potential for increasing the area under irrigation is great. Over the next few years IIMI will initiate collaborative programmes in Latin American institutions to complement similar activities in Asia and Africa. The publication presents papers from seven Latin American experts describing the present situation of irrigation management in their own countries in the wider context of overall irrigation management issues in the region and identifying problem areas and areas where the potential for improvement seems great.

Yoder, Robert., and Thurston, Juanita., (eds), (1990)
Design Issues in Farmer-Managed Irrigation Systems: Proceedings of an International Workshop of the Farmer-Managed Irrigation Systems Network held in Chiang Mai, Thailand, 12 - 15 December 1989

In many countries irrigation systems have been built -and managed by government agencies, but due to poor performance and high recurring costs, governments are seeking ways to turn over the operation and maintenance of the systems to the water-users. However, the procedures and designs used for improving existing systems and building new farmer-managed systems are often not appropriate when the end product is to be managed by the farmers. This publication represents an effort to focus on design and the design process for farmer management, to give attention to the technical expertise of the farmers, and to highlight the necessity of incorporating farmer input into all phases of the design process.

Manor, Shaul., Patamatamkul, Sanguan., and Olin, Manuel, (eds), (1990)
Role of Social Organizers in Assisting Farmer-Managed Irrigation Systems: Proceedings of a Regional Workshop of the Farmer-Managed Irrigation Systems Network held in Khon Kaen, Thailand, 15 - 20 May 1990

The successful and often impressive experiences in farmer-managed irrigation systems in many countries of Asia have promoted- the development of a number of programmes in various countries with the purpose of accelerating this process. Implementing these types of systems is generally accomplished through the fielding of 'social organisers'. Social organisers serve as intermediaries between the farmers and the agencies. These regional workshop proceedings document the experiences of practitioners and researchers from nine countries in South and Southeast Asia, emphasising the problems they encountered and their suggested solutions.

Resource Mobilisation for Sustainable Management: Proceedings of a Workshop on Irrigation Schemes in Sri Lanka held in Kandy, Sri Lanka, 22 - 24 February 1990 (1990)

The papers focus on institutional reforms that are seen as a prerequisite to effective mobilisation of sufficient resources for sustainable management of irrigation schemes. They analyse the impediments to high-performance system management within the irrigation management agencies and the direction in which reforms must move to bring improvements and identify broader policy issues and recommendations that are very important to the whole change process underway.

Robert Yoder (ed), (1990)
Assistance to Farmer-Managed Irrigation Systems: Results, Lessons, and Recommendations from an Action-Research Project, Nepal Country Paper No 3

This report highlights the results and lessons learned in an action/research project that developed and tested strategies for assisting 19 farmer-managed irrigation systems in a remote area of Nepal. The results and lessons drawn are based on continuous observation and documentation of field activities, project accounts, and reports from project staff, consultants, and farmers. Using the experience and lessons of the action/research project, recommendations have been prepared in the form of procedures to be followed for providing assistance to existing irrigation systems in a similar environment.

Inge Jungeling, (1989)
Improving Management of Small-Scale Irrigation Systems, Sri Lanka Country Paper No 5

This paper analyses the contributions of a NGO in improving management of small-scale irrigation systems in Sri Lanka. It documents the decision-making processes of the NGO and the context in which this decision

making takes place; government policies and policies of NGOs in improving the performance of small-scale irrigation systems and in assisting the rural population in general. The site selected for research was the Tank Settlement Project in Hambantota District, southern Sri Lanka.

Shyamala Abeyratne, (1990)
Rehabilitation of Small-Scale Irrigation Systems in Sri Lanka; State Policy and Practice in Two Systems, Sri Lanka Country Paper No 6

Based on a study of two small irrigation systems in Sri Lanka, this report analyses the impact of a government programme for system rehabilitation and improvement of water management. The study reveals that during the improvement process, there had been insufficient coordination between the implementing agencies, and consultation with farmers was also below the expectations of the managers of the national programme. As a result, the existing system of water allocation was disrupted, threatening the long-term impact of the programme. The study draws lessons for improving future programmes of this nature in Sri Lanka and elsewhere.

David Groenfeldt, (1989)
Guidelines for Rapid Assessment of Minor Irrigation Systems in Sri Lanka Working Paper No 4

This paper presents a set of guidelines for rapid evaluation of an irrigation system developed by IIMI staff in cooperation with the staff of the Regional Development Division and the Badulla District office of the Integrated Rural Development Projects in Sri Lanka. It was compiled following a workshop on rapid-assessment methodologies suitable for small-scale irrigation systems held in August 1988.

Ijsbrand H de Jong, (1989)
Fair find Unfair: A Study into the Bethma System in Two Sri Lankan Village Irrigation Systems, Working Paper No 15

Bethma is a traditional custom in small, communal tanks of Sri Lanka, where water supplies which are not adequate for the full command area are allocated to a part of the area, and all farmers are given proportional land shares in the irrigated part. This paper deals with the rules that govern bethma, how farmers make use of them and the role of the government in bethma. It also addresses the questions; why do conflicts happen less frequently during bethma? why do farmers practice bethma? What are the farmers' perceptions?

Ekanayake, Rathnasiri., Navaratne, W M U., and Groenfeldt, D., (1990)
A Rapid-Assessment Survey of the Irrigation Component of the Anuradhapura Dry-Zone Agricultural Project (ADZAP), Working Paper No 16

The focus of the ADZAP in Sri Lanka has been to provide a viable farming system through careful development of local resources. The pre-project context of semi-shifting chena (swidden) agriculture was to give way to permanent, intensive cultivation of both irrigated command areas and upland plots. The report deals with the irrigation component of ADZAP which constitutes the greatest component cost and the dominant focus of the project. It is suggested that supplementary lift irrigation, that is, tapping groundwater supplied by the tank itself, could become an important feature of the farming system in the project area.

Ekanayake, Rathnasiri., and Groenfeldt, D., (1990)
Organizational Aspects of Improved Irrigation Management: An Experiment in Dewahuwa Tank, Sri Lanka, Working Paper 17

One of the incentives in improving irrigation management is to find ways of stretching water further during the dry season in water-deficient systems, when rice is relatively more expensive to grow than during the wet season, and when other crops which can be grown only during the dry season offer the farmer and the country a comparative advantage. This report addresses the issue of irrigation management to promote diversified crops during the dry season.

Dayaratne, M H S., and Wickramesinghe, Gamini, (eds), (1990)
Role of Nongovernment Organisations in the Improvement of Minor Irrigation Systems in Sri Lanka: Proceedings of a Workshop held at Digana Village, Sandy, Sri Lanka, 17-18 March 1989, Working Paper No 18

An inherent feature of non-government intervention in minor irrigation schemes is the continuous involvement of beneficiary farmers to create a sense of ownership of the system by farmers which ultimately reduces their dependency on outside assistance. The Government of Sri Lanka has encouraged these assistance programmes as operation and maintenance of minor irrigation systems have become a heavy burden on the government. These proceedings present experiences of importance to government organisations that are directly involved in minor irrigation work.

Moragoda, Ranjanie., and Groenfeldt, D., (1990)
Organizational Aspects of Improved Irrigation Management: Kalankuttiya Block, Mahaweli System H, Sri Lanka, Working Paper No 19

IIMI's research interest in Sri Lanka's Mahaweli System H, in general, and the Kalankuttiya Block in particular, was prompted by the existing widespread adoption on non-rice crops during the dry season. By studying a case of diversified cropping 'success' IIMI hoped to better understand the irrigation management factors underlying that success, and if possible, to improve on them. This report addresses the issue of irrigation management to promote diversified cropping during the dry season.

de Silva, Ramya., (ed), (1990)
IMIN Bibliography: A Selected Bibliography on Irrigation Management, Vol 3, No 1, viii + 126p. Free selectivity on request.

A bibliography of selected documents entered in the Irrigation Management Information Network (IMIN) database. Publications and information from over 100 countries are indexed; monographs, conference proceedings, government publications, technical and research reports, dissertations, and journal articles. Chapters in books are included. The present issue covers acquisitions in 1989.

Vimaladharama, Kapila P., (Compiler), (1990)
A Selected Bibliography on Small-Scale Irrigation Systems in Sri Lanka
A bibliography of available writings, whether published or unpublished, on minor irrigation in Sri Lanka covering such areas as assistance programmes, water management, farmer participation, and system performance and management.

For further information on IIMI publications, contact the Distribution Section, Information Office, **IIMI**, PO Box 2075, Colombo, Sri Lanka. Tels 94(1)-565601, Fx: **94(1)-562919**, Tx: 22318 or 22907 **IIMIHQ** CE

Other Publications

Beaumont, P., Levine, M., and McLachlan, K., (eds), (1989)
Qanat Kariz and Khattara, Menas Press Ltd, (available through the Middle East Centre, School of Oriental and African Studies, University of London, Thornhaugh Street, London WC1E 7HP).

This book examines the origins and diffusion of the qanat (horizontal well) in its various forms, and also its influence as a supplier of water on patterns of human ecology and settlement. The survival of the qanat and trends in their modern utilisation are also discussed. About three quarters of the articles focus on qanats in Iran. However, there are also chapters on the foggara (oases in Algeria), khattara (also called **rhettara**) irrigation

in Morocco, qanats in Israel, **afraj** in Oman, kariz in Afghanistan, and mambos (qanats) and gamas (spring tunnels) in Japan.

Underbill, H., (1990)
Small-scale Irrigation in Africa in the Context of Rural Development
Cranfield Press, CIT, Bedford MK43 0AL, UK. Price US\$ 12.50.

This study updates the author's previous study for FAO. Part A includes a brief but comprehensive summary of issues and experience with small-scale irrigation in sub-Saharan Africa, aimed at African agricultural development workers. The issues of large versus small-scale schemes, outgrower schemes, and the role of international, national and local donors, especially NGOs, are critically discussed. Part B looks at practical aspects of implementation at each stage of development and is aimed at irrigation field workers. There are also appendices on planning and health aspects. The author expects the book to be useful to those promoting small-scale irrigation, and seeking financial and other support from development agencies.

Tiffen, Mary., Harland, C., (1990)
Socio-Economic Parameters in Designing Small Irrigation Schemes for Small-Scale Farmers, Nyanyadsi Case Study, (3 reports, and a summary report), Hydraulics Research, Wallingford, UK. £15.00 per report.

This four volume collaborative study by Hydraulics Research, ODI and Agritex, Zimbabwe, is a detailed socio-economic analysis of a 400 hectare irrigation scheme in Zimbabwe. It investigates the minimum farm income level necessary to sustain irrigated cultivation, the minimum economic plot size, and the effects of drought on farm incomes. It looks at relative scarcities in labour, land, capital and water, and the interrelations between irrigated cultivation, livestock rearing, dryland farming and non-farming activities. Finally, it examines cultivator's attitudes towards authority, land inheritance, tenancy forms, irrigation system management and payments for water. It was found that the reliability and adequacy of the water supply is the main determinant of cropping patterns and yields, hence incomes. This is a comprehensive and detailed study that will be of interest to researchers and practitioners interested in small-scale smallholder development in sub-Saharan Africa, of which Nyanyadsi is representative. It demonstrates useful appraisal techniques, includes a critical discussion of the methods used, and the questionnaires are appended. It also demonstrates the merits of collaboration between research institutions with different but closely associated interests.

Gooneratne, W., and Hirashima, S., (eds), (1990)
Irrigation and Water Management in Asia, Sterling Publishers, New Delhi, India.

This book provides an overview of Asian irrigation through both general policy analysis and case studies. Case studies look at small-scale irrigation in the northern Philippines, in Bali, and in the dry zone of Sri Lanka. Large-scale irrigation is discussed through case studies for Sri Lanka, and comparing India and South Korea. Both scales of irrigation are reviewed in terms of management, maximisation of agricultural production and employment, and the promotion of equitable distribution of gains. The book is targeted at Asian development planners and policy makers, as well as students in agricultural and rural development.

Sampath, R K., and Young, Robert A., (eds), (1990)
Social? Economic, and Institutional Issues in Third World Irrigation Managements Westview Studies in Water Policy and Management, No 15, US\$ 40.00. -

Experts now recognise that poor returns on irrigation investment are often due to project or programme mismanagement and inadequate attention to social, economic, and institutional factors. The contributors to this volume examine problems of irrigation management, and propose strategies for improving irrigation efficiency and equity in the developing world. A series of detailed case studies of project successes and failures provide an interdisciplinary analysis of irrigation management in a variety of Third World settings. Its twenty chapters form a comprehensive read for those involved in irrigation management theory. Early chapters outline recent concepts and theories from the social and management sciences, while sections 3 and 4 provide applied economic analysis with useful case studies.

Dhawan, B D., (ed), (1990)
(a) *Big Dams; Claims, Counterclaims*
(b) *Minor Irrigation, with Special Reference to Groundwater* Commonwealth Publishers, New Delhi, India.

(a) This book, which reprints a series of articles first published in India's Political and Economic Weekly, debates the issues related to big dams from an India perspective. Dhawan argues that environmental, geological and sociological criticisms of big dams are outweighed by their benefits. There follows a series of convincing counter arguments by a number of contributors. Dhawan concedes a middle way, in which dam heights are reduced with a cut in total irrigative capacity, may be most appropriate.
(b) This collection of papers, all by Dhawan, critically reviews the shift

in India from large-scale surface water irrigation to small-scale groundwater irrigation from tubewells. Dhawan warns that estimates of groundwater potential are over estimated, especially in hardrock regions, and his discussion of tubewells questions how well they address problems of under utilisation, or allocative efficiency and equity.

Both books are polemical in style to promote lively debate. The issue of 'openness' recurs with both sides calling for more cooperation between the public, planners and engineers.

Howell, P P., and Allan, J A., (eds), (1990)
The Nile: Resource Evaluation, Resource Management and Legal Issues Proceedings of the joint RGS-SOAS conference, May 1990, from the Centre of Near and Middle Eastern Studies, Thornhaugh Street, London WC1H 0XG.

In recent years, reduced flows, increased climatic fluctuations and intensified drought in the Nile basin, have highlighted the need for improved water management and planning to meet the water supply, irrigation and power needs of dependent states. This small and highly readable book brings together hydrological, historical, geopolitical and legal analyses and presents priorities for future water development.

A detailed hydrological analysis is presented, using historical and current data, by senior engineers and hydrologists. There is an absorbing account of the history of water development in the region, especially the influence of the British colonial authorities and the impact of independence, not least, Nasser's unilateral commissioning of the Aswan Dam. There follows reviews of legal treaties affecting water sharing between states, especially the 1959 agreement between Egypt and Sudan.

It is concluded that more efficient management of the Nile is vital to meet the region's food requirements and maintain political stability. 'Clean slate' negotiations between all nine affected states, not least Ethiopia, will be necessary to create a more robust political and legal environment for effective river basin planning.

Biswas, A K., et al, (eds), (1990)
Environmental Modelling for Developing Countries Tycooly Publishing, London, UK.

Biswas opens with a critical review of environmental, modelling in which he acknowledges the progress made in computing and mathematics, but argues that too often modelling is the preserve of theoreticians and has

limited application to real environmental problems in developing countries. Frequently, hardware and software are transferred unmodified from developing countries to under-qualified staff in developing countries who may not be aware of simplifying assumptions within the model, and where data may be scarce or unreliable. Further, models are too often static, i.e. they are not updated according to changing parameters, and are separated from project decision-making. There follows a series of examples from modelling experience in ecology, air and water quality and water resource development. Of particular interest are papers on the use of QUAL I and QUAL II in evaluating waste loads in streams and rivers, modelling groundwater overdraft and related environmental consequences, and the integration of environmental concerns into water resources project planning. In the concluding chapter, the judicious use of modelling is advocated as a powerful tool in environmental management.

Cernea, Michael, (1990)
Social Science Knowledge for Development Interventions, World Bank Development Discussion Paper No 334

Failures have plagued many development programmes because they were sociologically ill-informed or ill-conceived. However, the conventional 'entrance points' for sociological/anthropological knowledge in planning for induced development are few and of little influence, and we need some new frameworks for social enquiry. The growing role of planning and state interventions are prime examples of circumstances that require a new design of structures for research and analysis.

Bromley, Daniel., and Cernea, Michael., (1989)
The Management of Common Property Natural Resources, World Bank Discussion Paper No 57

This paper reviews interpretations of common property regimes and of resource degradation. It points out that many common property regimes have become 'open access' regimes, and it is exploitation under open access principles which is a greater cause of resource degradation. Development assistance will only succeed if programmes and projects address social interactions between resource uses, and help build up social organisation conducive to sustainable productive use of natural resources.

IRRI

Masicat, P., De Vera, V., and Pingali, P L., (1990)
Philippine Irrigation Infrastructure: Degradation Trends for Luzon, 1966-89, Social Science Division, Paper 90.03.

Pingali, P L., Moya, P F., and Velasco, L E., (1990)
The Post-Green Revolution Blues in Asian Rice Production, Science Division, Paper 90-01.

Pingali, P L., and Xnan, V T., (1990)
Vietnam: De-Collectivisation and Rice Productivity in the Philippines, Social Science Division, Paper 90-04.

Dorji, N., Flinn, J G, Maranan, C, (1990)
Rice Production in the Wangdiphodrang-Punakha Valley of Bhutan, IRRI Research Paper Series No 140.

These papers collectively gave an overview of rice yield trends in Southeast Asia and factors influencing their improvements or decline. These papers are likely to be useful for Network members interested in irrigation system performance and environmental impact of irrigation, as well as research and extension needs in rice production.

All available from The International Rice Research Institute (IRRI), PO Box 933, 1099 Manila, Philippines.

Journal Articles

Appropriate Technology
17(1), June 1990

Barrett, Alison., 'Floods in Bangladesh', pp 8 - 10.

Water Resources Development
Vol 6(4), 1990

Goodland, R., 'The World Bank's New Environmental Policy for Dams and Reservoirs', pp 226 - 239.

Biswas, A., 'Watershed Management', pp 240 - 249.

Vincent, L., 'Sustainable Small-Scale Irrigation Development: Issues for Farmers, Governments and Donors', pp 250 - 259.

Oyeband, L., 'Drought Policy and Drought Planning in Africa', pp 260 - 269.

Lema, A X, 'East African Climate: 1880-1980', pp 270 - 277.

Margeta, X, and Fontane, D G., 'Designing Communal Rain-Harvesting Systems by Spreadsheet Methods', pp 278 - 286.

Vol 6(3), 1990

Govindasamy, R., and Balasubramanian., 'Tank Irrigation in India: Problems and Prospects', pp 211 - 217.

Water Resources Management
4(3), 1990

Jermar, Milan K., 'On the Rationalisation of Water Management for Food Production', pp 211 - 217.

World Development
18:10, 1990

Adams, W M., 'How Small is Beautiful? Scale, Control and Success in Kenyan Irrigation', pp 1309 - 1323.

Watertines
9(2), October 1990

Several articles on the public and environmental health impact of water development projects.

Kandiah, A., (1990), 'The Role and Responsibilities of Engineers and Agriculturalists', pp 7 - 11.

Abu-Zeid, M., (1990), 'Environmental Upgrading of Irrigation Systems to Control Schistosomiasis', pp 31 - 35.

ODU Bulletin
No 20, October 1990

Contains a selection of papers on 'Irrigation Management and Microcomputers'. Available from Hydraulics Research Ltd, Wallingford, Oxfordshire OX10 8BA, UK.

No 19, July 1990

Articles on Irrigation and Drainage Research'.

No 18, April 1990

Articles on 'Irrigation System Performance'.

The Courier
No 124, November-December 1990

This edition of The Courier features a special dossier on irrigation in Africa, including contributions on small-scale irrigation, environmental inputs, improving efficiency, diversification, and groundwater irrigation. Case studies are taken from several Sudano-Sahelian countries and there are summaries of programmes by FAO, IIMI, EEC, CTA and ILRI, Wageningen, and Leiden,

International Institute for Land Reclamation and Improvement (IIED), Annual Report, 1989

Immerzel, Wivan., and Oosterbaan, R X, 'Irrigation and Flood/Erosion Control at High Altitudes in the Andes', pp 8-24.

Wolters, W., and Bos, M G., 'Irrigation Performance Assessment and Irrigation Efficiency', pp 25-37.

Jurriens, M., and Landstra, W., 'Water Distribution: Conflicting Objectives of Scheme Management and Farmers', pp 38-46.

Steekelenburg, P N G van., 'Towards Situation-Specific Management in Irrigation', pp 47-62.

Oosterbaan, R X, and Abu Senna, M., 'Using Saltmod to Predict Drainage and Salinity in the Nile Delta', pp 63-75.

5 TRAINING COURSES

United Kingdom

During 1991 Silsoe College is offering short courses in Field Management for Effective Drainage (7-10 January), Irrigation Principles and Practices - UK (February), Irrigation for Developing Countries (15-19 April), Soil Conservation (3-28 June). For details, contact the Short Courses Administrator, Silsoe College, Silsoe, Bedford MK45 4DT. Tel: 44(0525)-60428, Fx: 61527.

January 8-1 April 1991, Diploma Course in Irrigation and Water Resources, WEDC, (Water, Engineering and Development Centre), Loughborough University of Technology, Leicestershire LE11 3TU, UK.

Aimed primarily at professional staff who work in irrigation and water resources in LDCs, but who have not received a specialist training in these subjects. For further details, write to the Course Tutor.

January 8-1 April 1991, Diploma Course in Wastewater and Irrigation WEDC, (address as above).

A 12 week diploma course for people working in irrigation who consider wastewater as a possible source if water is in short supply, and for people involved in wastewater who consider irrigation as a means of disposal of sewage effluent. It covers the basic principles of wastewater collection and treatment, and design of irrigation systems, with specific attention to the reuse of wastewater for irrigation. Contact the Course Tutor, as above, for more details.

May 20-27 July 1991, Rehabilitation and Management of Irrigation Projects

An intensive 10 week course for engineers and other professionals involved in the rehabilitation, upgrading and management of irrigated agriculture. Institute of Irrigation Studies, The University, Southampton SO9 5NH. Tel: 44(Q703)-593728, Fax: 593017, Tx: 47661 (a/b sotonu g). Applications should be made as soon as possible.

September 30-18 October 1991, Effective Irrigation Managements Setting Targets, Monitoring Performance and Achieving Objectives

A 3 week intensive course organised in association with Hydraulics Research, Wallingford, which draws on extensive experience of irrigation management methods and performance assessment techniques. For more details, write to the Effective Irrigation Management Short Course, at the Institute of Irrigation Studies, Southampton, at the address above.

October 1991, Irrigation Engineering

This 12 month course covers subjects areas such as assessment and development of water resources, project planning and implementation, irrigation theory and practice, irrigation and drainage design, irrigated agriculture (soils, crops and farming systems), groundwater engineering, and management, operation and maintenance of projects. For further details, contact Mrs T Clinton-Carter, Institute of Irrigation Studies, The University, Southampton SO9 5NH, UK. Tel: 44(0703)-593728.

Worldwide

The CEFIGRE (International Training Centre for Water Resources Management) is running several courses mainly designed for managers and engineers from developing countries. They are organised either at CEFIGRE headquarters in Sophia Antipolis, France, or in the countries themselves in cooperation with local or regional partner institutions.

4-15 March, Egypt, Waste Water Reuse (code 1.1)

1-26 April, Sophia Antipolis, France, Base de données et gestion des ressources en eau souterraine (code 1.2)

July 15-2 August, Bangkok, Environmentally-Sound Watershed Management (code 1.3)

4-29 March, Montpellier et Nimes, Management des périmètres irrigués (I) Management stratégique et gestion des ressources humaines et financières (code 3.1)

1-26 April, Montpellier et Nimes, Management des périmètres irrigués (II) Exploitation et maintenance des infrastructures (code 3.2)

3-28 June, Bangkok, Integrated Rural Development (code 3.3)

September 30-18 October, Niamey, Aménagement du terroir villageois et place de la CES/DRS (code 3.5)

8-26 April, Bangkok, Environmental Impact Assessment (code 4.1)

3-21 June, Sophia Antipolis, France, Etudes d'impact des projets d'hydraulique sur l'environnement (code 4.2)

11-23 November, Douala, Environmentally Sound Management of Water Resources (code 4.3)

CIFIGRE, Sophia Antipolis, BP 113, 06561 Valbonne, France. Tel: 331(93)-654900, Fx: 654402, Tx: 461 311 F.

6 FORTHCOMING CONFERENCES AND WORKSHOPS

Worldwide

17-19 February 1991, Alexandria, Egypt

African Regional Symposium on *Techniques for Environmentally Sound Water Resources Development*. For details, write to either The Overseas Development Unit, Hydraulics Research, Wallingford, OX10 8BA, UK, Tel: 44(0491)-35381, Fx: 32233, or the Water Research Centre, 22 El Galla Street, Bulak, Cairo, Egypt.

20-22 February 1991, Marrakesh, Morocco

CMWR 1991 2nd International Conference on *Computer Methods and Water Resources*, organised by the IAHR. Contact Liz Newman, Computational Mechanics Institute, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO4 2AA, UK. Tel: 44(0703)-293223, Fx: 292853.

March 1991, Taipei, Taiwan

Computer Applications in Water Resources International Conference. Details from IWRA, University of Illinois, 205 N Matthews Avenue, Urbana, IL 61801, USA. Tel: 1(217)-333 0536, Fx: 333 8046.

15-20 April 1991, Malta

Conference and exhibition on *Desalination and Water Reuse*. Details from Institution of Chemical Engineers, 165 -171 Railway Terrace, Rugby CV21 3HQ, UK.

22-26 April 1991, Wiesbaden, Germany

Hydrological Modelling for Irrigation & Drainage in XVIth General Assembly of the European Geographical Society.

13-18 May 1991, Rabat, Morocco

Water for Sustainable Development in the 21st Century. *The 7th World Congress on Water Resources*. Secretariat, Administration de l'Hydraulique, Direction de la Recherche et de la Planification de l'Eau, Rue Hassan

Benchekroun, Agdal-Rabat, Morocco. Tel: 212(7)-78690, Fx: 76658, Tx: PLANEAU 310-82.

June 1991, Vienna, Austria

The 17th International Congress on *Large Dams*. Information from the International Commission on Large Dams, Secretariat, 151 Boulevard Haussman, 75008, Paris, France.

4-9 June 1991, Saskatoon, Saskatchewan, Canada

Waterscapes 91 international conference and exposition devoted to ensuring that all aspects of water management contribute positively to the development of a sustainable environment. For more information, write to Waterscapes 91, 3 - 3002 Louise Street, Saskatoon, Saskatchewan, Canada S7J 3L8, Canada. Tel: 1(306)-373 9089, Fx: 373 3778.

19-23 August 1991, Nairobi, Kenya

The 7th WEDC Conference on *Infrastructure, Environment, Water and People*. Short papers and discussion notes will be welcomed from people actively working on these topics, including environmental and social aspects of irrigation. For information, contact, WEDC, Loughborough University of Technology, Leicestershire, LEU 3TU, UK. Tel: 44(0509)-222885, Fx: 211079, Tx: 34319 UNITEC G.

21-25 October 1991, Mexico City, Mexico

International Seminar on *Efficient Water Use*. Details from IWRA, University of Illinois, 205 N Matthews Avenue, Urbana, IL 61801, USA. Tel: 1(217)-333 0536, Fx: 333 8046.

18-23 November 1991, Bangkok, Thailand

The 8th ICID Afro-Asian Regional Conference on *Land and Water Management in Afro-Asian Countries*. Contact International Commission on Irrigation and Drainage, 48 Nyaya Marg, Chanakyapuri, New Delhi 110021, India. Tel: 3016837, Tx: 031 65920 ICID IN.

3-6 December 1991, New Delhi, India

1st International Conference on *Research Needs in Dam Safety*. Information from C V J Varma, Organising Secretary, 1st International Conference on Research Needs in Dam Safety, Central Board of Irrigation and Power, Malcha Marg, Chanakyapur, New Delhi 110021, India. Tel: 3015984, Tx: 31-66415 CBIP IN. Closing date for abstracts 30 November 1990.

5-11 July 1992, Budapest, Hungary
The 16th ICID European Regional Conference. Contact Secretary-General, ICID, 48 Nyaya Marg, Chanakyapuri, New Delhi 110021, India.

6-12 September 1993, The Hague, Netherlands
15th International Congress on Irrigation and Drainage *Water Management in the Next Century*. Contact Secretary-General, ICID, 48 Nyaya Marg, Chanakyapuri, New Delhi 110021, India. Tel: 91(11)-301 6837, Fx: 91(11)-301 5962, Tx: 031-65920 ICID IN.

7 CONFERENCE AND WORKSHOP REPORTS RECEIVED

United Kingdom

Organisation and Management of Irrigation Projects
International Commission for Irrigation and Drainage (ICID) meeting at the Institute of Civil Engineers, 3 October 1990

Mr J Hennessy, new President of ICID, introduced the speakers and publicised the activities of ICID in research and development worldwide. There followed presentations by I W Makin (Overseas Development Unit, Hydraulics Research), D R Stacey (Binnie & Partners), and T Franks (University of Bradford). Mr Stacey focused on the need for a project management structure tailored to suit specific projects which can be adapted to suit each particular phase with detailed consideration given to staffing levels, structural change, communications, and the relationship between project organisation, agricultural extension services, farmer organisations, credit banks and revenue authorities. Mr Franks explored the potential for applying management theories taken from other sectors, e.g. organisation environment and management systems, to irrigation schemes. It was noted that the application of managerial performance indicators, privatisation methods, and improved government agencies were already under evaluation in the irrigation sector. Mr Makin concentrated on improved control technology, i.e. a computerised scheduling system at Kraseio in Thailand as a relatively low-cost alternative to rehabilitation and increased staffing. Improved monitoring, feedback and control can improve rainfall and irrigation water utilisation and give scheme managers a clearer picture of the success or failure of the system to meet target objectives.

Economics, the Environment and Water Development
Joint meeting of ICID and the Agricultural Economics Society at ICE, 13 December 1990

Ian Carruthers (Wye College) began by polarising the views of economists, engineers and environmentalists. Nicholas Hildyard (the Geologist) then criticised the negative effects of big dam and irrigation projects, especially resettlement, land shortage, waterborne diseases, and salinisation. John Gardiner (Thames National River Authority) and Peter Bolton (Hydraulics Research) discussed the issue of sustainability in development projects and suggested a River Catchment Planning model for managing land drainage, flood defences and the environment. Attention was given to adaptive planning and closer liaison with local authorities and environmental groups.

Richard Palmer-Jones (University of East Anglia) considered potential adverse effects of dry season tubewell development in Bangladesh, including lowering of water tables and reduced flows to river courses and ponds encouraging salinisation and reduced fish stocks. He argued that government regulation of the resource had slowed irrigation adoption, whereas privatisation (especially in deep tubewells) is responsible for the recent recovery in boro rice production. He added that poor or inadequate data makes environmental impacts difficult to assess.

Eng Joas Ribeiro da Costa (Portugal) illustrated the importance of political support and institutional cohesion for successful water resource management, together with judicious use of models. Julian Bertlin (Wye College) introduced Dr Abdelhafid Debbarh who described salinisation problems at a scheme on the Tadla Plain, Morocco, where they are developing an environmental monitoring system and database.

Appropriate Development for Survival - The Contribution of Technology
Joint ICE/IME Conference, Institute of Civil Engineers, 9-11 October 1990

The conference covered a range of topics related to development under the sector headings of Food, Energy, Water and Sanitation, and Infrastructure. Presentations included appropriate and economic development, practical implementation, environmental impact, social issues, the engineer's contribution, education and training, management and planning, and technology choice and maintenance. In addition to the formal presentations, there were a large number of papers from delegates on a wide cross section of issues and research programmes related to technology development.

Sector workshops allowed delegates to discuss specific topics in more detail and prepare 'action plans' for the future.

Worldwide

Resource Mobilization for Sustainable Management

Proceedings of a Workshop on Major Irrigation Schemes in Sri Lanka held in Kandy, Sri Lanka, 22-24 February 1990, IIMI

These papers focus on institutional reform that is seen as a prerequisite to effective mobilisation of sufficient resources for sustainable management of major irrigation schemes. They analyse the impediments to high performance system management within the irrigation management agencies and the direction in which reforms must go to bring improvements and identify broader policy issues and recommendations that are very important to the whole change process underway.

International Conference on Ground-water Resources Management

5-7 November 1990, Asian Institute of Technology, Bangkok, Thailand

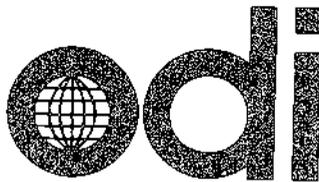
Fifty papers were presented at this conference, which provided an overview of current research and development issues. Sections of the conference covered groundwater investigation, groundwater modelling, groundwater quality, environmental impact, conjunctive use, and groundwater management. One key issue in the discussion was the limited number of examples of realistic and practical development, and management strategies. The problem of developing realistic and appropriate groundwater investigation methods and models, that could and would be used by field representatives, was also raised.

ERRATA

In our last Newsletter of July 1990, we carried comments from David Potten of Hunting Technical Services, on the divergence between theoretical and actual water demand on groundwater irrigation projects. At two points in this section, volumes of water were printed with an 'm' instead of 'm³'. The information should read:

- theoretically calculated demand averaged 47,600 m³ per well, per month;
- the actual average monthly demand has not exceeded 17,500 m³;

We apologise for any misunderstandings caused by these typographical errors.



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