



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

WORKING PAPER 94

Centre Commissioned External Review (CCER) of the IWMI-TATA Water Policy Research Program

Rome, 20 May 2004

Jacob J. Burke, (FAO)

Deep Joshi (PRADAN)

Ravi Chopra (People's Science Institute)

Working Paper 94

**Centre Commissioned External Review (CCER) of the
IWMI-TATA Water Policy Research Program**

Rome, 20 May 2004

Report by:

Jacob J. Burke, (FAO)

Deep Joshi (PRADAN)

Ravi Chopra (People's Science Institute)

Reviewers to the Board of Governors of
IWMI and the Trustees of the TATA Foundation

Burke, J. J.; Joshi, D.; Chopra, R. 2005. *Centre Commissioned External Review (CCER) of the IWMI-TATA Water Policy Research Program*. Colombo, Sri Lanka: IWMI 115p. + 2 annexes. (Working paper 94)

/ agricultural research / groundwater management / irrigation management / institutional development
/ social aspects / non-governmental organizations / water policy / project appraisal / evaluation /
India

ISBN 92-9090-595-6

Copyright © 2005, by IWMI. All rights reserved.

Please direct inquiries and comments to: iwmi@cgiar.org

Draft Preface

IWMI Working Paper on IWMI-ITP CCER Report and Management Response

In early 2004, the International Water Management Institute (IWMI) and the Sir Ratan Tata Trust commissioned an external review of the IWMI-Tata Water Policy Research Program (IWMI-Tata Program). The IWMI-Tata Program is a five-year initiative, sanctioned in August 2000, which is jointly funded by the Sir Ratan Tata Trust and IWMI. The aim of the IWMI-Tata Program is to engage Indian and global scientific and resource management institutions in a practical agenda of water sector research and policy discussion.

The purpose of the Center Commissioned External Review (CCER) was to conduct a midterm evaluation of the IWMI-Tata Program in an effort to:

- gauge the *effectiveness and relevance* of the Program's research agenda, the *quality* of the research outputs, the *efficiency* of the Program's dissemination activities and the *adequacy* of the Program's funding
- provide inputs on *midcourse corrections*
- assess options for *future research directions* in a second phase of the program

The review was conducted in February and March 2004 by three experts:

- Dr. Jacob Burke: Groundwater Specialist, FAO
- Mr. Deep Joshi, Executive Director, PRADAN
- Dr. Ravi Chopra, Director, People's Science Institute

This Working Paper presents the final CCER report and IWMI's Management Response. These documents, together with the overall program direction, were reviewed and approved by IWMI's Board of Governors during its Program Committee Meeting, held on November 17, 2004 in Colombo, Sri Lanka.

Prof. Nobumasa Hatcho,
Program Committee Chair,
IWMI Board of Governors

Dr. Meredith Giordano,
IWMI Research Director

Table of Contents

Acronyms and Abbreviations	vii
1. Executive Summary	1
2. Preamble	4
3. Conduct of CCER	5
4. Introduction and Context	6
5. Programme Management	9
5.1 Funding and resource mobilisation	9
5.2 Staffing.....	12
5.3 Overall Programme Quality	12
6. Detailed Evaluation of the ITP research clusters	14
6.1 Introduction	14
6.2 Groundwater (Socio-ecological assessment and governance)	15
6.3 Institutional Aspects of Irrigation (inc Central India Initiative(CInI)):	17
6.4 Technology Choices	18
6.5 River basin dimension	19
6.6 New Initiatives	20
6.7 The publication record	21
7. Detailed Evaluation of the ITP Field Activities - Initiative (NGI)	22
8. Publication and Communication Strategy	25
9. Programme Impacts	30
10. ITP Office Structure, Roles and Relationships	34
11. Long Term Perspective	34
12. Recommendations	37
12.1 General Recommendations	37
13. Summary Conclusion	41
Annex 1 Review Terms of Reference	45
Annex 2 Review Itinerary	50

Annex 3: List of Outputs (Policy Briefs, Highlights, Comments and Research Papers to March 2004)	51
Annex 4 IWMI-Tata Water Policy Research Program Office Staff List	78
Annex 5: List of ITP Partners	79
 IWMI Management Response	 105
Annex 1: Communication Strategy Concept Note—IWMI-Tata Water Policy Program	111
Annex 2: Holy cow! Milk’s a groundwater guzzler	115

Acronyms and Abbreviations

APM	-	Annual Partners' Meeting
CCER	-	Centre Commissioned External Review
CGIAR	-	Consultative Group on International Agricultural Research
CInI	-	Central India Initiative
DFID	-	Department for International Development (UK)
IDFC	-	Infrastructure Development Finance Corporation
ITP	-	IWMI-Tata India Water Research Programme
IWMI	-	International Water Management Institute
IRMA	-	Institute of Rural Management
NGDO	-	Non Government Development Organization
PRADAN	-	Professional Assistance for Development Action
SRTT	-	Sir Ratan Tata Trust
WALMI	-	Water and Land Management Institute
WSSD	-	World Summit on Sustainable Development

1. EXECUTIVE SUMMARY

This is a Centre Commissioned External Midterm Review (CCER or ‘the Review’) of the IWMI-TATA Water Policy Research Programme (ITP) prepared by a team of three consultants, Jacob Burke (FAO), Ravi Chopra (People’s Science Institute, Dehradun) and Deep Joshi (PRADAN, New Delhi). The Review was conducted between 17 February and 27 April 2004. It consisted of

- (i) attendance at the ITP Annual Partners’ meeting held at IRMA, Anand 17-19 February 2004;
- (ii) consultations with international specialists in Indian water management, media people and ITP partners among policy researchers and NGOs;
- (iii) consultations with selected policy makers in government;
- (iv) visits to the ITP headquarters in Anand and discussions with all the staff and the Principal Scientist;
- (v) visits to field sites in North Gujarat where an action research programme (the North Gujarat Initiative, NGI) is under way;
- (vi) appraisal of IWMI-TATA priority areas and its outputs over the past 3 years.

The Review expresses its sincere thanks to the management and staff of the IWMI-TATA Water Policy Programme for all the materials provided, for their hospitality, courtesy and collegiality during the Review and for their constructive response to question and enquiry. The Review provides a series of general and specific recommendations for consideration by IWMI’s management and its Board of Governors and the SRTT. We consider that these recommendations should—if implemented – strengthen the ITP outputs and impacts within the current 5 year programme period.

The Review considers and recommends that:

General

1. The goals of ITP within the broad mission of IWMI and SRTT are appropriate, and the underlying research questions addressed are valid and fit into internationally agreed development targets relating to a livelihoods approach to water management. Therefore, ITP should be maintained as a key element in IWMI’s portfolio of partner programmes.

Programme Scope, Quality and Impact

2. The Review is impressed by the scope and quality of research in most areas it reviewed. While recognizing that some areas are relatively new, precluding detailed appraisal, they fulfil potential and should be continued.
3. The Review is, however, concerned about (i) the broad scope of the research themes (ii) the balance of research themes (from micro-economic research and state/national macro-policy recommendations) (iii) the development of an effective communications strategy and (iv) sustaining the ITP momentum into a second programme cycle.

4. At the same time, the Review notes that several geographic regions (such as the poverty stricken and flood-prone Ganga-Brahmaputra-Meghna basin, the mountains), issues (gender, political economy, domestic water, water quality) and phenomena (land-water-forests interactions) are excluded or poorly represented.
5. With regard to policy implications of ITP outputs to date, the work on the socio-ecology of groundwater in India is of international repute and built on successful partnerships with government and non-government institutions and allow it to project into the international policy area.
6. The action-research project in **North Gujarat (NGI)** contains the seeds of a potentially significant policy and action coalition, affecting a large population whose livelihoods are threatened by rapidly declining groundwater levels. It was initially conceived as a collaborative effort, with ITP principally as the catalyst. In the event, ITP is directly engaged in action. Though the project is providing key insights into the adoption of water saving irrigation technologies, diversification of farming systems and the use of organic fertilisers, there is a need to simultaneously examine the macro-construct that drives the present resource management/ livelihood strategies in the region and the likely public policies that would catalyze change. There is also need to explore the institutional mechanisms to expand outreach once viable packages are developed through micro-experimentation.
7. The research studies and reviews fashioned as **Central India Initiative (CInI)** have extended research into the water-livelihoods nexus (and more generally, the management of natural resources-livelihoods nexus) as it affects the tribal communities, largely ignored by policies and action. This presents an opportunity for breaking new ground in both conceptual and policy terms, affecting some of the poorest and socially most vulnerable people in the country and a large geographic region.
8. Several **new initiatives** are now being proposed following the 2004 APM. The recently launched work on urban hinterlands shows promise and will fill a critical gap in research on rural–urban transitions. Equally the attempt to synthesise the status of India’s main irrigation systems under the newly proposed “Irrigation at the Crossroads” looks promising and can be expected to move forward the debate on how to modernise Indian canal irrigation. The watershed initiative is perhaps too broad and complex to be taken up by ITP as a specific research theme, but is an area in which ITP can provide detailed critique and evaluation of past developments and current trends.
9. **Additional areas** of focus are warranted where policy shifts need to be substantiated by sound technical and socio-economic analysis. The focus on water scarcity could be complemented by analysis of the impacts of flood management on rural livelihoods. Equally, the role forestry policy on upland hydrology and the impacts on rural livelihoods downstream could be explored.

Partnerships and Networks

10. ITP has a significant number of effective partnerships among NGOs and researchers. Government agencies and mainstream scientific research community, however, remain poorly represented, as do certain regions of the country. The Review recognizes that such partnerships need time and effort to manage and deploy effectively. Future development of partnerships under ITP may need to be managed more strategically to produce programme impact by way of creating a wider “water community” and significant policy changes.
11. ITP was thought of as a program that would be conceived and implemented by an alliance with a broad spectrum of Indian institutions. The original budget indicated that most research

would be contracted out. After an initial attempt to follow such a participatory strategy, there has been a shift towards more in-house and closely supervised research. This would limit opportunities for building a broad based community of researchers, which was one of the original objectives. The Review recommends that the “field building” approach of broad based participation be followed more vigorously. Creation of a constellation of three to four senior persons to assist the Principal Scientist and an Advisory Committee to guide the governance of the program would aid such an approach.

12. The original objectives of ITP would be well served with a longer-term perspective that would stimulate a search for a wider array of mechanisms to develop partnerships and build capabilities for a “meaningful engagement with the problem (of water)”.

Communications and Dissemination

13. The stated aim of ITP’s communication and dissemination effort is to effectively transmit ‘convincing messages’ distilled from research outputs to various levels of decision makers. The number and range of research publications produced form a tremendous resource for the preparation of communication and policy related materials. But much of the communication effort has concentrated on dissemination to researchers and NGOs. Even this outreach can be expanded by having more papers published in well-known journals.
14. ITP needs to devise an effective communication strategy which focuses on decision makers, within a larger framework of providing critical knowledge inputs to the variety of actors associated with influencing water policy. To important components of this strategy could be (i) small focused workshops and (ii) regular reporting of ITP research findings in the popular print and electronic media. To do this, ITP must improve the communication and media expertise within the Program by developing partnerships with communication organizations, media-centric organizations and individuals with expertise in policy making.

Finance, Programming and Staffing

15. ITP activities do not appear to be constrained unduly by finance considerations. Based on the research outputs to date, the funding of a successor programme cycle now needs to be pursued actively. ITP would be well advised to seek funding that preserves its catalytic role, affords it reasonable elbow room to feel the way forward, enables it to leverage and is focused on field building rather than concrete results alone.
16. As the ITP enters the last eighteen months of its current 5 year cycle, thought now needs to be given to bring all existing and proposed outputs to a point in a series of research summaries and synthetic outputs. These synthetic outputs will need to form the basis for the projection of the ITP policy messages and will need to be considered in terms of a well defined communication strategy.
17. The leadership provided to ITP is accomplished, internationally respected and highly committed. It appears that a finely judged balance has been found between allowing junior researchers the intellectual and financial freedom to follow their own initiatives, within the parameters of the ITP, and an active process of internal and external peer review and senior supervision. The IWMI-wide thematic responsibility borne by the Principal Scientist does not seem to constrain his leadership of ITP.

18. If ITP were to expand the scope of outsourced research as a way to expand the network—to build and nurture the field—it may be useful to recruit a senior staff person or consultant to assist the Principal Scientist in the task of building such a network.

2. PREAMBLE

- The TOR with regard to the CCER of the ITP theme at IWMI are detailed in [Annex 1](#).
- The itinerary of the Reviewers is detailed in [Annex 2](#)
- The ITP is currently headquartered in Anand, Gujarat State, India. Under the terms of its memorandum of understanding (MOU), the bulk of its work is based entirely within India. However, part of the IWMI themes followed through by the ITP team also link with projects in IWMI's regional offices (Asia, Pakistan & Central Asia, India, SE Asia, Africa, Latin America) as part of the Comprehensive Assessment of Water Management in Agriculture. The Review was able to visit the ITP office in Anand and the sites of the North Gujarat Initiative.
- ITP has completed three years of an initial 5 year programme designed to produce policy. This midterm review is to evaluate the quality of its outputs—the science of data gathering and subsequent policy analysis—and an assessment of its impacts not solely in terms of official government policy, but the direction of related programmes.
- The ITP programme consists of ;
 - a set of 18 themed research clusters ([Annex 3](#)) resulting in some 330 individual pieces of research
 - A field action-research programme—the North Gujarat Sustainable Groundwater Initiative (NGI)
 - A Central India Initiative (CInI) consisting of “Water Based Livelihood Enhancements Efforts in Tribal Areas”.
- The current staff list with qualifications and experience is given in [Annex 4](#). The current set of ITP outputs is listed in Annex 5 according to type. A list of programme partners is given in [Annex 5](#)
- The current funding from SRTT comprises a block grant of 45 Million Rupees, plus additional funding of 4.85 Million Rs for the NGI and 3.675 Million Rs for specific district level studies in “Water Based Livelihood Enhancements Efforts in Tribal Areas” under the umbrella of the CInI.
- IWMI project budget co-financing amounts to 1.2 Million Rupees for NGI
- Co-financing from bilateral donors comprises inputs from German (BMZ) and Swiss (SDC) Governments
- Two proposals have been submitted to the CGIAR Challenge Programme – The interlinking project: and “Groundwater Governance”.

3. CONDUCT OF CCER

The reviewers received the TOR and background documentation in time to prepare for the visits to ITP's headquarter in Anand and the field sites in North Gujarat. The formal review began in Anand during the 3rd Annual Partners' meeting (between the 17th and 19th of February) with briefings from Dr Christopher Scott, Director, IWMI, South Asia Program and Dr Tushaar Shah, Principal Scientist, IWMI, who is in charge of ITP, on February 18, 2004. The reviewers subsequently met on February 19, 2004 to formulate their methodology. The detailed itinerary for the conduct of the CCER is found in [Annex 2](#).

The reviewers' approach comprised of:

- Analysis and review of documents, including peer-reviewed international publications, working papers, research proposals, annual report, strategic planning report, and handouts provided during presentations and field visits.
- Field visits to several study sites in Gujarat where ITP projects are currently under way (see Annex 2)
- Interviews and discussions with researchers at ITP, particularly those embedded in the ITP theme.
- Interviews and discussions with partners and collaborators of ITP at different field sites.
- Detailed appraisal of the thematic areas of ITP, including an individual assessment of research outputs,
- Evaluation of the publication programme (Policy Briefs, Comments and Highlights)
- Assessment of the impact of the ITP programme in terms of both India's water management debate and the international agricultural water management discourse

Based on the TOR and following the briefing session at IWMI, a set of key questions emerged which were used as a mental checklist when reviewing the ITP outputs:

- Does the research fill a gap? What is the comparative advantage of ITP in terms of both national and international agricultural water management?
- Resources: Are the research efforts leveraged by the programme adequate to address the problem targets?
- Have the perspectives—macro (the big picture) through meso to micro—been balanced?
- Has the range (scope) of research been responsive to the circumstances?
- Scientific method: is it appropriate for water issues which tend to be inter-linked and inter-disciplinary and required aggregation to convert into policy outputs?
- What period is appropriate: catching up with moving targets versus scientific rigour

- The scaling issue: what degree of spatial and temporal resolution/precision is acceptable in order to make policy recommendations and impact the public discourse.
- Innovation: to what degree has ITP innovated in terms of research methods, policy outputs, and actions
- Publication and dissemination strategy: is it adequate or is it missing opportunities?
- Communication strategy: is there a strategy and is there impact on the target audience?
- Sustainability: has ITP established a credible water policy think tank that can be expected to attract continued support?

The review has focused on the following aspects:

- Assessment of the research activities sponsored by ITP through its staff and partners, their significance, scope and coverage of India's water related problems and the quality of research
- Analysis of the communication and dissemination strategy and outputs
- Assessment of the likely impact on policy-making
- Program management and the process of engagement with the field
- Future directions and overall role of ITP
- Mobilization of additional funds
- Recommendations for future Program activities

4. INTRODUCTION AND CONTEXT

The present utilizable water resources of India amount to about 2750 liters per capita daily. This amount is sufficient for the nation's needs if managed properly. Large parts of India, however, already face serious water shortages. Water researchers predict that India will become a water deficient nation sometime in the first half of this century. Several warning signs, e.g., seasonal water shortages across the country, recurring droughts and floods, rapidly depleting groundwater aquifers in the western and peninsular regions, poor surface and groundwater quality, reduced snowmelt in the Indo-Gangetic river system, etc. are now visible. Linked with the physical problems are complex social issues of water management institutions and equity. Thus, there has been a critical need to involve Indian and international researchers in a comprehensive research effort that leads to policies and programs for sustainable, productive and equitable management of India's water resources.

The ITP programme was set up in response to the widely documented and highly visible water stress in western and peninsular India to mitigate the impacts of intensifying water use on India's natural resource base and the people who are dependent upon it. It is differentiated from the main IWMI programme co-ordinated out of the Hyderabad office which is responsible for activities associated with the CGIAR Comprehensive Assessment and Challenge Programme under 5 research themes.

The IWMI-Tata Water Policy Research Program, (or the ITP for short), is a five year (2001-2005) program initiated by the International Water Management Institute with a grant from Sir Ratan Tata Trust (SRTT). In addition, IWMI has used its own funds to involve its senior researchers and other international experts to provide inputs to the Program. It is headquartered at Anand in the western state of Gujarat, India. The Program is managed by Dr Tushaar Shah, Principal Scientist at IWMI and an internationally known water expert. (He is also the international theme leader for groundwater at IWMI.) IWMI also provides knowledge support to ITP through its other related research activities in India and abroad.

In its first three years, ITP has supported about 330 research efforts, on a variety of themes that have produced 252 research reports, the production of short publications—IWMI-Tata Comment (3), Water Policy Research Highlights (14) and Water Policy Briefing (11 by April 2004). These are all available on the ITP website. In the initial years, ITP hosted regional workshops so that research results could be shared with researchers, policy-makers and other actors in the water sector. The high point of the annual activities is the Annual Partners, Meet (APM) to review the past year's research work and to provide ideas for the broad research agenda for the following year.

The stated aim of ITP is 'to catalyze informed action through practical, multi-disciplinary policy-oriented research and its effective communication to water sector decision makers at various levels.' Its proposed activities are:

- Seed research/consultancy grants to Indian institutions and individuals to engage in scientific as well as problem-solving, applied research
- Up to three research workshops per year meant primarily for researchers to share their findings and synthesize the results
- Up to three policy dialogues/consultations every year meant for researchers to communicate and discuss their research with senior policy makers within and outside government
- Fellowship support for up to 10 M Phil, doctoral and post-doctoral researchers as part of the Program
- Operation of an IWMI India Discussion Paper series (including the costs of publication and dissemination of research results); and
- Annual review of the impact of the Program

Against this proposal, it should be appreciated that the water management scene in India is changing. A number of key circumstances need to be highlighted here:

- economic pressure for Indian agriculture to perform to service broadening markets
- attempts to accelerate investment in water, energy and transport infrastructure (e.g., the role of IDFC)
- attempts to introduce/reform State water and groundwater legislation
- a pervasive land degradation problem

- intense competition for bulk water within and between States
- the increasing involvement of NGOs in water development and in the water policy debate in India

The Review was also aware that the impulses given to water management research from the international dialogue through the GGIAR Challenge Programme and other international fora, (including the CSD process and the World Water Council), have implications for the overall direction of the ITP research, particularly with regard to improving the performance of agricultural water management. However, it should be emphasised that the research directions reflect the current tensions within India and respond to the diversity of water management issues across India's States.

The scope of ITP is broad. The first annual work programme (2001) concentrated on groundwater themes and produced a major review of the socio-ecology of groundwater irrigation in India. The second (2002) annual work programme continued to develop a "nuanced and well-rounded understanding of India's groundwater management challenge" but also sought to explore the groundwater problematique in the broader context of India's river basin management. ITP also pursued a new theme on the institutional issues related to smallholder water harvesting, groundwater recharge and irrigation institutions. These three themes were designed to complement the three priority themes established by the IWMI India regional office, viz. watershed management, water productivity in a river basin context and sustainable groundwater management. The field programme of the North Gujarat Sustainable Groundwater Initiative commenced in September 2002. Also in 2002, a new focus was provided by the launch of the Central India Initiative (CInI) where collaboration with two NGOs (Sadguru Foundation and PRADAN) was established to support improved water management in tribal areas of central India. In 2003, the work programme expanded significantly, broadening the analysis of river basin management and river basin governance while also continuing to probe the micro-economic aspects of small scale water control. The proposed work programme for 2004 now seeks to, *inter alia*;

- complete the demonstration programme on micro-irrigation, water conservation and organic farming in the NGI
- consolidate the CInI research into a synthesis paper (*Increased Water Control as a Strategy for Tribal Agrarian Prosperity*) and published book
- consolidate research in Tank studies
- explore groundwater quality and waste water re-use issues
- examine linkages between irrigation and rural water supply systems
- take up the new themes proposed in the ITP 2004 Partners' meeting

The focus of the ITP is on management and organization around rural water use. The programme is therefore dependant upon compiling and assessing large numbers of individual point data relating to wells, boreholes, tanks and irrigation schemes and their individual users. Its research targets are numerous and highly distributed with each data point having small marginal significance. Three salient points emerge from this consideration. First, good water science has to be applied in a country where nationally reported water data is published sometimes decades after compilation and is of

variable quality. Second, the style of socio-economic analysis that is applied has to be appropriate. The approach to sampling and aggregation of district level data in order to analyse and indicate credible policy directions are important features of such socio-economic policy research. Finally, the results of policy analysis have to be disseminated and internalised.

5. PROGRAMME MANAGEMENT

5.1 Funding and resource mobilisation

ITP was initiated with a five year (2001-2005) grant from the Sir Ratan Tata Trust (SRTT). In addition, IWMI uses its own funds to involve its senior researchers and other international experts to provide inputs to the Program. It is headquartered at Anand in the western state of Gujarat, India. The Program is managed by Dr Tushaar Shah, Principal Scientist at IWMI and its international theme leader for groundwater.

Approximately 70 per cent (Rs.32.5 million) of the SRTT Grant was intended to support research activities, the remaining Rs 12.5 million were for communication activities, including regional researcher workshops, regional policy consultations, research publications and an annual review. An underlying thrust of the Program was to catalyze and support partnerships and collaborations with Indian institutions and individual researchers as part of IWMI's mandate to build India's capacity to meet its water sector challenges.

In October 2003, SRTT approved reallocation of the sanctioned funds, on the basis of a request from the ITP office. The new budget has increased funds for research activities, publication of discussion papers and the APM. It has drastically cut back funds for the regional workshops.

The SRTT Grant: In August 2000, the Sir Ratan Tata Trust sanctioned Rs 45 million (US Dollars one million approximately) to IWMI for the IWMI-Tata Program. The sanctioned budget is given in Table 1.

Table 1: Approved Program Budget (December 2000), INR

Sl.No	Line Item	SRTT Contribution	Other Sources	Total
	SRTT Fund for Grantmaking			
1	Seed research/consultancy grants	22,500,000	-	22,500,000
2	Fellowship support	7,000,000	-	7,000,000
3	Supporting Consultancies	3,000,000	-	3,000,000
	Program Component			
4	Regional researcher workshops	4,500,000	-	4,500,000
5	Regional policy consultations	4,500,000	-	4,500,000
6	IWMI India discussion papers	1,500,000	-	1,500,000
7	Annual review	1,500,000	-	1,500,000
	TOTAL	45,000,000	-	45,000,000

Some key features of the sanctioned grant are worth highlighting. These are:

- The grant accepts the dynamic character of ITP. Prior to the start of each calendar year, an Annual Work Plan is prepared and submitted to SRTT. While setting a broad agenda

for the year, the Annual Plan itself can be updated on a quarterly basis. ITP is required to submit half-yearly progress reports to SRTT.

- The grant enables ITP to make (i) research grants, (ii) consultancy grants, (iii) fellowship support, and to support consultancies to national researchers.
- Grant making by ITP and the annual review, which is open to a representative group of stakeholders, are meant to develop capacities within the water resources sector in India, for a comprehensive effort at resolving its water crises.

Specific Activities (2001-2003): The specific activities in the first three years are summarized below:

- ITP has made research and consultancy grants on a wide range of themes, including groundwater irrigation and its management in western and southern India, irrigation and agricultural productivity in eastern India, water in relation to livelihoods and the environment, the energy-irrigation nexus in India and the usefulness of tanks and other traditional water harvesting structures, among others. This has resulted in the preparation of over 300 research reports and published papers. The research has been undertaken by ITP's own staff and through a number of research partners.
- The research outputs have been collated on CDs and also disseminated among a variety of stakeholders in the form of various publications including "IWMI-Tata Comment", "Water Policy Research Highlight" and "Water Policy Briefing". Important research findings have been highlighted in the popular media at the regional and national levels.
- Several regional and national seminars, workshops and briefings have been organized for researchers and policy makers.
- An Annual Partners' Meet (APM) is held in Anand in the early part of each year to share the research outputs with interested stakeholders and to set a broad program agenda for the year.
- The APM is usually followed by a planning workshop where specific research activities for the year are defined.
- Additional funds have been mobilized through SRTT to develop two action research projects, the North Gujarat Initiative (NGI) and the Central India Initiative (CInI). The NGI was launched in September 2002 to explore, 'approaches to protect and strengthen the livelihoods of resource poor households bearing the brunt of the deepening ecological crisis in North Gujarat', with a grant of 4.85 million. CInI is an attempt to analyze ways of enhancing the use of water for poverty alleviation in the poorest region of India, which happens to be tribal-dominated, with a total grant of 3.676 million.
- Negotiations have been undertaken with international agencies like Swiss Development Cooperation (SDC), Asian Development Bank (ADB), the Challenge Program of CGIAR, to mobilize more funds for enhancing research, dissemination and other program-related activities.

Towards the end of the third year, there has been a shift in emphasis between the different line items as indicated in the revised program budget, Table 2.

Table 2: Revised Program Budget (October 2003), INR

Sl.No	Line Item	SRTT Contribution	Other Sources	Total
SRTT Fund for Grantmaking				
1	Seed research/consultancy grants	19,000,000	-	19,000,000
2	Fellowship support	11,600,000	-	11,600,000
3	Supporting Consultancies	6,500,000	-	6,500,000
Program Component				
4	Regional researcher workshops	1,400,000	-	1,400,000
5	Regional policy consultations	1,300,000	-	1,300,000
6	IWMI India discussion papers	2,000,000	-	2,000,000
7	Annual review	4,700,000	-	4,700,000
TOTAL*		46,500,000	-	46,500,000

*The budget now includes utilization of INR 1,500,000, which will accrue from the estimated interest from term deposits.

ITP was conceived as an equal partnership between SRTT and IWMI in terms of resources. Each partner was to contribute approximately \$ 200,000 (INR 9 m) a year for five years. SRTT funds were to be used for research, local capacity building (fellowships) and dissemination work, where as IWMI was to provide core support towards intellectual leadership, management and logistics. Overall, this has worked out as planned. Besides the time of the Principal Scientist, (about 100 person–days a year), and other senior and midlevel researchers, IWMI meets the cost of the establishment.

ITP has mobilized additional funds from SRTT itself, INR 3.676 m for the second phase of the research theme Central India Initiative (CInI) and INR 4.85 m for the action research project North Gujarat Initiative (NGI). The Swiss Development Cooperation (SDC) has committed approximately INR 10 m, pending a satisfactory arrangement for routing the funds. Improving natural resources management and poverty alleviation are SDC priorities and they typically seek long-term institutional partnerships. Therefore, SDC funding pledged as of now is exploratory and likely to lead to long-term institutional commitment. The Asian Development Bank is likely to support a part of the NGI activities focused around organic farming. Finally, there is likelihood of CGIAR funding under the Challenge Programme.

Besides funds directly routed to ITP, the Program has also leveraged resources indirectly, most tangibly in NGI. NGI originally was slated to be a much larger project, (budgeted at over INR 130 m), with contributions expected from the Dairy Unions, local people and donors. The original formulation did not work out as some key partners withdrew. In the event, the “action” part of NGI did indeed leverage resources by way of people’s contribution, though not at the scale originally envisaged. This has resulted in a much larger outreach of NGI on the ground than might have been possible with the SRTT grant alone. It is likely that one or more of the north Gujarat Dairy Unions would participate in NGI, bringing in larger resources.

The level of funding does not seem to be a constraint given the present formulation and focus of ITP. More funds (than the present level) would, however, be required to pursue a more vigorous programme of building and nurturing a community of individuals and institutions dedicated to knowledge building, advocacy, activism and action around water across the country. For example,

more funds would be needed if ITP were to expand the programme of Fellowships (beyond those offered in-house and at IRMA), revive the idea of holding regional consultations, conduct regional/ vernacular APMs as has been suggested by many, build itself into a resource center, foster advocacy and “outsource” more of the research through grants to stimulate a broader fraternity in the field. Such expanded scope would also require a larger and more experienced staff at ITP, especially for orchestrating or *Programming*, stronger administration and a more outgoing/participatory governance mechanism.

The nature of funding is critical, for it determines the degree of freedom. SRTT funding has been very flexible, notwithstanding the tension for concreteness and the anxiety to generate actionable ideas and models. Funding from SDC is also likely to be equally flexible, for they, too, typically seek an instrumental or catalytic role and are not bogged down by the intrinsic value of the outputs or outcomes. In contrast, funding from CGIAR (Challenge Grants), ADB and the Dairy Unions would be more closely tied to deliverables.

All funding, however, has strings attached. If SRTT has “so what” kind of concerns about utility in the short-term, SDC has even stronger concerns about equity (“reducing discrimination”, as they call it) and (participatory) processes. ITP would be well advised to seek funding that preserves a catalytic role, affords reasonable elbow room to feel the way forward, enables it to leverage and is focused on field building rather than concrete results alone. ITP has earned the equity necessary to be choosy about funding partnerships through the groundwork it has done so far.

5.2 Staffing

The staff of ITP appear to be adequately resourced in convivial surroundings which encourage collegiate interchange but is also quiet—the office is based on individual offices surrounding a central shared space. Computer resources and internet access (leased broadband) are generally good, but not immune from web slowdown. The office has had to deal with peak-loads of young staff and time-sharing of computers, but this is the exception rather than the rule.

The present staff structure provides adequate high quality support and guidance to a young team of Indian researchers who are going on to PhD programmes. A list of current staff is given in Annex 4. It is not felt that the Principal Scientist is overburdened in terms of supervision and management workloads, but is able to dispense high quality advice and guidance with the bulk of the administration and co-ordination covered by experienced administrative staff. The team also avail themselves of contact with other IWMI staff based in Hyderabad and locally available experts. They do not feel that they lack supervision from senior staff and that the process of peer review within the office and with colleagues at the IWMI office in Hyderabad provides them with enough ‘reality checks’.

5.3 Overall Programme Quality

The ITP agenda is ambitious given the scale of the water management issues in India. With the possible exception of China, nowhere else can claim to have the same mix of population density, poverty, and hydro-environmental degradation—with so much at stake and with little or no room in which to relax the pressure on the resource base. Alternative policy outcomes are therefore vital. Can an initiative that is small in comparison to the level of funding on water related research in India, reasonably hope to have some impact? Is such a team able to constitute a viable ‘think tank’ and produce the right high quality outputs to have an impact?

In comparison with other similar international programmes and water ‘think tanks’, it is hard to beat the relevance and depth of the ITP output. Many of the themes that are addressed in the ITP studies—and the questions raised—are simply not addressed by international organisations and NGOs (GWP, SEI, WWC etc). More significantly, the quality of the outputs appear to several orders of magnitude ahead of the research outputs coming from the current set of Indian State water institutions (e.g., WALMI <http://www.walmi.org/public.htm>). This might invite comparison with other water policy initiatives (in terms of budget and impacts), but in fact there very few established stand-alone water policy/applied science initiatives. The ODI water policy (<http://www.odi.org.uk/rpeg/wpp>) or the DFID sponsored community management (<http://www.bgs.ac.uk/hydrogeology/comman/home.html>) initiatives spring to mind. But neither have the breadth and detail of socio-economic research. In this sense, ITP is unique and IWMI has sustained a comparative advantage within India and across the international water scene.

It is relevant to ask whether the level of core budget funding and limited additional external funding is adequate/commensurate to cope with the scale of the issues—and the targets which go beyond India and into the sub-region. ITP does not appear unduly constrained by its current financial position. However, resources could be improved to cope with local production of high quality mapping and graphics—essential tools for public relations. All vehicles and most photocopying are outsourced—and this appears to be an efficient means of procurement. Computing equipment is sufficient but could benefit from some high standard peripherals to produce high quality outputs. Public relations may need some management to effect lasting impact.

The current funding position is relatively secure. The SRTT input is modest (\$US 200,000 per year), but it is generally flexible and this is seen as a big advantage. Funding from IWMI (over and above establishment costs) may improve in 2004/5 and Challenge Programme input is possible in 2005. In terms of bi-lateral co-financing grant financing, from SDC in place but awaiting confirmation of a transfer mechanism. (IWMI is currently unable to receive foreign funds directly in India due to current government policy). Funding from other sources to do side projects is not seen as too interesting—too many conditions are attached which would detract from the main thrust of ITP work. Despite the setbacks on some funding sources, it is not felt that this has constrained the programme of studies. However, it is felt that the IPT Partner institutions are not remunerated sufficiently for the work they undertake.

Therefore, the ITP management is confident that the team will produce the outputs, but how these outputs can be presented and ‘pitched’ into the policy debate in India needs to be thought through. Experience to date is that while there is reasonable uptake across the science, development NGOs and national press, the engagement of government has been disappointing.

The potential tension between the scientific demands of IWMI versus the public impact that is sought by SRTT has not become apparent. The SRTT funding is, after all, philanthropic. A middle course has been steered in which the mix of water science, socio-economic assessment, and policy analysis is applied through the NGI where appropriate, and the lessons learned from the practical implementation of the NGI are fed back into the groundwater policy debate—but this is not necessarily explicit. Should it be?

The IWMI-Tata web-site is straightforward and comprehensive with all the 252 prepared papers available through the ITP Annual Partners’ Meetings listings, which include papers and presentation files. What could improve the comprehensibility of the site and the ITP in general is a programmatic chapeau indicating the thrust and weight of the research effort.

Home Page

<http://www.iwmi.cgiar.org/iwmi-tata/Index.asp>

The quality across such an array of some 250 individual research efforts is understandably variable. Attempts have been made to summarise these individual efforts in ‘synthesis’ papers, but this has only been done on two occasions viz:

Shah, T. and Desai, R. 2001. Creative destruction: Is that how Gujarat is adapting to groundwater depletion? A synthesis of 30 ITP studies;

Phansalkar Sanjiv J. and Verma, T. 2004. Improved Water Control as a Strategy for Enhancing Tribal Livelihoods: A Synthesis of Studies undertaken as part of CInI.

A more systematic approach to the use of synthesis studies in the ITP functional research clusters/themes would be very useful. Overall, ITP would benefit from a communications strategy that builds on the IWMI marque, elaborating the research results into several key outputs using the in-house IWMI skills in publishing where they can boost the appearance and presentation of the material. More exchange between ITP and IWMI HQ on publication guidelines and editorial styles would help significantly.

6. DETAILED EVALUATION OF THE ITP RESEARCH CLUSTERS

6.1 Introduction

Approaching the wide range of research initiatives in order to review the outputs and performance has been hampered by the lack of a programmatic ‘map’ or chapeau document that provides a breakdown of the main research themes. The 18 themes that are identified in Annex 3 give some indication, but the number of research outputs under each of the identified themes is perhaps a better guide of the relative importance that has been attached to specific areas. For instance, 56 are categorised under ‘sustainable groundwater management in Gujarat’, but only 2 under ‘water and health’.

The development of the ITP programme has been centred on groundwater governance in South Asia, but has expanded into related policy areas together with the NGI and CInI sub-programmes. This review can tentatively identify the following 4 main programme areas with the 18 associated theme clusters set out in Annex 3. In addition, there are the set of 3 new initiatives that were launched, as guest sessions at the ITP 2004 Annual Partners’ meeting.

1. Groundwater Governance in South Asia:

- sustainable groundwater management in Gujarat (including NGI)
- groundwater socio-ecology in Asia
- sustainable groundwater management
- groundwater management in eastern India
- energy/irrigation nexus

2. Institutional/Livelihoods aspects of Irrigation:

- irrigation and tribal development (including CInI)

- irrigation management transfer
- water productivity in agriculture
- irrigation and poverty
- hydraulic history

3. *Technology choices*

- tanks in India
- micro-irrigation
- wastewater irrigation
- drinking water studies
- water and health

4. *The river basin dimension*

- integrated water management
- basin studies (Narmada/Sabarmati)
- watersheds

Initiatives launched at the 2004 Annual Partners' Meeting (Guest Sessions) comprised:

- Watershed Development in India
- Rural-Urban interaction: will work toward a synthesis paper based on a broad view of transactions in the urban/rural transitions within India—a range of case cities will be studied
- Canal irrigation at Cross Roads—it is envisaged that a policy paper emphasising main system management as a priority (to avoid further shrinkage of irrigated areas) is planned and will avoid emphasis on PIM.

6.2 Groundwater (Socio-ecological assessment and governance)

This theme commenced at the outset of the ITP work programme and still serves as the foundation for much of the programme. The theme has generated 4 high quality policy briefs (Innovations in Groundwater Recharge, Wells and Welfare, The Socio-Ecology of Groundwater and the Energy-Irrigation Nexus) with supporting IWMI-Tata Highlights and Comments arising from a cluster of 30 research papers. The work has also resulted in a Challenge Program Proposal—“*Capacity Building through Action Research into Indo-Gangetic and Yellow River Basins*”.

It is important to note that the issue of groundwater development and management in India is without precedent. The research outputs and the policy analysis for India do resonate globally. No where else in the world has groundwater development been taken to scale and matured into a post-development scramble for limited resources in the absence of planning and regulatory constraint. The insights obtained in India reveal an 'end member' in the spectrum of rural groundwater outcomes. The research is centred on India but also incorporates work in Pakistan, Nepal, Bangladesh and latterly the North China Plain. Arguably, it gives a regional perspective on groundwater governance in Asia, but South Asia remains the centre of attention and South-East Asia is not covered at all. However, it is plausible that the analysis applied to South Asia would be appropriate for South East Asia, where the role of groundwater has not been generally acknowledged.

With respect to the national analysis for India and the detailed research arising from NGI related work, (noting that a synthesis of 30 ITP studies on groundwater in Gujarat was presented at the 1st ITP Annual Partners meeting in February 2002 and predates the NGI field work), the ITP coverage of contemporary groundwater issues in India is exhaustive.

The theme of sustainable groundwater management in Gujarat accounts for 56 papers alone, the groundwater socio-ecology, sustainable groundwater management and groundwater management in Eastern India themes account for another 54. There are also the 15 papers produced under the irrigation nexus theme, in which groundwater is implicated.

Given this range and concentration on groundwater issues, have the outcomes justified the resources applied to the groundwater theme? Some key points can be made here.

First, the scope of the research. The scope of the groundwater research is novel and would not normally appear in the standard hydrogeology journals (e.g., the Hydrogeology Journal of the International Association of Hydrogeologists or the Journal of Hydrology), which tend to reflect the technical and scientific interests of practicing hydrogeologists rather than the socio-economic nature of groundwater use.

Second, the quality of the research. The technical basis of the socio-economic research is generally sound enough with good presentation and explanation of statistical analysis. However, the understanding of groundwater processes is weak. The distinction between the "hardrock", "bounded aquifers" and the alluvial aquifers made in some of the Groundwater Governance in Asia publications is potentially misleading. The distinction might appear plausible in terms of Indian geology, but in fact, all aquifers have boundary conditions and abstraction from stacked systems of alluvial aquifers can reach limits in terms of quality and quantity. The work could be balanced with brief elaborations of the groundwater settings and circulation processes to check on the assumptions, particularly in relation to recharge and storage assumptions.

Third, the dissemination and coverage of the topic outside India. There has been good visibility of India's groundwater problématique and ITP analysis in global fora, including the 3rd World Water Forum held in Japan in March 2003. More recently, the work has been presented at a GEF-STAP expert group meeting hosted by UNESCO in April 2004. In this sense, the visibility has been high in international circles, where there is concern over the sustainability of such groundwater development.

Finally, the policy relevance is extremely high. Groundwater dependence in India has become so entrenched in the more developed western States that continued access to groundwater will continue to underpin agricultural productivity and equity. But the prospects for the future without such access has not hit home in all States, with groundwater departments apparently still relying on command and control assumptions. In this sense, the impact of the body of research has yet to penetrate. Other areas where it could go is in the relation to contract farming, where groundwater access is vital and can give an edge in providing on-demand water services for sensitive high value horticultural crops.

6.3 Institutional Aspects of Irrigation (inc Central India Initiative(CInI)):

The research program, titled Central India Initiative (CInI) began through collaboration between two NGOs that had for over a decade been promoting small scale irrigation among the Scheduled Tribes—the NM Sadguru Water and Development Foundation (NMWSDF), Dahod; Professional Assistance for Development Action (PRADAN), New Delhi—and ITP. Started in June 2002, CInI was inspired by the fact that:

- resource endowments in the undulating and hilly Central Indian regions that are home to about 70 percent of the Scheduled Tribes offer widespread opportunities for enhancing livelihoods through water resource development,
- this had not happened on a large scale for a variety of socio-economic and political reasons, while
- there had been several successful initiatives by NGOs.

CInI sought to examine the determinants of success/failure in enhancing tribal livelihoods through water resource development. In the first phase, a number of case studies of field projects were carried out to sharpen the issues relevant to develop strategies for water resource development as a means to enhance tribal people's livelihoods. A workshop of social scientists was then conducted to illuminate the sociological aspects of tribal development. A workshop with policy makers and NGOs was also conducted to outline the scope of further research.

The second phase of CInI consisted of:

- a comprehensive review of literature on tribal agrarian economies, macro-level studies to examine the relationship between tribals and irrigation infrastructure in 10 districts in central India
- a sample survey in seven tribal districts to examine the status of tribal agriculture vis-à-vis the non-tribals
- a basin level simulation to examine the scope for water harvesting in the upper reaches where tribal people typically live
- a study of extant technologies for harvesting and use of water for farming
- a study of the role of women in agriculture in tribal areas
- a study on Irrigation Service Provider as a model for promoting irrigated farming, and
- a study of 12 action programs

Synthesizing the results of these studies, CInI has put together a comprehensive set of action strategies for four segments of the region, based on the agro-ecological condition, level of infrastructure development and the present status of tribal agriculture (in the continuum from hunting– gathering to modern input intensive agriculture). These have been formulated in the form of a funding proposal. ITP is now in the process of presenting these to policy makers in the various States in collaboration with NGOs. One such presentation has already been made in the State of Jharkhand.

Much of the work done in CInI is a combination of a synthesis of what was already known, critical and purposive analysis of available data, case studies to draw lessons from practical experience and some primary data collection and analysis. The recommendations provide concrete ways forward that are based on what is already being done on a small scale in different contexts across the region in question. The findings and recommendations are presented forcefully and convincingly.

CInI has clearly been a worthwhile effort. Its significance can be gauged from the fact that tribal people are among the poorest in India. They are concentrated in unique ecological settings and have not benefited from well-articulated strategies for their economic development. CInI was also able to bring together a large number of NGOs working with the tribal people on the ground and help them articulate some of their lessons. The critique of CInI formulations has been that many critical issues, such as:

- endemic indebtedness among tribal people
- deep isolation that makes external interventions extremely difficult
- poor infrastructure, and
- the question of management of forests critical both for the present livelihood systems of tribal people, as well as the development/management of water resources have not been considered.

While the critique is valid, it is perhaps misplaced given the essentially water-livelihoods focus of ITP. CInI as a broader theme, if taken forward by the government, NGOs and donors, would certainly have to contend with these issues.

The question of water and livelihoods in different ecological and socio-economic settings calls for more sustained attention and diversified engagement, notwithstanding CInI and the macro-studies on irrigation-poverty linkages. In fact, the CInI kind of approach that looks at the water-livelihoods nexus across a region with well-defined characteristics might be useful for the mountains, the northeast, and the entire traditional paddy region.

Large-scale surface irrigation systems represent huge investments in India and have received on-going attention from policy makers to improve efficiency. In fact, those concerned with these are the most powerful elements in the water establishment and the arena is littered with aborted attempts to improve productivity and public wastage. Are large surface irrigation systems doomed to remain stalemated? Are these largely to be seen in the context of groundwater recharge? Would the emerging systems of decentralised local governance have a role to play? Under what conditions might PIM work? ITP, as someone pointed out, is not “wholeheartedly” into it.

6.4 Technology Choices

The work on tanks is mainly confined to the south Indian experience. The focus is mainly on management structures and on irrigation. This is understandable in the context of the role tanks have historically played in south India, the decline in groundwater and significant public investments in tank rehabilitation. However, “small water bodies” of various sizes, natural or artificially created, public, communal or privately owned, are a part of the rural “waterscape” in India. From *beels* in the northeast to *chauras* in north Bihar to the *pukurs* in Bengal and the *pokhars* in the Hindi belt,

such water bodies are integral to the lives and livelihoods of rural people. Besides sources of domestic water, these are also used for rearing fish and for irrigation. There is a need therefore to go beyond the south Indian tanks and issues of management structures for tanks into the livelihood ecology of such water bodies and how it is shaping up in these times.

The work on water saving technologies—especially drip and micro-sprinklers – is topical. This has been an arena of increasing policy attention during the past decade and several States now provide large subsidies to adopters, often inspired by equipment suppliers. Motivations have come from both ends—water saving and efficiency for big farmers, as well as enabling smallholders access to affordable water technologies. There is a good deal of ignorance about these technologies, regarding costs, cost-effectiveness and maintenance. Various research studies, as well as the North Gujarat action research project have shed some light. However, the question of irrigation equipment and machinery is much larger and deserves deeper engagement, at macro- and micro- levels.

The issue of drinking water—more generally, domestic water—has received scant attention, and often obliquely in terms of the emerging town-hinterland divide. The Review has been given to understand that this reflects IWMI policy. ITP, however, is a “joint venture” and drinking water is a major policy issue in India, attracting huge public investments. Women and girl children bear the brunt of drinking water shortages and it affects the wellbeing of all citizens. Closely linked is the issue of water quality, which again has been basically dealt with in the context of groundwater.

6.5 River basin dimension

The thrust of IWMI's accent on river basin management has been predicated on a notion of achieving overall 'basin efficiencies'. Such notions may have partial application in India where many peninsular river basins are hardly functioning as river basin systems with ordered cascades of on-line and off-line stores, head regulators and release rules. The hydraulic behaviour of these rivers is conditioned much more by the demands of highly distributed, but dense, populations with millions of local impoundment and abstraction structures. Local cycling of surface and shallow and deeper groundwater circulations is, however, significant where groundwater irrigation predominates. The ITP take on integrated river basin management has reflected this Indian reality, starting off with an early examination of the relevance of IRBM solutions to the Indian scene, (Water Policy Briefing No. 3) and posing a set of institutional challenges, in which many small-scale hydraulic interventions can be “developed into a unified structure, shifting the focus from just resource management to resources and service management”.

Subsequent ITP work has been limited to basin work on the Sabarmati and the implications of large-scale water projects in the Narmada valley (which took up a whole session in the APM 2004 *Session I: From Rajasiro to Giant Pipelines Future Challenges and Opportunities in Narmada Valley Projects*). However, related research into groundwater use in the Ganga-Meghna-Brahmaputra basin that also culminated in APM 2004 *Session V: Groundwater and Livelihoods in the Ganga Basin: 2nd Generation Issues and Options* has also brought out the significance of the groundwater variable in the river basin context. Rather than tackling integrated river basin management in India head-on, this exploration of the largely unrecognised contribution of groundwater circulation and use in river basin systems could be an area in which ITP can demonstrate comparative advantage.

This leads to the development of the River Linking Challenge proposal in response to the high level initiative by the Government of India Task Force on Interlinking of Rivers (<http://riverlinks.nic.in/>). But some care needs to be given to the rhetorical introduction of the subject and

on the substance which could perhaps turn the aims or research around. It is not so much the agriculture and urbanisation challenges to which water infrastructure will have to adapt. The specific objectives of the proposal do in fact start from this premise, but whether as a distributed research programme it could maintain consistent quality across all the planned outputs will be a challenge in itself. ITP will need to position itself carefully here and try to start from a policy-neutral position, making positive critique upon an empirical basis—hydrology and economics.

Watershed development is another major area so far not addressed by the ITP research agenda, although the CInI work to an extent touches upon it, (some might wrongly conclude that CInI advocates watershed development as a strategy for enhancing livelihoods of tribal people through management of water and land). Huge public investments are already being made in this area even as issues of viable financing mechanisms, cost effectiveness and institutional coherency remain obscure. The purpose of the AMP 2004 *Session IX: Watershed Development in India: Lessons from a Decade of Implementation* was to try and bring the technical and social threads together in a controversial area. What ITP can now do in this area may remain a question. The debate is so complex and loaded that pinning down an area ripe for research is difficult. However, the impact and significance of many small scale hydraulic interventions on local catchment and basin balances translates into a set of technical and institutional challenges, as anticipated in Water Policy Briefing No.3. An examination of scaling effects across the peninsular basins, both in terms of hydrology and institutions, to determine the aggregate impact of closing and opening of local water balances would be warranted and could perhaps build on the water audit work carried out in AP and Karnataka.

In conclusion, the direction of ITP research related to India's river basin's needs to crystallise to the point where the groundwater component in river basin systems and the scaling of millions of small hydraulic interventions become a policy issue for technocrats and politicians. These instruments of the distribution of water equity across India's river basins need more recognition.

6.6 New Initiatives

Three 'guest' sessions in the 2004 Annual Partners' Meeting launched new research areas for ITP. They may evolve to become cornerstones of ITP's portfolio. Therefore, and as indicated previously, the Review felt it was premature to make an in-depth appraisal given the time frame over which this programme has been operational following recruitment of new staff. However, we consider that (i) significant progress had been made within a short period of time, (ii) this area of research has significant potential to understanding fundamentals in ecology and probably also disease epidemiology, as it operates at very different spatial and temporal scales, and (iii) the group had a critical future role to play within both the ITP theme and more broadly within IWMI.

Links with other irrigation reform initiatives—www.watercontrol.org?

Initiatives launched at 3rd Annual Partners Meeting

- Canal Irrigation at the Cross-roads
- Watershed Development in India
- Rural-Urban interaction: will work toward a synthesis paper based on broad view of transactions in the urban/rural transitions within India—a range of case cities will be studied.

Others for consideration:

- The significance of Integrated River Basin Management: building on leapfrogging work
- The evaluation of the SSP project

Two CGIAR Challenge Programme research proposals have been developed. “**Capacity Building through Action Research into Indo-Gangetic and Yellow River Basins**” and “**Strategic Analysis of India’s National River-Linking Project**”. While these are only proposals and there are no outputs to evaluate, it is worth evaluating their relevance in terms of future ITP work. The former may have little relevance since the target groups/beneficiaries for the project are the state officials, who have so far not shown themselves responsive to the groundwater resource depletion and degradation trends. The rationale for the latter is more persuasive and is probably an area where ITP can establish better credentials.

6.7 The publication record

Some 252 papers have been produced under 18 identifiable research clusters (Annex 3). Only a very few products have been brought forward into the current IWMI Working Paper and Research Reports. The bulk of the outputs have rather been focused on the production of IWMI policy briefs where ITP had contributed to 6 Briefs (out of a current weblisting of 11).

Water Policy Briefs

<http://www.iwmi.cgiar.org/waterpolicybriefing/index.asp>

Highlights and Comments

<http://www.iwmi.cgiar.org/iwmi-tata/index.asp?nc=8769&id=304&msid=99>

The conversion of ITP research papers into IWMI Research Reports appears to be low. Some of the ITP synthesis papers could be prepared and perhaps here there is room for taking a more active approach with certain research clusters and programming synthesis papers to contribute to IWMI Research Reports and Working Paper series.

It is clear that the communication strategy has relied more on the production of the locally published IWMI-Tata Comment and Water Policy Research Highlights which can be disseminated widely—of which there are 17 presently listed on the web site. While these publications have the imprimatur of IWMI, it may be felt that they are not part of the IWMI publication programme and the quality controls that apply to IWMI mainstream publications.

Results published in external publications are also limited at this stage. This is to be expected within the first phase of a research programme when results from original research have not yet been consolidated. However, links with other large scale groundwater initiatives appear to be good—the international engagement through IAH-UNESCO sponsored publications is a case in point.

How can all these individual papers be brought to a point? Is there a plan for more synthesis papers? (See the Gujarat synthesis of 30 ITP studies). Does the broad range of studies point to a more specific focus and thrust, e.g., groundwater irrigation and livelihoods? This programmatic design to the publication strategy needs to come out.

A comment solicited from Dr. Charles Batchelor, an independent consultant based in the UK but with extensive field and project experience in India, is worth citing.

While the outputs from the IWMI-Tata Water Policy Program are a useful contribution to the debate on water policy, there are ways in which program outputs could be improved substantially. These include:

- *More rigorous editorial control over the outputs. The standard of some briefing notes is quite poor and, even in the better notes, some of the writing is really quite sloppy.*
- *More attention referencing publications. The innovative thinking in, say, the recent publications of the “Fluid Mosaic” group is not reflected in IWMI-Tata publications. Also, some briefing papers selectively reference work that is itself marginal.*
- *A greater willingness to challenge the sanctioned discourses that have developed in relation to water harvesting, groundwater management, linking of rivers etc.*
- *A greater willingness to discuss sensitive issues that have a major bearing on water management such as corruption, cooking of water-related statistics, political interference, electioneering etc.*
- *Better handling of issues of scale. Statements such as, “groundwater recharge needs to be augmented, for example, by means of mass rainwater harvesting and recharge activities”, suggest a poor appreciation of the potential negative tradeoffs associated with intensive water harvesting.*

—personal communication from Dr. Charles Batchelor to J Burke April 2004

7. DETAILED EVALUATION OF THE ITP FIELD ACTIVITIES—NORTH GUJARAT SUSTAINABLE GROUNDWATER INITIATIVE (NGI)

NGI was born in a specific set of circumstances. The country, especially Gujarat was reeling under a severe drought. Clear and compelling evidence of a rapid decline in the ground water table in North Gujarat had been around for some time. Policy initiatives to regulate ground water use, (the proposed Bill to regulate groundwater, NABARD’s policy of restricting credit, the proposed Electricity Pricing Bill) were either stillborn or ineffectual. There had been reports of widespread people’s initiatives to harvest rainwater and recharge the aquifers. Government departments and NGOs had for some time been implementing a variety of rainwater harvesting and watershed development projects. The local Dairy Unions in North Gujarat were beginning to get concerned about the effect of declining groundwater table on the industry after almost a decade’s exponential growth (Banas Dairy grew ten-fold in a decade to 10 m l/day). Against this backdrop, ITP seized the initiative to put together a constellation of stakeholders—the Dairy Unions, scientific institutions, NGOs, key opinion makers and donors—to orchestrate an action project that would coordinate all the efforts, bring some science into the action programmes and mobilise additional resources.

In the event, the initial formulation did not proceed as planned. All the potential stakeholders, except the Banas Dairy, dropped out. Also, the utility of the ongoing, essentially supply side initiatives of harvesting rainwater and well recharge became suspect upon closer examination. ITP decided to forge ahead with a small exploratory action research project with its own resources. The project

was eventually supported by SRTT with a separate grant. From a proposed orchestration—in our view, more suitable—role, ITP has serendipitously moved into direct action research that calls for identifying, testing and adapting technologies and its extension among farmers. The focus has also shifted from the earlier supply side construct of augmenting groundwater to managing water demand through an integrated (agricultural) land and water management package of water saving irrigation technologies (micro-drip and micro-sprinklers), soil enhancing techniques (vermi-compost) and changes in farming systems (horticulture, vegetable cultivation). Experiments on well recharge are also continuing but demand management forms the core. The cottage scale water treatment technology using reverse osmosis seems to have exciting prospects to ameliorate drinking water quality problems.

There is as of now sporadic micro-level evidence that the water saving technologies may have potential to reduce water consumption per unit biomass produced. Experimentation is still proceeding. Questions remain about costs and a financing model, (micro-) site specificity of the technologies (spacing, flow rates, etc.) and labour intensity (especially in case of vermi-compost). The organisation of water supply is a potential constraint as partnerships and other communal/market arrangements limit farmers' control over water. The larger questions, however, are to what extent is NGI addressing the macro-construct that drives the present resource management/livelihood strategies in the region? How would an appropriate policy regime be stimulated? And what is the institutional mechanism to expand outreach once viable packages are developed?

The action-research project would appear to have made a very quick start from the inception of its pilot programme in September 2002, with establishment of the demonstration farm just outside Palanpur and the uptake of micro-irrigation on some 30 farm sites across 4 talukas in Banaskantha district. The initiative has been the subject of a first year review in late 2003 and this evaluation is not intended to second guess that review.

The key features of the initiative have been a shift from an emphasis on augmenting water availability, (tank rehabilitation and well recharge), in favour of an emphasis on the adoption of new irrigation technology by farmers seeking to both increase the reliability and biomass of fodder crops and diversify into horticulture, (notably citrus), and castor oil. The original proposal was sub-titled, "Proposal for creating a poverty-focused sustainable groundwater management regime". This may have rather over-stated the actual potential for improved irrigation practice to impact poverty (and also result in water conservation).

In seeking to improve the uptake of new technologies, it is important to understand the drivers of groundwater management. The production and marketing of milk appears to be well organised by the Dairy Union who supply into the 1m l/day dairy in Palanpur from some 1300 village co-operatives. Guaranteed prices offer farmers a good surplus over production costs—but on the basis of subsidised energy for groundwater. It is estimated that milk production accounts for some 70-80 percent of the groundwater economy and will continue to dominate the demand for water in the State. However, there is an expectation among project staff that contract farming will expand, as buyers provide seeds and other inputs and offer stable prices. The potential in local markets for diversified horticulture production under buy-back contracts remains to be seen. Otherwise there appears to be a significant price risk with local market prices showing high volatility. Perhaps the advent of more food processing capacity in Gujarat, (and this is a growing sector in agriculture) will be able to absorb more production but this would have to be accompanied by much better quality control in post-harvest processing. Good farm management will be essential to meet these more exacting requirements and it may be that only a portion of the emergent farmers can attain these standards.

The experimental farm appears to be highly successful, not only in its rapid establishment of mulching and irrigation trial plots, but as a demonstration product that has received visits from nearly 1,000 farmers within its first year of operation.. The trials initiated at the experimental farm provide a wide menu of technology choices from which farmers can take their pick. For example, it is reported by farm staff that, when farmers are seeking to diversify into orchard crops, farmers first question the agro-ecological suitability of their land, then sapling quality and only then make a technology choice for micro-irrigation.

In the field, it is notable that the State programme of subsidised sprinkler assistance to farmers did not seem to be that effective. Irrigation pipes are being used for delivery of border irrigation of wheat, rather than servicing sprinkler sets. With the arrival of the NGI, there is some evidence that farmers are beginning to re-visit their use of government subsidised sprinkler sets and integrating these systems with drip technology. Inter-cropping of vegetables seems to be important. Recouping outlay on drip seems to be no problem if enough vegetables can be produced. The local market appears to be strong—but perhaps only for large producers. The project needs time to compile the initial results and find time to go back and monitor the late adopters and see if their organisation has improved. It is general on-farm management that seems to be the key in successful adoption of drip and micro-sprinkler technology to service fodder requirements and produce horticultural crops for the diversifying local markets. In this regard, ITP need to negotiate an extension from SRTT to allow results from at least two annual cycles to be monitored (ideally three). It should be borne in mind that the project is effectively doing the research (lateral spacing for alfalfa, pressure requirements for low-head systems etc.), field extension and market development as a ‘turn-key’ initiative. The young team are cohesive and well motivated, helping to act as extension workers and technical advisers. But how the markets for the products of drip evolve will also be interesting to watch. Will a ‘plastic revolution’ emerge?

Clearly, dairy seems to have emerged as a key element in the local agrarian economy. *Inter alia*, it provides regular, assured income; thanks to the insurance cover for animals and the fodder camps organised by the Dairy Union in periods of drought, dairy is a low risk venture unlike agriculture; dairy complements agriculture as it helps add value to crop residues and evens out cash flows across good and bad years; it uses women’s labour which has low opportunity costs. The first order challenge therefore would seem to be to move away from the present field crops-fodder-dairy regime to an as yet unknown alternative that would drastically (rather than marginally) reduce water use per rupee of income. Would horticulture be such an alternative? Would livestock rearing around tree fodder be promising? No one really knows, but there is, it seems, a need to carry out this sort of analysis of the macro-forces at play. There is, in the same vein, a question of private vs. public land.

Within the dairy-agriculture combine itself, alpha-alpha, the main fodder crop aggressively promoted some years ago by the Dairy Union itself and perceived to be the main culprit, apparently consumes only 28 percent of the irrigation water; the balance is used for other field crops. Therefore, even a 70 percent reduction in water use in alpha-alpha as reported by one farmer would lead to less than 20 percent overall savings. Are there alternative fodders that are more efficient users of water? Are there cattle varieties that are better converters of the virtual water embodied in fodder and feed? These, in any case, are questions in the same genre—of tinkering with technology within an overall framework of resource management/ livelihood generation—as the ones NGI is attending to.

There is evidence of marginal agricultural land being brought back into production under drip in some cases. This may be expected to result in encroachment on public waste-land and marginal expansion of irrigated areas within the district. However, the impetus that can be given to local agriculture and water conservation through tank cleaning/rehabilitation and water harvesting, as

anticipated in the original project design, may be limited. These public works approaches, in a farming community that have become conditioned to on-demand water services from private (and subsidised) borehole production, are unlikely to be effective. Equally, the process of recharge through thick layers of silty sands on an undulating basement topography is hard to predict locally and it may be that the natural style of recharge is as efficient as can be. Certainly recharge process in such semi-arid terrain needs to be verified by isotope analysis to check the actual proportion of rainfall that may be expected to infiltrate (through direct and indirect recharge processes) into local aquifers.

Then there is the question of public policies. A potential policy lever that may drive some water sense among farmers is energy pricing. Other needed policy changes are about incentives for using water saving technologies, incentives/disincentives that would influence farming systems and investments and institutional arrangements for better management of common property land resources. Can policy makers be tempted to dare a move away from grandiose, but politically low risk, schemes of inter-basin water transfers to the politically high risk construct of coping with a given ecology?

However, the shift of emphasis for the NGI away from supply management to demand management is important and shows that the project team are capable of adapting. It is apparent that the cropping areas will probably remain the same, (with some possible expansion of orchards), and cropping intensity will rise. However, overall water consumption is expected to decrease. Reduction of further demand will probably only occur with the introduction of marginal power tariffs across the board. The behaviour of farmers with new connections will be interesting to watch.

Finally, there is the practical question for ITP of handing over. This was not an issue in the original plan of orchestration, which did not work out. Once a viable “package” is available, how would it be promoted? Apparently, some NGOs are already showing interest. ITP needs to look around more aggressively for potential agencies/mechanisms for the scaling up stage

8. PUBLICATION AND COMMUNICATION STRATEGY

IWMI’s original grant proposal to SRTT argued that, “India needs to evolve and implement a coherent, nuanced water sector strategy based on applied learning and multi-disciplinary scientific knowledge building. Skilful initiatives are needed to engage government, NGOs and people in ongoing analysis and discussion of alternative courses of action in dealing with these issues. Initiatives are also needed to catalyze planned responses in a proactive mode that keep problems for blowing up into crises.” A key objective of the Program, therefore, is to effectively communicate the research results to water sector decision makers. All the four Program Components—regional researcher workshops, regional policy consultations, production and distribution of discussion papers and the annual reviews—relate directly or indirectly to communication and dissemination of research findings to water policy decision makers at various levels. This section outlines the activities undertaken, assesses their effectiveness and recommends corrective action.

The ITP publication strategy is predicated on an evolution of individual research reports (or synthetic research reviews) to IWMI Research Reports and eventual distillation in IWMI Policy Briefs. This progression has resulted in six IWMI research reports under IWMI’s own communication programme and 11 IWMI Policy Briefs *all bearing the IWMI-Tata Water Policy Program* imprimatur. In addition, 14 IWMI-Tata Water Policy Research Highlights have been produced to emphasise a specific research output and three IWMI-Tata Comments have been produced when the results of a body of research are reviewed within ITP. A full listing of research outputs and associated publications are given in Annex 3.

In the context of communication, it is important to point out that the number and the range of research publications produced form a tremendous resource for the preparation of communication and advocacy materials. The total research publications include 75 papers that have been presented at seminars, workshops and conferences, seven have been published or accepted for publication in journals and four have been produced as book chapters. All of these represent an attempt to communicate beyond the ITP network, or presumably, the even wider IWMI network.

The Comments and Highlights are pre-publication papers prepared for ITP's Annual Partners Meets. All of them are also posted on the IWMI-ITP website for wider circulation. They are often compilations of work in progress. Out of the 17 Comments and Highlights, 10 have so far been produced as completed research reports or papers.

A few completed ITP research reports or papers have been peer reviewed by IWMI and then published as IWMI Research Reports (six) or as Water Policy Briefing documents (eight until March 2004 and 11 by the end of April 2004). The latter represents the highest level of IWMI's research outputs designed specifically to influence decision makers. The first issue appeared in early 2002, though it was planned to produce six or eight of them in the first year (2001) itself. The Policy Brief presents good scientific analysis in an interesting and readable form. For a fuller treatment of the subject a person can refer to an IWMI-Tata Discussion Paper (10 produced so far) or an IWMI Research Report. Copies of the Water Policy Briefing have been mailed directly from IWMI's headquarters in Colombo to members of the Lok Sabha, the Lower House of the Indian Parliament. They cover a wide range of issues such as, using large canal irrigation systems for recharging groundwater in the Indo-Gangetic plain, the socio-ecology of groundwater in India, building high performance knowledge institutions for water management, repair of tanks and the energy-irrigation nexus among others.

Beyond the IWMI publication cycle, the results of some research have been submitted and accepted in international peer review journals and national Indian technical journals. The one major publication outlet that has been exploited is the Economic and Political Weekly (<http://www.epw.org.in/showIndex.php>). This EPW has wide readership among India's policy makers and arguably is the most direct path to the ITP target audience.

In addition, a groundwater book covering South Asia is planned. It is anticipated that this will emphasise several facets of groundwater in India

- assessment of the socio-ecology (including an analysis of groundwater and livelihoods in the Ganga basin)
- development of a groundwater governance toolkit
- a perspective on public health issues associated with groundwater: arsenic and fluoride

These publication efforts notwithstanding, some questions on the current publication strategy are warranted. In the case of the IWMI Research Reports and Policy Briefs, it is assumed that an internal IWMI publication guidelines and approval process is applied. However, are there any firm criteria for deciding when a set of papers constitute the basis for a synthesis paper or when an ITP Research Comment is appropriate? Or is it reasonable to expect a more ad-hoc, opportunist approach to publication? The Review senses that the policy targets in India's water debate will come in and out of focus and that a publication strategy that is capable of responding to such moving targets will be more effective. Visibility over such debates as the inter-linking rivers initiative or tank rehabilitation needs to be carefully judged and used effectively to project research findings where

they are sufficiently mature. This should not, however, involve a compromise between established water science facts or rigorous socio-economic analysis and the rhetorical debate. What is abundantly clear is that given the rather bleak future for India's water resource (despite apparent respites following good monsoon rainfall—as in 2003), ITP does not have the luxury of waiting for the results of rigorous programme of conventional scientific research. A call on the level of precision has to be decided upon when ITP releases research outputs—is the temporal and spatial resolution of hydrological and socio-economic data sufficiently precise to justify a research conclusion?

The communication of the research results to a target audience is perhaps the most critical link in achieving impact. Dissemination is comprehensive enough with all highlights and comments going to all Secretaries and all water related officials. However, there has been limited success with government involvement.

- Mailing lists: There is limited use of this medium, with only about 260 names on the list in the Anand office and mailing of the Policy Briefs to Lok Sabha members from Colombo,
- Website: web hit rates are high
- Publications in Economic and Policy Weekly
- Donor and Policy workshops held in Delhi—but government participation still a problem.

Therefore, in the last half of the program, attention will need to be paid to positioning the major published outputs with regard to the water policy debate in India. The evidence from the series of ITP Annual Partner meetings is that Indian government representatives are being progressively, (if slowly), co-opted but that the bulk of the meeting audience remains in the research and NGO sector. The ITP outputs are mailed to all the relevant State secretaries for water and their respective departments. This audience needs to be widened over the next year to ensure a broader and deeper target audience for the major outputs anticipated at the end of the 5 year programme cycle. To do this may require riding upon several water debate 'waves' in order to attract attention and visibility. The inter-linking rivers initiative may be one, others need to be locked onto. At this stage, it is recommended that a communication strategy to deliver the anticipated outputs of the 5 year programme be developed.

Website: The ITP website (www.IWMI.org/IWMI-Tata) is hosted by the main IWMI website. It is straightforward and displays all the 252 research publications of ITP, including the papers and presentation files of the APM. Though the site is not updated regularly, it does attract attention. ITP staff claim that there have been more than 4,000 downloads of papers on gender issues, with irrigation papers a close second.

Special Events: The Annual Partners' Meeting regional researcher workshops and policy consultations are important events designed to share ITP's research work with a variety of stakeholders, including policy-makers at various levels.

The APM is the high point of ITP's annual calendar of activities. It was meant to be an annual review of the Program's research work and to provide ideas for the broad research agenda for the new year. It has evolved into a popular mechanism for directly communicating the research findings to a select group of stakeholders, including students, research professionals, academics, NGOs, journalists, activists, administrators and other senior government officials. Its popularity has grown. There were 137 participants in the 2004 APM against 70 in the 2002 APM. Each successive year, the exercise becomes more complex with more papers, more people and more sessions. Papers presented at the APM are also made available on CDs.

The regional researcher workshops were originally meant to develop research ideas by ‘synthesizing advanced scientific work.’ But they also became communication events, where ITP Program staff and the partners shared their research work. In contrast to the APM, however, this activity’s importance has declined. The number of such workshops decreased from four in 2001 to three in 2002 and only two in 2003 (till June 2003). The regional researcher workshop in January 2003 was organized a day before the APM to take advantage of the presence of a large number of APM participants.

The concept of a policy consultation is to present ideas for action to decision makers and opinion makers in a workshop setting that ‘skilfully sets out the complete logic and evidence underlying them.’ Like the researcher workshops, this activity was pursued actively in the initial years but then it tapered off, leading to a large pool of unspent funds. About four or five regional policy consultations were held in 2001 and 2002. Most of them were organized in Gujarat on subjects related to groundwater. Among the participants were farmer leaders and NGOs from Gujarat. ITP researchers, however, have participated in policy-related events organized by other agencies and presented their research findings before senior government officials, particularly in Gujarat.

Media Coverage: Data tabulated by the ITP staff shows that 44 articles have appeared in the print media based on the research done. More than half of them, 26, are in national newspapers, though some have appeared only in the regional editions. The remaining articles include two in international publications and the rest in the vernacular ones. The electronic media has occasionally covered ITP activities.

Extension and Outreach: The North Gujarat Initiative (NGI) project has developed extension and outreach activities, targeting the local farmers. Its demonstration farm and the subsidized field replications by selected farmers have given the local population a chance to observe the value of low cost, water-saving irrigation technologies, such as micro-drip irrigation systems and mini-sprinklers along with organic farming. International Development Enterprises, India (IDE), whose micro-drip technology is on display at these locations, claims that over 12000 of its kits have been sold in North Gujarat as a consequence. In 2002 and 2003, NGI organized several events including study tours, training programs and discussion meetings with local farmers. In 2003, about 700 farmers attended 42 village meetings organized by the NGI staff. A film has been made by VIKALP, an Ahmedabad-based professional group, on the advantages of micro-drip irrigation, using a fictionalized story line.

Emerging Issues: In a program like ITP, the initial years focus on applied research, which then provides the basis for later communication and advocacy materials. Logically then, the communication effort will lag behind the research effort, but will grow with time. But the budgetary allocation for dissemination (IWMI discussion papers, regional policy consultations and researcher workshops) was equally distributed over the five Program years. Since there was little to communicate initially and no communication strategy had been worked out, a large portion of the funds for the regional workshops and consultations remained unspent, though there was a small excess expenditure under the direct dissemination head (IWMI discussion papers). Consequently in October 2003, the overall Program budget was reallocated with significant increases for APM, research costs and IWMI discussion papers expenses, while the allocations for the regional researcher workshops and policy consultations were cut back by over two-thirds. The drastic cuts in the communication related activities, may be a bit too excessive, if the Program later wishes to impact decision making and create a broad base for concerted water sector research and action.

The stated aim of ITP’s communication and dissemination effort is to effectively transmit ‘convincing messages’ distilled from research outputs to various levels of decision makers. Presumably, the goal is to provide sound knowledge support to policy makers. A variety of people from housewives to farmers, senior researchers, politicians—big and small, political parties, organized groups of labour, the corporate sector and NGOs and other opinion-makers try to influence water policy making. Government officials at various levels—scientists, engineers, administrators,

senior officers and department heads—prepare policy drafts which are vetted by the ruling political leadership and debated by legislators before they finally become policy documents.

An effective communication strategy must, therefore, aim to reach a large cross-section of possible actors in the policy arena, but certainly provide critical knowledge inputs to the relevant officials in government. For this a variety of methods and instruments may be used. At first glance, it appears that ITP has tried a variety of communication approaches. But most of these are directed at researchers and NGOs. Only two activities—publication of Policy Briefs and regional policy consultations—are aimed directly at decision makers. The latter has now been severely pruned. Media coverage too indirectly influences decision makers.

There is scope for expanding the reach of the dissemination effort directed at the researchers. The number of papers published in journals and books is less than a dozen. Some improvement on this score will occur later in 2004 when six or seven papers will be published in the *Economic & Political Weekly*, a very widely read and respected journal among social scientists.

In Conclusion. The APM and the extension/outreach activities of NGI are the strengths of ITP's communication and dissemination effort. Most of the partners whom the reviewers met were fulsome in their praise for the efficient and courteous management of a complex affair like the APM. While some suggest further widening it, others favour limiting the participation to those who are more likely to use the knowledge gained at the APM. There is some merit in expanding it, or being more selective instead of reducing its scale, if ITP wishes to broaden the base of active players in the water sector. The government is still missing from the APM. Its participation can be enhanced by using the regional researcher workshops and policy consultations as relationship building events. But the budgetary cuts on the latter will require a highly focused and selective approach to the choice of issues and participants for the policy consultations.

ITP also needs to draw lessons from the NGI outreach experience. Rather than initiating only action research projects, ITP can identify existing locations for good water use practices and support agencies to organize extension and outreach projects there.

The reporting of ITP's work in the print and electronic media is low and sporadic. It needs to be significantly improved, given the importance of water for the future security of the country. Most of the media coverage is bunched just before and after the APM. But advertising experts assert that messages have to be repeated to be more effective. Annual events like the World Environment Day, World Water Day and Earth Day, along with local water related festivals need to be used to ensure regular coverage of ITP's work. To ensure widespread coverage, ITP must establish working relations with media-centric organizations in the country. Of particular importance are the Indian Federation of Environmental Journalists, Sarvodaya Press Service, which caters to small Hindi newspapers, and other media agencies, like Jal Seva in Gujarat, that can provide links to the regional press.

ITP has so far mainly relied on research papers to disseminate its work. It needs to seriously consider the publication of books, which are usually more easily purchased by libraries. As part of an effort to build a vibrant water sector in the country ITP may consider publishing a Status Report on India's Water Resources every two or three years. Given the reach of ITP's research network, it could be an important citizens' initiative. The release of such publications can be targeted at opinion and policy-makers.

Finally, ITP may consider promoting the use of innovative traditional and modern techniques, as a part of public education. Maps, charts and posters produced using GIS technology can be used effectively. Folk communication methods have an enormous potential to reach the public at large, with convincing messages, in urban and rural areas. Organizations like Kerala Shastra Sahitya Parishad or the Jan Natya Manch (Delhi) have carried out campaigns on environmental and social themes using folk media. Almost every Indian state has at least one such organization. Given the present budgetary allocations, additional funds will have to be mobilized if the IWMI-Tata Program chooses to promote or deploy such efforts. Their effectiveness can be tested in one or two pilot cases.

The issues raised here indicate weaknesses in the Program's communication and dissemination efforts due to the absence of a coherent communication strategy. There is either no communication expertise within ITP and its partners, or it has not been tapped so far. The absence of such expertise has been most keenly felt on the media front.

9. PROGRAMME IMPACTS

What is the function of research in terms of policy impact—should it 'whistle-blow' or dispel technical and institutional myths (e.g., rainwater harvesting, climate change, IMT, etc)? Given the extreme degradation of India's natural resource base and the dependency of the rural economy, ITP does not have the luxury of time and achievement of high levels of scientific precision before it can publish. If the politicians and administrators bury their heads in the sand, then science should not be guilty of the same crime.

The likely agricultural and rural outcomes for India will continue to be driven by non-negotiable population and natural resource limits. Political whim and hydraulic technocracy will influence to a degree, but it is important to research the right drivers of change. If research is focused too closely on water, it may miss critical movement elsewhere. There is no monopoly on knowledge in India

The broad feedback from the field is that:

- 1. ITP has been prolific in research that is of high quality, is presented crisply, is produced very fast, therefore topical and engaging,*
- 2. ITP has widened the horizons and stimulated widespread interest and often enabled (or even "pushed") NGOs into documenting and analyzing their experience,*
- 3. ITP is looked upon as a resource institution by many—practitioners (particularly NGOs) seek inputs for training, advocacy (as a neutral agency) and problem solving, while researchers seek inputs for building research skills and methodologies,*
- 4. ITP comes out as a youthful, energetic, flexible and approachable group,*
- 5. The Annual Partners' Meet (APM) is managed very well, is a unique professional event and is very useful,*
- 6. ITP is a source of information and knowledge, and overall,*
- 7. ITP must be continued.*

and there appears to be a wide array of appropriately directed research. The fundamental problem is being able to make firm recommendations at state and national level on the basis of many individual studies that will not have used uniform analysis—particularly with regard to sampling. Such sampling may be compromised by the interview technique—asking questions like “how much water do you sell” are unlikely to be met with the truth, let alone a uniform response. This is particularly the case with groundwater where each point interview is relatively insignificant in relation to overall aquifer impact but highly significant in terms of neighbouring farmers. ITP researchers stressed that they have learned that they need to be as systematic as possible in the social surveys if meaningful comparisons are to be made.

The program process—comprising of setting research/ action research priorities and agenda; searching for, identifying and choosing partners; monitoring and course correction; stimulating intellectual exchange; triggering institutional (change) processes; and creating/setting standards and bench marks—has evolved over time. To a large extent, the process was to be guided by the on-going review protocol of the SRTT grant that envisaged preparation of mutually agreed annual work plans and quarterly updates of those plans; and specific “process-oriented” tasks, namely, researcher workshops, policy dialogues and annual review to be carried out every year. It was envisaged that ITP would “choose a thrust area every year ... while sustaining low intensity engagement in the rest (of the six anticipated IWMI priority areas)”. The thrust area for the first year (2001)—Sustainable Groundwater Management and India’s Livelihoods Security—was already spelt out in the ITP proposal. There were, however, no process details spelt out in the proposal or the grant letter, for example about how research priorities would be set, how collaborators (individuals and institutions) would be identified and selected, the nature of engagement ITP would have with collaborators, etc. What was envisaged

The critique offered by the people met by the Reviewers is that:

1. *There is too much focus on Gujarat, analytical rigour, groundwater and irrigation,*
2. *Research studies are of varying scope as well as quality, and sometimes lacking in strategic coherence,*
3. *Many issues important in the Indian context, such as domestic (including drinking) water, water quality, the land-water-forests nexus, inter-State disputes, floods, canal irrigation, PIM, political economy, gender and social issues are not adequately dealt with,*
4. *There is a need to create participatory mechanisms to generate research agenda so that there is a wider ownership of ideas,*
5. *APM has become too cumbersome, with little scope for quality discussions and leaving out participants from the vernacular,*
6. *There is no coherent strategy for policy impacting and there is little to show on that front,*
7. *The experience of networking has been mixed with participation skewed in favour of researchers and NGOs and very little participation from government,*

was that IWMI and partner institutions would develop and fund research proposals within the approved annual work plan. The annual work plan was to, inter alia, spell out the broad theme of research planned for the year and the selection criteria and approval process for individual and institutional grants and consultancies. This arrangement, it was expected, would provide IWMI strategic and operational control over the research program, enable it to develop a broad national water research and policy network and ensure accountability of IWMI to SRTT and the Indian public.

The annual work plan and the theme for the first year were already spelt out in the proposal, though without process details regarding identification and selection of potential grantees and consultants. In the event, specific activities and collaborations were developed on the basis of inputs from the extensive professional network the Principal Scientist had among researchers, research institutions and NGOs. The idea of advertising for research proposals in the Economic and Political Weekly was dropped as it was felt that ITP could be deluged with requests and could be seen as a grant making entity. In the second year, the annual planning workshop was activated as envisaged in the proposal. Almost all research funds were committed by involving potential partners, besides ITP staff, SRTT and invited donor representatives, all of whom participated in the annual planning workshop.

On the basis of the experience from the first full scale planning workshop, which we shall touch upon later, participation in the annual planning workshop now is limited to ITP staff, a few collaborators selected by ITP, invited donor representatives and SRTT representatives. ITP staff prepare concept notes after the Annual Partners' Meet to identify gaps in the research agenda and flag research areas that need to be added to the topics already being supported. Some 20 concept notes were prepared this year. These form the basis for discussions in the annual planning workshop. Only about 25 to 30 percent of the research funds were allocated this year at the workshop and the balance would be allocated through the year as and when suitable proposals were received.

An informal core group has now emerged, comprising of, besides the Principal Scientist, Drs. Sanjiv Phansalkar and R. Shaktivadivel. All program decisions are essentially made by the Principal Scientist with inputs from ITP staff and topical consultations with Drs. Phansalkar and Shaktivadivel.

IWMI's role as spelt out in the proposal was "to catalyze and support partnerships and collaborations with and amongst Indian institutions as the key mechanism to operate the Program", while acting as the "custodian of the governing ideas in the program". The budget, too, reflected this, with 72 percent of the funds earmarked for "research and consultancy grants, fellowships and consultancies", together called "The SRTT Fund for Grantmaking". Thus, the proposal lays a great deal of emphasis on partnerships and networks, and reaching out strikes as a key objective of the proposed endeavour. While the program continues to seek inputs from the research, NGO and (to a limited extent) policy fraternity, principally through the mechanism of the Annual Partners' Meet, the process is now entirely directed by the ITP staff; perhaps a broader and stronger participation of the fraternity of researchers, policy makers and practitioners (government and NGO) was originally envisaged. Clearly, there has been a shift in the governance and management process from what was loosely envisaged in the proposal and was indeed attempted in the second year of ITP. Several tensions may have led to this shift:

- Broad based consultation in the second year raised expectations among participants of receiving grants. Besides obvious budgetary limitations, ITP did not want to be cast in a grant maker mode.
- Due to the strong science and technology orientation, hierarchical structures and high costs of mainstream science and technology research institutions, partnerships could not be developed with them (while good partnerships were developed with NGOs and individual researchers).

- ITP had limited staff capability to monitor and administer a wide array of collaborations developed through an “open” consultative process and it was not able to envisage or create a review mechanism rooted in the network/partnerships themselves. For example, almost 80 percent of the research grants made after the first full-scale annual planning workshop fell way behind schedule and could not be presented at the Annual Partners’ Meet as scheduled.
- The short time horizon for projects (e.g. six months to a year rather than two or more years) keeps most partners out of the loop as typical research institutions tend to have longer time horizons.
- The facility of a “rolling plan”—whereby the annual plan is revised every quarter—has introduced a degree of tentativeness (though the SRTT grant did not obviously require that plans necessarily be changed every quarter); it keeps the door open for accepting any promising proposal any time during the year.
- A self-inflicted construct of the Annual Partners’ Meet as a forum for presenting “finished research” or “cooked results” calls for a degree of control over content and outputs and a racy pace that is perhaps not possible through a wide and diffused network. To an extent SRTT’s anxiety, stated or perceived, about concrete results and “models” that lead to action, and the peer pressure within IWMI for scientific rigor, add to this tension. Presentations must not only be complete and meet the standards of scientific research but also give concrete pointers for action.

“Field building”, implied in the stated objective “to develop a broad national water research and policy network”, calls for an orientation and skills very different from those required for conducting high quality research. Time horizons are long, outputs may be messy, there is lack of concreteness, progress is in fits and starts, it is difficult to measure effectiveness and there is little control. While we have no doubt that ITP is intuitively committed to field building, for that truly is the only way to deal with long term challenges—such as the management of natural resources—faced by nations and societies, the governance and management processes that have so far unfolded betray a strong concern for here and now outcomes. There remains palpable tension between the project circumscribed by the present grant and the program that inspired ITP. We recommend ITP to shift gears now to the program of field building. The two are not mutually contradictory; only the emphasis, processes, pace and parameters of measuring success differ.

One possible way forward is to create an Advisory Committee comprising of individuals of standing in relevant fields, such as water, livelihoods, natural resources et al to guide the governance of the program. The Committee would be most useful if it had individuals from the fields of research, policy as well as action. In a way, if ITP were an independent organization, the Committee recommended here would be akin to its Board of Governors.

ITP would also be well served if it had a constellation of three to four senior persons to act as a sounding board to the Principal Scientist. Two such individuals, Drs. Phansalkar and Saktivadivel are already on board, though around specific research themes of their interest for which they have taken responsibility rather than broader issues of governance and management of the entire program. One or two more individuals may be included on the basis of shared interest in the field.

If ITP were to expand the scope of outsourced research as a way to expand the network—to build and nurture the field—it may be useful to recruit a senior staff person or consultant to assist the Principal Scientist in the task of building such a network.

With regard to the technical aspects of the programme, it is sensible to ask what are the best set of tools to approach such natural resource/socio-economic mixes. Much of the point data related to groundwater and groundwater use is imperfect data, fraught with errors and approximations. Therefore, some systematic thinking about the role of sampling multiple locations and remote sensing data needs to be given. There is evidence of a lot of local discrete analysis, but macro-analysis is sometimes lacking, although such synoptic perspectives are necessary in order to derive policy analysis and policy outputs.

Finally, the original objectives of ITP would be well served with a longer-term perspective that would stimulate a search for a wider array of mechanisms to develop partnerships and build capabilities for a “meaningful engagement with the problem (of water)”, avoiding the fragmentation of research efforts. But overall, much more clarity needs to be given to the programme design and not just for the Reviewers to follow the relevant dimensions of ITP work. The publication program needs to be evaluated to reflect the relative weight of the research efforts and assess how many research areas are appropriate within an annual work program.

10. ITP OFFICE STRUCTURE, ROLES AND RELATIONSHIPS

A staffing list is presented in Annex 4. The current staff list offers a mix of backgrounds with emphasis on policy and economics but some engineering skills at senior levels. The motivation among staff in Anand and in the field (under NGI) appears to be high. The majority of the staff are young post-graduates and have a strong interest in building a track record with an international organisation before preparing for PhD programmes. Intellectual exchange appears to be vibrant. Weekly internal seminars are held and local institutions (IRMA, universities etc.) are invited to attend.

The ITP office infrastructure is generally good, but the production of high quality mapping and line figures may require some additional investment in printing equipment and software to allow for more rapid and flexible dissemination of outputs. Office accommodation is congenial and appears to invite good staff inter-action.

The relationship of the ITP to IWMI’s research themes is driven through the IWMI India office in Hyderabad and the ITP outputs can be categorized in terms of these research themes. However, it would be advisable for ITP management to map research outputs into a set of sub-themes that reflect the specific thrusts of and probes of the relationship to the TATA Trust outputs and agenda. The Trust are looking for practical outputs with a view to building up practical projects (NGI and CInI). SRTT seeking to reassure its mainly corporate trustees that the input is paying off. There appears to be a degree of tension here, although there is a tacit understanding that the IWMI funded work on groundwater across Asia is brought to bear on the issues facing groundwater management in India.

Funding sources—role of institutions (particularly international) may not be suitable for types of research. Bees in bonnet keep changing.

11. LONG TERM PERSPECTIVE

The issues ITP has sought to address are necessarily of a long-term nature. The “red alert” sounded by various IWMI studies and others about the water situation in India should evoke a sense of great urgency—even alarm—among thinking people. In formulating responses, however, it is imperative to factor the complexity of such issues. These are enmeshed into the social, economic and political dynamic of the society, much of which in India is still in deep ferment. Basic institutions

are still evolving. Existing operating structures are unwieldy, outdated and rapidly losing credibility; new ones, such as for local governance, have been barely seeded. As a consequence, there is great hiatus between practice and precepts, policies and action. Inevitably, even as one finds “solutions” for a problem through research, action-reflection and dialogue, other problems emerge. Therefore, while looking ahead, it would be useful to gaze beyond the remaining period of the grant, or even beyond the possible second phase indicated in the SRTT grant. The past three years of the Program may be thought of as exploratory, in the nature of a window into the future of possibilities; the remaining two years, by the same token, for positioning ITP for the future.

“What are the possible roles?” is a question the three protagonists—SRTT, IWMI and the founder leader of the Program—alone can answer, using whatever process they may choose; the Review can at best flag a few possibilities.

One possibility, a trivial one, is to close at the end of the current life of the grant—end of 2005. ITP has produced some very stimulating research papers, kicked off a potentially exciting idea in CInI, planted the seed of a potentially huge action coalition in NGI, stirred the pot quite vigorously to kindle many an appetite, created innovative mechanisms for professional exchange and initiated/trained a corps of enthusiastic graduates into water related research; others may carry on from here even as the “I” in ITP merges into the IWMI office at Hyderabad and the “T” goes about supporting research and action projects at large within the “water-sustainable livelihoods-wellbeing” framework.

It is obviously not a rational proposition; no one the Reviewers met thought it was.

A second possibility is to become a “centre of excellence” in water related research. It would essentially mean conducting applied water research in-house and through tight collaborations with other researchers/institutions. The focus of research would be the so-called “soft areas”—social and behavioural sciences rather than physical sciences and engineering, though there would be close collaboration/interaction with the latter. The research could be disseminated through a variety of means, including a forum like the APM, publications, website, etc. As a centre of excellence, ITP would also have exchanges with scholars, be a source of ideas and information and set standards that others would emulate, but of their own accord. Policy makers, policy advocates and practitioners may also occasionally consult such a Centre to illuminate issues, generate options and prepare strategies.

A good part of ITP today has so evolved. All the research done in-house and a good deal that is farmed out under the supervision of the informal core group is akin to what a Centre would do. Even the action-research is within the ambit of such a Centre.

A Centre need not always become an ivory tower. Normally, a few would take note of it, get influenced, but more would ignore, for that is in the nature of normal human exchanges. On the other hand, it could, as ITP has done so far quite successfully and elegantly, be noticed by more rather than few through the APM and the web. In this context, the experience of BASIX, Hyderabad in conducting Quarterly Reviews is instructive—a large number of people in the field of micro-credit and livelihoods promotion pay their way to attend these quarterly events that focus only on BASIX’ work. If a learning event is created and if people know they would learn something of value, they come of their own accord and at their own expense. In a sense, mountains (of human lethargy) do come to Mohammed (of enlightenment, creativity and excitement). ITP, too, is beginning to have a similar experience in a small way. But the core agenda of such a Centre is “doing things itself”; stimulating, nurturing and building others is a by-product. If mountains come, they do, if they do not, then they do not; which mountains come and what happens to them, similarly, does not matter!

The third option is to be a catalyst and resource institution. This it seems was the focus of the ITP proposal, especially the catalyst part. Time and again the proposal talks of two themes—engaging Indian institutions and providing a window into international best practices: “IWMI recognizes that its work can produce far better impact if ... it is undertaken in collaboration with a broad alliance of Indian institutions and researchers”, “the Program would be ... conceived and implemented by an alliance ... with a broad spectrum of Indian institutions”, “... to catalyze and support partnerships and collaborations ... as the key mechanism to operate the Program”, etc. As a catalyst, the focus would be on “field building”, the field comprising of researchers, practitioners, communicators, activists, policy makers and people’s forums. The core task would be orchestration, capacity building, leveraging, alliance building, setting and improving standards, rather than research outputs; the key style would be enabling, and catalyzing rather than doing. The basic premise here is that the problems are huge and pervasive and require action from multiple agents, at multiple locations, in chorus and in an on-going way.

The resource agency role could be vis-à-vis researchers, practitioners as well as policy makers. Several people the Reviewers met spoke of this role. It is possible to combine these, though capacity building of practitioners calls for a more decentralized presence and there may be others better placed to perform that role, except in the case of those engaged in advocacy.

ITP has done some of these, especially the catalyst part, but it clearly had underestimated the effort needed in stimulating fruitful action. Perhaps the “field” turned out to be more barren than expected. As a result, more of research has tended to be done in-house or closely supervised; mechanisms for exchange have been coalesced into the APM where participation is open and broad based, therefore very good (as opposed to workshops for policy makers where participation is notoriously low), and fellowships have largely been used for in-house research rather than as a way to stimulate water research outside.

The situation has not changed from the time the ITP proposal was written. In large parts of the country, there is virtually no one engaged in applied research in the field of water that would fit the ITP bill (for example, the central, eastern and northeastern India). Yet there are fairly strong academic centers and capable researchers there who might be drawn in and there are many individuals engaged in water related action/advocacy who might become stakeholders and bring insights.

Funding is likely to be available for both the options—center of excellence as well as catalyst/resource center, but is more likely for the second. The present level of “visible” activity may be difficult—very unlikely—in the second option. The time frame would have to be no less than seven to 10 years. Undoubtedly, the second option offers higher long-term payoffs.

In terms of agendas, the future also beckons towards issues, regions and phenomena not yet attended to. The mountains remain neglected, not only in terms of what is happening there, including in the glaciers, but also how that affects the lower reaches teeming with humanity. The northeast is nowhere in sight in spite of the huge role it is likely to play in the future. Inter-regional dynamics, present and prospective, are not yet looked into even as the phrase “virtual water” is freely bandied about. Issues like domestic water and water quality that affect the wellbeing of millions and receive so much policy attention, await attention. Phenomena like land-water-forests-livelihood systems have not been touched. Issues of political economy, floods—there is a great deal that beckons.

The tools used as well as human resources required would also differ between the two. In the catalyst/resource center scenario, the instrument of small research grants with short turnaround time has clear limitations, as has been the experience. Fellowships, joint projects, focused capacity building inputs would be more useful. Similarly, more senior people (as staff or consultants) would be needed for the orchestration role.

Finally, there is the question of identity, regardless of the objectives and agenda. There are two distinct options. One, to continue as a “project” of IWMI, aided presently by SRTT but possibly by others as well in future. The other alternative is to spin-off over time into an entity incorporated in India, perhaps, but not necessarily, with formal affiliation with IWMI. While each has its pluses and minuses, there clearly is value in retaining the window into the world—therefore, close ties with IWMI for some time.

12. RECOMMENDATIONS

12.1 General Recommendations

The Review discussed future research priorities, programmes and policies, and identified potential opportunities, recognizing managerial and resource constraints.

General

1. The ITP fills a **critical gap** in Indian water research and is an important programme within IWMI’s portfolio and the larger framework of the CGIAR family. It fills a significant gap in India’s scientific and economic research by probing at the sometimes controversial boundary of India’s water management initiatives. Arguably, this could compromise the purely scientific contribution of the ITP work. However, given the state of India’s water resources and the dependency of millions of rural livelihoods on engagement with local water resources, it is important that an innovative research agenda is pursued. On the basis of findings presented in this report, we strongly recommend the concentration of resources to complete the current phase of action-oriented research and policy analysis.
2. ITP is not a conventional research programme seeking to inject findings in peer-reviewed literature. It has a fundamentally different audience and purpose. This does not downplay the scientific rigour of its research, but it does mean that final reports and synthesis do need to go through an international peer review process (and not journal publication—perhaps ask a leading practitioner to assess). **It is now time for a period of consolidation and positioning of outputs in areas where research has established verifiable arguments.** These findings then need to be pitched at State governments—but only if the scientific basis is established. It may be that the junior researchers need to go back and re-check/re-assess their original findings. The research needs to be more tenacious in this respect. Only then can the outputs be presented to national and state for a emphasising the room for manoeuvre (if there is any) and the time in which adjustments need to be made. The limits of the physical surface/groundwater systems with respect to the livelihoods of the implicated populations need to be stressed. Understanding these limits may need further research.

Programme Scope, Quality and Impact

3. The Review is impressed by the scope and quality of research in most areas it reviewed. While recognizing that some areas are relatively new, precluding detailed appraisal, they fulfil potential and should be continued.
4. The Review is, however, concerned about (i) the broad scope of the research themes (ii) the balance of research themes (from micro-economic research and state/national macro-policy

recommendations) (iii) the development of an effective communications strategy and (iv) sustaining the ITP momentum into a second programme cycle.

5. At the same time, the Review notes that several geographic regions (such as the poverty stricken and flood-prone Ganga-Brahmaputra-Meghna basin, the mountains), issues (gender, political economy, domestic water, water quality) and phenomena (land-water-forests interactions) are excluded or poorly represented.
6. With regard to policy implications of ITP outputs to date, the work on the socio-ecology of groundwater in India is of international repute and built on successful partnerships with government and non-government institutions, which allow it to project into the international policy area. The **groundwater** theme has been exhaustive but issues of data and its significance/contribution to the global debate needs to be positioned carefully. Provision for manipulation and presentation of the data for such an audience needs to be considered.
7. The action-research project in **North Gujarat (NGI)** contains the seeds of a potentially significant policy and action coalition, affecting a large population whose livelihoods are threatened by rapidly declining groundwater levels. It was initially conceived as a collaborative effort, with ITP principally as the catalyst. In the event, ITP is directly engaged in action. Though the project is providing key insights into the adoption of water saving irrigation technologies, diversification of farming systems and the use of organic fertilisers, there is a need to simultaneously examine the macro-construct that drives the present resource management/livelihood strategies in the region and the likely public policies that would catalyze change. There is also need to explore the institutional mechanisms to expand outreach once viable packages are developed through micro-experimentation. The Review recommends that the outcomes of the NGI are consolidated and brought to an interim conclusion and funding for monitoring of farm outputs over a three year cycle sought. ITP also needs to examine the macro-issues affecting the water-livelihoods nexus and work towards building a broader coalition of local stakeholders, including the Dairy Unions, NGOs and government and research agencies.
8. The research studies and reviews fashioned as **Central India Initiative (CInI)** have extended research into the water-livelihoods nexus (and more generally, the management of natural resources-livelihoods nexus) as it affects the tribal communities, largely ignored by policies and action. This presents an opportunity for breaking new ground in both conceptual and policy terms, affecting some of the poorest and socially most vulnerable people in the country and a large geographic region.
9. Several **new initiatives** are now being proposed following the 2004 APM. The Review wishes to make some specific recommendations relating to the ongoing ITP programme as it works toward its completion of the first 5 years of research and field activities.
10. The recently launched work on urban hinterlands shows promise and will fill a critical gap in research on rural–urban transitions. The urban/rural hinterland initiative has global significance although the intensity of the rural/urban transitions in India may be unprecedented but it would make sense to complement the focus on rural groundwater with a consideration of groundwater in the urban sector—the role of self-supply and the crowding out of rural use.
11. Equally the attempt to synthesise the status of India’s main irrigation systems under the newly proposed “Irrigation at the Crossroads” looks promising and can be expected to move forward the debate on how to modernise Indian canal irrigation. This theme has remained under-represented in the past.
12. Of the recent initiatives, irrigation at the cross roads will have significance for Asian irrigation particular and will need to be elaborated carefully..

13. The watershed initiative is perhaps too broad and complex to be taken up by ITP as a specific research theme, but is an area in which ITP can provide detailed critique and evaluation of past developments and current trends.
14. **Additional areas** of focus are warranted where policy shifts need to be substantiated by sound technical and socio-economic analysis. The focus on water scarcity could be complemented by analysis of the impacts of flood management on rural livelihoods. Equally, the role forestry policy on upland hydrology and the impacts on rural livelihoods downstream could be explored.

Partnerships and Networks

15. In the first three years, the ITP has been able to expand out of a Gujarat base, although its main **partners** remain Gujarat based (IRMA, GIDR), and has covered a set of thematic issues in Indian water resource management that would otherwise not be elaborated. The collaboration needs to extend out of the Gujarat base, and into important themes not yet adequately addressed.
16. ITP has a significant number of effective partnerships among NGOs and researchers. Government agencies and mainstream scientific research community, however, remain poorly represented, as do certain regions of the country. The Review recognizes that such partnerships need time and effort to manage and deploy effectively. Future development of partnerships under ITP may need to be managed more strategically to produce programme impact by way of creating a wider “water community” and significant policy changes. The original objectives of ITP would be well served with a longer-term perspective that would stimulate a search for a wider array of mechanisms to develop partnerships and build capabilities for a “meaningful engagement with the problem (of water)”.
17. ITP was thought of as a program that would be conceived and implemented by an alliance with a broad spectrum of Indian institutions. The original budget indicated that most research would be farmed out. After an initial attempt to follow such a participatory strategy, there has been a shift towards more in-house and closely supervised research. This would limit opportunities for building a broad based community of researchers, which was one of the original objectives. The Review recommends that the “field building” approach of broad based participation be followed more vigorously. Creation of a constellation of three to four senior persons to assist the Principal Scientist and an Advisory Committee to guide the governance of the program would aid such an approach.

Communications and Dissemination

18. The stated aim of ITP’s communication and dissemination effort is to effectively transmit ‘convincing messages’ distilled from research outputs to various levels of decision makers. The number and range of research publications produced form a tremendous resource for the preparation of communication and policy related materials. But much of the communication effort has concentrated on dissemination to researchers and NGOs. As the research results are now being consolidated, this outreach can be expanded by having more papers published in authoritative journals, nationally and internationally.
19. ITP needs to devise an **effective communication strategy** which focuses on decision makers, within a larger framework of providing critical knowledge inputs to the variety of actors associated with influencing water policy. To important components of this strategy could be (i) small focused workshops and (ii) regular reporting of ITP research findings in the popular print and electronic

media. To do this, ITP must improve the communication and media expertise within the Program by developing partnerships with communication organizations, media-centric organizations and individuals with expertise in policy making. Even at this late stage, it is important for the IWMI-Tata Program to evolve a coherent communication strategy. The latter may have to be actually implemented in a second phase of the Program, unless fresh funds are available or reallocated in the first stage. The focus on decision makers must be retained within a larger framework of providing critical knowledge inputs, or ‘convincing messages’, to the variety of actors associated with influencing water policy. The popular media and innovative communication methods should be important components of this strategy. To this extent, ITP may consider sponsoring a focused workshop for designing a purposeful communication strategy with experienced representatives from the fields of communication, media and policy-making.

20. The **publishing programme** needs to become more coherent and a clear workplan for outputs and presentations at the end of the 5 year cycle detailed and budgeted.
21. Depending on the niche that ITP chooses to identify for itself, it should help develop innovative methods and products for **public education**, using its own research outputs.
22. As the ITP enters the last eighteen months of its current 5 year cycle, thought now needs to be given to bring all existing and proposed outputs to a point in a series of research summaries and synthetic outputs. These synthetic outputs will need to form the basis for the projection of the ITP policy messages and will need to be considered in terms of a well defined communication strategy.

Finance, Programming and Staffing

23. Given the **resources** available within the IWMI core budget and the fixed grant from SRTT, ITP is now at a stage in which to consolidate the wide range of water research activities and bring them to a point at which a series of perhaps 5 major outputs can be produced and presented at the end of this initial ITP cycle. Projected funding from SDC, for example, could be used to strengthen the consolidation and fund a set of high quality publications.
24. ITP activities do not appear to be constrained unduly by finance considerations. Based on the research outputs to date, the funding of a successor programme cycle now needs to be pursued actively. ITP would be well advised to seek funding that preserves its catalytic role, affords it reasonable elbow room to feel the way forward, enables it to leverage and is focused on field building rather than concrete results alone.
25. The structure of the ITP **staffing/human resources policy** is balanced well enough for the existing set of junior researchers to receive adequate supervision and would only need review were the numbers to change significantly. The use of Masters students in the Anand office and their work in the field has proved cost effective and productive, since they have been brought together in a group in congenial surroundings and are not left working in isolation without resort to supervision.
26. The leadership provided to ITP is accomplished, internationally respected and highly committed. It appears that a finely judged balance has been found between allowing junior researchers the intellectual and financial freedom to follow their own initiatives, within the parameters of the ITP, and an active process of internal and external peer review and senior supervision. The IWMI-wide thematic responsibility borne by the Principal Scientist does not seem to constrain his leadership of ITP.

27. If ITP were to expand the scope of outsourced research as a way to expand the network—to build and nurture the field—it may be useful to recruit a senior staff person or consultant to assist the Principal Scientist in the task of building such a network.

13. SUMMARY CONCLUSION

The IWMI-TATA Review process provides a very comprehensive update on the status of agricultural water management in India. The range of papers and the subsequent discussions in the thematic areas of the ITP meeting presents a mix of independent research conclusions and government policy position. The lively debates over watershed development and the interlinking rivers proposal, in particular, illustrate how polarised government and NGO positions can be. The value of the IWMI-TATA research is in trying to establish or demystify the water science that conditions the status of India's diverse natural resource endowments and applying a socio-economic assessment of outcomes for livelihoods. The policy recommendations that have come out of the first three years of the ITP work are partially formed. This should not come as a surprise. Arguably, the research initiatives are working at the frontier of India's water problématique, asking questions that have not been asked before and seeking to enter the Indian water policy debate on the basis of validated research outputs. At the end of the 5 year programme cycle, ITP will need to position their conclusions at state and national level. The communications strategy to do this is being worked on, but the ability of a CGIAR institution to enter the national water debate in all the water related sectors may be limited. It is here that other multilateral and bi-lateral agencies can assist in taking the results of the ITP programme, internalising them in their own dialogues with government at national and state level. It is therefore important that a coherent communication strategy is put into place as soon as possible to ensure that a persistent and consistent message is established.

ANNEXES

Annex 1 Review Terms of Reference

Mission / Centre Commissioned External Review (CCER) to undertake a mid-term review of the IWMI-Tata Water Policy Research Program, Anand.

BACKGROUND

The IWMI-Tata Water Policy Research Program (IWMI-Tata Program) is a five-year initiative (*Sanctioned August 2000, Amount sanctioned: Rs. 4.5 crores, Amount disbursed: Rs. 2.70 crores*) to engage Indian and global scientific and resource management institutions, in a practical agenda of water sector research and policy discussion. During the first year, the IWMI-Tata Program started several research initiatives on water management problems in India through its own scientific staff and through a number of research partners. They covered a wide spectrum of water management concerns from groundwater over-exploitation problems (in south India, western India), to low agricultural productivity and water logging and salinity problems (in eastern Indo-Gangetic plains). The program is now in its third year with its portfolio consisting of, among other things, Water, Livelihoods and Environment, Central India Initiative (CInI), Promoting Micro irrigation, Ground Water Socio-ecology of Asia, Ground Water Management in Gujarat, Making India Public Irrigation System Viable, Energy—Irrigation Nexus in India and Tanks in Today's Context. Outputs are being brought out in the form of "IWMI-Tata Research Highlights", "IWMI-Tata Comments" and "IWMI-Tata Water Policy Briefings" besides IWMI Research Reports, Journal articles are widely circulated amongst researchers, policy makers and different stakeholders. The main highlight of each project year has been the Annual Partners' Meet held every January in Anand. In 2003, it was attended by nearly 200 water experts. In the second half of FY 2003-04, the IWMI-Tata Program is focused on (i) further developing its focal research areas; (ii) re-looking at its dissemination tools and re-focus its strategy vis-à-vis policy makers; (iii) organise a mid term review of the program; (iv) develop the proposed partnership with the Swiss Development Cooperation (SDC); and (v) Taking CInI to scale.

In September 2002, The IWMI-Tata Program launched its first field project—"North Gujarat Sustainable Groundwater Initiative" (NGI) to explore, in an action research mode, approaches to protect and strengthen the livelihoods of resource poor households bearing the brunt of the deepening ecological crisis in North Gujarat (*Two year grant, Amount sanctioned: Rs. 48.50 lakhs, Amount disbursed: Rs. 40.00 lakhs*). The objectives of the pilot project are: (i) establish a groundwater management regime involving demand and supply side approaches that rely on a strong footing laid by a powerful education campaign on water; (ii) study the impacts of the comprehensive intervention on the water balance, livelihoods, agricultural and dairy economy of the pilot villages assessed through project monitoring systems as well as independent studies and assessments; and (iii) lay the groundwork for a larger, regional sustainable groundwater initiative based on lessons learnt from the pilot. The fountainhead of IWMI-Tata Program strategy has been to manipulate the

demand for water in agriculture without compromising on the net returns from agriculture, so as to cut down groundwater pumping. Facilitating large scale adoption of water saving irrigation devices had been accepted as the most important operational strategy for IWMI-Tata Program. The initiative involves the following: (i) augmenting water availability through tank rehabilitation, promotion of private well recharge and support to community water conservation & recharge; (ii) propagating water saving approaches in alfalfa and non-fodder crops; and (iii) awareness, education and propagation of a new 'water ethic'. At the end of the first year of the project in August 2003, the following was achieved: (i) increasing level of awareness among people in the project area regarding groundwater depletion; (ii) increased knowledge of technical aspects and costs and benefits of water saving devices; (iii) actual adoption of different types of water saving irrigation systems, particularly micro-tube drips in existing horticultural plantations; (iv) plantation of horticultural saplings like gooseberry, pomegranate and lemon by 30 farmers; (v) adoption of vermi-composting; and (vi) promoting water saving irrigation devices on alfalfa, which had been tested effective in both water saving and yield improvements. The annual review exercise for the project was undertaken in November 2003.

In 2002, the IMWI-Tata Program launched a second large initiative, called the Central India Initiative (CInI). In spite of being rich in natural resources, the central India tribal belt is the poorest region of the country. CInI (*amount sanctioned: Rs. 36.76 lakhs, disbursed: Rs. 20.00 lakhs*) has the following objectives: (a) understanding what stimulates and what inhibits demand, from tribal groups and individuals, to access modern technologies related to irrigated agriculture as a means of livelihood; (b) arriving at programmatic propositions and policy suggestions based on research; and (c) identifying areas for further research. The initiative is divided into three phases, of which, the first phase concluded in early 2003. During this phase, the project concept was pre-tested and the case-study framework for Phase II finalised. The second phase commenced in August 2003, which involves four types of studies. The Trust is in the process of developing four field projects in Jharkhand based on the research findings. A meeting was held at Anand on September 26, 2003 to review progress in the project. The first drafts of the case studies were submitted in December 2003, and the findings of the studies would be presented in the Annual Partners' Meet (APM) in February 2004.

Objectives of the Review

- To undertake a mid term review of the IWMI-Tata Program.
- To give inputs to strengthen activities being undertaken

An Outline of Tasks to be Undertaken (Scope of Services)

- The Centre Commissioned External Review (CCER) / Mission would review the program activities of the IWMI-Tata Program for the period 2000–2003 and also consider future strategic direction. The CCER / Mission team would consist of Mr. Deep Joshi (Executive Director, Pradan, New Delhi), Mr. Ravi Chopra (Director, Peoples' Science Institute (PSI), Dehradun) and Mr. Jacob Burke, (Head, Groundwater Division, FAO, Rome). The exercise would commence from the Annual Partners Meet (APM) in February 2004 and would conclude in April / May 2004 after the Mission submits its final report.

- The CCER / Mission would review the IWMI-Tata Program and its activities through visits to the program headquarter in Anand and also through program site visits, review of activities and outputs and discussion with partners and representatives of beneficiaries as appropriate (detailed itinerary given under “Time Frame”).
- The Mission / CCER members would prepare for the conduct of the review by reading all background information provided by IWMI-Tata Program. (This may include CGIAR documents, SRTT documents, IWMI-Tata Program plans and reports, and other publications relevant to the area being reviewed, project proposals and reports, Memoranda and Letters of Agreement, staff lists and other documents as appropriate etc.)
- The Mission / CCER would contact international partners and national counterparts to obtain their views on the work of the IWMI-Tata Program, their perspective on collaborative activities and their interests in terms of future directions of the program.
- The Mission / CCER team would travel to the IWMI-Tata Program headquarters in Anand and selected program research sites conducting activities specified for review.
- The Mission / CCER would commence the formal review with a briefing from Dr Christopher Scott, Director, IWMI, South Asia Program during the APM to further define its scope and issues pertinent to its conduct. Thereafter, the Mission / CCER team would internally discuss and finalize the design for the exercise. They would divide the tasks amongst themselves and finalize the travel itinerary, deadlines etc.
- The Mission / CCER team would review research outputs, overall direction and provide inputs to strengthen the annual work planning exercise. The Mission / CCER team would gauge the effectiveness and relevance of science to the field and IWMI-Tata Program’s mandate, staff capacity and management, partnership arrangements, quality of publications, relevance of outputs and the efficiency of their delivery to target audiences, the adequacy of funding and the plans for future research and development.
- The Mission / CCER team would also provide inputs for mid-course correction in IWMI-Tata Program’s strategy for 2004-5 based on their assessment.
- The Mission / CCER would review the options for future research directions, for the strengthening of productive partnerships and for consolidating the impact of research products on policymakers in the various relevant sectors.
- A detailed draft report would be submitted by the Mission / CCER team to IWMI & Trust by early May 2004 (See the “Time Frame”). It should have the following chapters in addition to others:
 1. Executive Summary
 2. Chapter 1: Background Chapter
 3. Chapter 2: A detailed Chapter on Finding and Recommendations including ex-post evaluation as well as a proposed updated research agenda.

4. Annexure 1: Daily reports on field visits details on interaction with village communities and project staff.
 5. Annexure 2: Brief of feedback session
 6. Annexure 3: All necessary material to supplement chapter on Findings & Recommendations.
- The senior management of IWMI (DG) and the Trust would manage the exercise. A copy of the draft report would be delivered to the Director General of IWMI and the Sir Ratan Tata Trust. IWMI's Board of Trustees will receive the draft report for discussion and comment at the immediately succeeding Board meeting along with a statement by management on the major findings and recommendations of the Mission / CCER. Thereafter, feedback would be shared with the Mission / CCER team.
 - After incorporating the feedback from the Trust and IWMI, the Mission / CCER team would submit a final report to the DG, IWMI & the Trust within two weeks of the receipt of the feedback.

Time Frame

The CCER / Mission would be for a total of 16 days spread over a four months (February – May 2004). The schedule given below is provisional and can be modified by the team during the APM. Mr. Jacob Burke (JB) would undertake his field visit immediately after the APM. Mr. Deep Joshi (DJ) & Mr. Ravi Chopra (RC) would undertake theirs in April 2004.

16 th February	Arrival of Mission / CCER team in Anand by evening.
17 th February	(i) Progress Briefing by the IWMI-Tata Program. (ii) Briefing with Dr Christopher Scott, Director, IWMI, South Asia Program. (iii) Consultation amongst members of Mission / CCER, Division of labour and finalization of design for the exercise. (iv) Attend APM. (JB, RC & DJ) (1 Day)
18 th February	Attend APM. (RC, JB DJ) (1 Day)
19 th February	(i) Attend APM. (ii) Mission / CCER would brief IWMI-Tata Program on finalized design for the exercise. (RC, JB & DJ) Evening departure - RC & DJ. (1 Day)
20 th – 22 nd February	Interaction with IWMI-Tata Program team including IWMI and the Trust. (JB) (3 Days)
23 rd – 24 th February	Field Visit NGI, Palanpur (Gujarat) (JB) (2 Days)
25 th – 27 th February	Meetings with individual stakeholders. Meetings schedule can be finalized during the APM. Can either be in Anand or other places as felt appropriate. Debriefing. (JB) Departure JB. (3 days)

1 st – 3 rd March	Report Writing (JB), Dispatch of Draft to RC & DP(3 Days).
21 st April	Arrival in Anand – DP & RC.
22 nd – 24 th April	Interaction with IWMI-Tata Program team including IWMI and the Trust (RC & DJ) (3 Days)
25 th – 26 th April	Field Visit NGI, Palanpur (Gujarat) (RC & DJ) (2 Days)
27 th – 29 th April	Meetings with individual stakeholders. Meetings schedule can be finalized during the APM. Can either be in Anand or other places as felt appropriate. Debriefing. (RC & DJ) Departure - RC & DJ (3 Days)
1 st – 3 rd May	Report Writing, Dispatch of draft report to IWMI & SRTT (DP & RC) (3 Days).
End May	Finalization of report (JB, RC & DJ) (2 Days)

Final Outputs that will be required of the Mission / CCER Team

- A detailed mission report with a comprehensive chapter on findings and recommendations.

Annex 2 Review Itinerary

Itinerary for Review members Burke (JJB)

Date	Time	Main Activities	Persons met
15/02/04	1300	Travel Rome-Delhi (JJB)	
16/02/04	0540	Arrive Delhi (JJB)	
17/02/04	0600	Delhi-Ahmedabad	
	0730	Ahmedabad-Anand transfer ITP Annual Partners Meeting	
17/02/04		ITP Annual Partners Meeting	
18/02/04		ITP Annual Partners Meeting	
19/02/04		ITP Office Anand	
20/02/04		ITP Office Anand	
21/02/04		Reviewing/Drafting Anand	
22/02/04		NGI field visit	
23/02/04		NGI field visit	
24/02/04		Drafting and meeting with ITP research team Anand	
25/02/04		Drafting and meeting with ITP research team Anand	
26/02/04		Meetings in Delhi with FAOR and DIFID (Ian Curtis)	
27/02/04	0230	Depart Delhi-Rome (JJB)	

Annex 3: List of Outputs (Policy Briefs, Highlights, Comments and Research Papers to March 2004)

LIST OF PAPERS COMPLETED UNDER IWMI-TATA PROGRAM (March 2004)												
Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
[1] SUSTAINABLE GROUNDWATER MANAGEMENT IN GUJARAT												
1	Indira Hirway	Gujarat 2020: Economy Demography and Society	2001							✓		
2	R K Nagar	Water Management issues in Saurashtra	2001							✓		
3	M Dinesh Kumar	Integrated water management in the face of growing demand and threatened resource base in North Gujarat: Constraints and opportunities	2001	✓								
4	G Shastri	Hydrological Impact of Watershed Management Activities in Saurashtra *	2002							✓		
5	NJ Srimali	Evaluation of Irrigation cum Artificial Recharge Structures in Machhan River Basin	2002							✓		
6	Hatim Isafaly	Diagnosis and Economic Modeling of Farming System in North Gujarat and Emilie	2002							✓		
7	M. Dinesh Kumar	Hydrology and Water Resources of Gujarat, Western India, proceedings of the International Conference on Hydrology and Water Resources in Asia Pacific Region, Kyoto, Japan	2003									✓
8	P P Patel	Geo-climatic set up and water resources of Gujarat	2001							✓		✓
9	M Dinesh Kumar, R K. Nagar, S P. Bhatol & S A Prathapar	A four point minimization program for water scarce Banaskantha district	2001							✓		
10	R K Nagar	Study of groundwater recharge movement in Gujarat	2001							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
11	A S Patel	Impact of Groundwater Recharge activities in Saurashtra	2001	✓								
12	Shah, T & Rohit Desai	Creative destruction: Is that how Gujarat is adapting to groundwater depletion? A synthesis of 30 ITP studies	2001							ii		
13	Shah, T	Decentralised water harvesting and Groundwater Recharge: Can these save Kutchch from desiccation	2001	✓								
14	RK Nagar	Study of GW Recharge Movement in Gujarat – Aji basin	2002							✓		
15	RKNagar & R Sakthivadivel	Efficacy of well recharge in hard rock area – case of Khadvanthali Village	2002							✓		
16	RK Nagar	Response to private initiative: Case of Dudhada Village , Amreli district., Gujarat	2002		✓					✓		
17	RK Nagar	Drought Proofing through water harvesting structures: Rajsamadhiala case	2002							✓		
18	M Dinesh Kumar	Micro Management of Groundwater in Banaskantha, North Gujarat- Issues, Prospects and Future Directions	2002		✓					✓		
19	Vilind R Parikh	Development of Parameters for Determining Efficacy of Seawater Intrusion Preventive Structures in Coastal Saurashtra	2002							✓		
20	RC Jain	Supply-based options for Groundwater Management in Different Geo-hydrological Environments in Gujarat	2003							✓		
21	Paresh A.Raval	Gujarat Ground Water Economy issue analyzing and Solving Problems	2002							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
22	Mahesh Joshi	Saurastera ma Sarkari And Binsarkari Sankalit Jalsanchay Prayaso And Teni Asaro par Sansodhan Abhayas	2002							✓		
23	Rama J.Shah	BhugarbhJad Sinchay ni Sabarkantha Jillana Krushi kshtra per thati arthik assar suchit abhiyas	2002							✓		
24	Hathi Tushar R	An Economic Analysis of Collective Action for Ground Water Management Through Percolation Tanks and Well Recharging-Some Regional Experiences	2002							✓		
25	Dr.B.M.Jani	Techno-Economic Analysis of Groundwater Resources In Gujarat	2002							✓		
26	Rajesh R.Modi	Impact of Chek-Dam Water Irrigation on Agricultural Economy A case Study of THRUKHA Village Of botad Taluka-Bhavnagar Dist	2002							✓		
27	M.S.Patel	“Kheti Ksetrama Sinchay Mate Bhugarbhjalna Upyogthi Ubhi thayel paristhiti(samasya)ni Tapas”	2002							✓		
28	D.M.Rohit	“inter linking between Groundwater irrigaction and rural electricity supply”Study of Five Village in Umreth Taluka	2002							✓		
29	R.C.Popat	Ananlatical Study of the Problrm of Drinking water and Water Conservation Through People’s Participation in Rajkot City	2002							✓		
30	Rohit J.Desai	Sabarkantha Jillana Talukaoma Bhugarbh jal No vapparas and Arthik Niti(Khedbrama,Vijaynagar And Ider Talukano Ekam Lakshi Abhyas)	2002							✓		
31	Premji.M.Patel	Panini Achat no Vistar and Jalstrav(water shad) (“kansvada Water Shad-Jadstrav Vikash Yogna” Taluka Malpur, Ji.Sabarkantha-No Abhyas)	2002							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
32	K.R.Ram	“Over Exploitation of Groundwater And it’s Impact on Agricultural Economy” With Special Reference of Sutrapada Taluka	2002							✓		
33	Sarah Ahmed	Sustainable Groundwater use: A Village Study of Padra Taluka Draft paper	2002							✓		
34	.Ashokkumar B.Trivedi	“Water shad Vikas Pariyojanani krushi vikas Par ni Asaro”(Sihor Talukana Buthana,Madhada,and Bhaldi Gamona Sandarbha ma	2002							✓		
35	V.J.Bhammar	“Bandhara Yojanani Krushi Vikas Per ni Asaro” (Mahuva talukana Nikol Bandhara Yojanana Vagnagar, Naip,Sathara And nikol gamona Sandarbhma)	2002							✓		
36	M.G.Shekh, D.R.Vajani	“Bhugarbhajal na Vadhu padta Upayog Tatha Bhugarbh Jadstar Nicha Javathi Krushi Arth Vyavastha Per Padelil Asaro”Zalod Taluka na Sandarbha ma Abhayas	2002							✓		
37	Misha Vyas, Bhavesh Desai	Bhugarbhajal Sinchay ni khetikstra Parni Asar: Mahesan Jilani Sandarbhe Abhyash	2002							✓		
38	J.G.Parmar	Wastage of Water in Agricultural Sector: A Case Study of Bardoli Taluka of Surat District	2002							✓		
39	Vinod K.Shah	Bhurgabhajal ni Arogya Upaer Asar: Chansama Taluko(Ek Abhyash)	2002							✓		
40	Dilip H. Parikh	Zadpi Saherikaran And Pani na Parasno: Amdavad Saher Memnagar Vistarno Abhyash	2002							✓		
41	Munish Alagh	Impact of Ground Water Irrigation on Agricultural Economy: Case Study of Narmada Regional Aspects of Ground Water Use in Sardar Sarovar System:Alternative Patterns And Outcomes.	2002							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
42	Ashvin Raval	Jamanagar jillana Jamkhambhadiya Talukana Gamoma Bhugarbhajad Recharge Pravuti par Jalsanchay ni asar Ek Abhyash	2002							✓		
43	Swati Dave and Ila Shah	Shilaj Gamma Piwani Panini Vyawastha ane Vitaran	2002							✓		
44	J.K.Tandel	Navasri jilla na Jalalpor Talukana Kantha vistar ma Sinchay tatha Pivana panini samsyaono Abhyas	2002							✓		
45	H.T.Patel	Bhugarbhajal Sinchay ni khedi Arthakaran par asar Banaskantha jilla na Palanpur talika no kes Study Ek Abhyas	2002							✓		
46	A.D.Gohel	Impact of Water Conservation & Ground Water Recharge Activity in Saurashtra Region	2002							✓		
47	Jayshree Soni	Water Scarcity And Gender Dimension	2002							✓		
48	Jayshree Soni	Human Aspects of Water management- A Trend Report	2002							✓		
49	P.J.Vaghela	Bhurgabajadna Ati Upyogithi Grameen Arthantra Upar Thayeli Asaroni Tapas	2002							✓		
50	Manoj Joshi	Muhava Talukana Bhugarbh Janta Valninee Athikrut- Samajik Asaro	2002							✓		
51	Raju, K.C.B. and Khandelwal, M.K.	Prosperity of Kutchch Depends on Judicious Rainwater Management.	2001									✓
52	R. Sakthivadivel and Jayesh Talati	Sea Water Intrusion in Coastal Aquifers of Mangrol, Saurashtra: Possible Technical and Institutional Measures*	2004									✓
53	M. Dinesh Kumar, Bhagirath Iyer and Vivek Agarwal	Can North Gujarat's Agrarian Economy Thrive With Less Ground Water Use? Simulations Based on Linear Programming Model for Banaskantha District*	2004									✓

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
54	Jayesh Talati	Water Revolution through Rainwater Harvesting in Gujarat*	2004									✓
55	M. Dinesh Kumar, Lokesh Singhal and Pabitra Rath	Value of Groundwater- Case Studies from Four Villages in Banaskantha, North Gujarat*	2004									✓
56	F. A. Shaheen and R. L. Shiyani	Dynamics of Groundwater Extraction for Agriculture in North Gujarat**	2004									✓
[2] IRRIGATION MANAGEMENT TRANSFER												
1	Avinash Kishore	A review of literature on socio-economic impact of canal irrigation	2001	✓								
2	Ajay Pandey	Exploratory study on Irrigation practices in Command and Non command Area of Mahi Bajaj Sagar Dam, Banswara, Rajasthan	2002							✓		
3	Avinash Kishore	Social Impact of Canal Irrigation: A Review of 30 years of Research	2002							✓		
4	SC Sharma	Turnover of GWRDC Tube wells to farmer groups	2002							✓		
5	Aditi Mukherji and Avinash Kishore	Irrigation Management Transfer: The Case of GWRDC's Tube well Transfer Program in Gujarat	2002		✓	✓				✓		
6	Jayesh Talati and Jan Liebrand	Evolving Institutions for Irrigation Management in Sardar Sarovar Project command	2003							✓		
7	IWMI-Tata Research Group	Framing the Rules of the Game: Preparing for the First Irrigation Season in the Sardar sarovar Project	2002		✓					✓		
8	Sarat Kumar and Archana Londhe	PIM in Canal Irrigation Systems in Gujarat and Andhra Pradesh	2003							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
9	Vincent Thomas	Villagers' Responses to Narmada Water Supply**	2004									✓
10	T Shah	Framing the Rules of the Game: Preparing for the First Irrigation Season in the Sardar Sarovar Project	2002		✓							
11	R Indu	Tube well transfer Program in West Bengal	2003							✓		
[3] IRRIGATION AND POVERTY												
1	Shah, T and OP Singh	Irrigation Development and Rural Poverty in Gujarat, India: A Disaggregated Analysis	2002		✓				Accepted			✓
2	M Bhattarai and A.Narayanamoorthy	Irrigation Impact on Growth and Performance of Agriculture in India	2003		✓					✓		
3	Sanjiv Phansalkar and Sachin Mardikar	Income and Equity in Water Use in Vidarbha	2002							✓		
4	Sanjiv Phansalkar	Understanding Underdevelopment: Water and Poverty in Vidarbha	2002		✓					✓		
5	Madhusudan Bhattarai and A.Narayanamoorthy	Irrigation Impact on Agricultural growth in India: A state level panel data Analysis	2002							✓		
6	M Bhattarai and A.Narayanamoorthy	Groundwater Irrigation and Rural Poverty Nexus: An analysis across states in India	2003							✓		
7	Sanjiv Phansalkar and Mahesh Jagdeo (AMOL)	Running an innovation aground: Experiment of private financing of irrigation in Vidarbha	2003							✓		
8	Sanjiv Phansalkar (AMOL)	Political Economy of Irrigation Development in Vidarbha	2003							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
9	Madhusudan Bhattarai, Randolph Barker and A.Narayanamoorthy	Who benefits from Irrigation Development in India? Implication of Irrigation Multipliers for Cost Recovery and Irrigation Financing**	2004									✓
10	A.Narayanamoorthy	Linkages between Irrigation and Rural Non-Farm Employment: A Disaggregate Level Analysis Based on Census Data**	2004									✓
11	Madhusudan Bhattarai and A.Narayanamoorthy	Dynamics of Irrigation Impacts on Rural Poverty in India: Changes Over Time and Across the States**	2004									✓
12	A.Narayanamoorthy and Madhusudan Bhattarai	Can Irrigation Increase Agricultural Wages? An Analysis across India Districts**	2004									✓
13	Bhawana Upadhyay	Poverty, Gender and Water Issues in Irrigated Agriculture and Irrigation Institutions	2002		✓							
[4] MICRO IRRIGATION												
1	IDE, New Delhi	Field trials of micro-sprinklers on Alfalfa	2002							✓		
2	Shilp Verma, Stazin teshpal and Tony Jose	Grassroots Innovations: Pepsee Systems of Micro Irrigation	2003							✓		
3	Vipul Patel	Yield and Water Productivity Impacts of Pressurized Irrigation Technologies on Alfalfa Crop in North Gujarat	2003							✓		
4	Shilp Verma	Promoting Micro Irrigation in India: A Review of Evidence and Recent Developments*	2004									✓

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
5	Regassa E. Namara, R. K. Nagar and B. Upadhyay	Drivers of Micro-irrigation Adoption: Empirical Results from Selected Villages of Gujarat and Maharastra States**	2004									✓
6	R.Sakthivadivel and Vaibhav Bhamoriya	The case of Micro-Irrigation: Does it really save water? Evidence from Maikaal (Nimar Valley) Cotton Growers*	2004									✓
7	M. Dinesh Kumar, Tushaar Shah, Maulik Bhatt and Madhu Kapadia	Dripping Water to a Water Guzzler? A Techno-Economic Evaluation of Efficiency of Drip Irrigation in Alfalfa*	2004									✓
8	Jan Willem Liebrand	Drip for Cows or Crops: What Gender Issues and New Livelihood Strategies Mean for Water Saving Technologies?***	2004									✓
9	Md.Abdul and Himanshu Chopra, Vaibhav Bhamoriya	Marketing strategy and practices in micro-irrigation(MI) systems industry	2004									✓
10	Nishant Sinha and Amit Kumar and Vaibhav Bhamoriya	Technology Transfer: Planned approach to up scaling drip technology in India	2004									✓
11	Nitin Jain, Nagendra Singh and Vaibhav Bhamoriya	Technology adoption: Comprehending the un-induced demystification of micro (drip) - irrigation technology	2004									✓
12	Shah , T. and Jack Keller	Micro Irrigation and the poor (Presentation)	2001							✓		
13	Indian Grameen Services	Promotion of Micro Irrigation Amongst the poor	2002							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
14	Chinchmalatpure, Umesh R and M Dinesh Kumar	When do Farmers Adopt Water Saving Technologies findings of a Market Research Study from North Gujarat								✓		
[5] IRRIGATION AND TRIBAL DEVELOPMENT												
1	Shilp Verma and Manas Satpathy	Irrigation Development for Tribal farmers in Surat	2002							✓		
2	Shah, T and OP Singh	Correcting a Wrong: Improved Water Control as the Strategy for Agricultural Intensification in India's Tribal Heartland	2003							✓		
3	Vaibhav Bhamoriya	The BAIF-DHRUVA Experience of Enhancing Tribal Livelihoods in South Gujarat	2004							✓		
4	Pradyumna Deshpande	BAIF-MITTRA's Efforts for Promoting Tribal Livelihoods in Jawhar Taluka of Thane District, Maharashtra	2004							✓		
5	Anuradha Vishwanath	Shyampura Lift Irrigation: A Case Study of Sewa Mandir's Interventions in Udaipur District, Rajasthan	2004							✓		
6	Mansoor M	A Case Study Vidarbha Watersheds Program	2004							✓		
7	Archana Londhe	Impact of Rajiv Gandhi Watershed Mission's Interventions on Tribal Livelihoods in Dhar District, MP	2004							✓		
8	P S Rahul	A Case Study of the Adoption and Spread of Sprinklers among Tribals in Narsinghpur District, MP	2004							✓		
9	Gajendra Chandrakar	Role of <i>Tar Bandhs</i> in promoting Agriculture in the Tribal Villages of Chatisgarh	2004							✓		
10	Dinesh Marothia	Minor Irrigation Water Storage Tanks (<i>Dabries</i>) in Chattisgarh: A Case Study	2004							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
11	Prashant Singh	Case Study of Tata Steel Rural Development Society's Interventions in Jharkhand	2004							✓		
12	Bismaya Mahapatra	From Forest Dwellers to Proud Farmers: Case Study of Tribal Farmers in Kalahandi	2004							✓		
13	Nilakantha Panigrahi	A Case Study of the Impact of IDE, India's Treadle Pumps Program in Orissa	2004							✓		
14	Arnab Chakraborty	PRADAN's Kharif Paddy Intervention in Purulia District of West Bengal	2004							✓		
15	Manish Verma	Participation of Tribals in Irrigated Agriculture in Banswara District of Rajasthan	2004							✓		
16	Shilp Verma	Participation of Tribals in Irrigated Agriculture in Surat District of Gujarat	2004							✓		
17	FES, Anand	Participation of Tribals in Irrigated Agriculture in Dahod District of Gujarat	2004							✓		
18	Tejaswini Swain	Participation of Tribals in Irrigated Agriculture in Gadchiroli District of Maharashtra	2004							✓		
19	XIDAS, Jabalpur	Participation of Tribals in Irrigated Agriculture in Mandla District of Madhya Pradesh	2004							✓		
20	Kashinath Metya	Participation of Tribals in Irrigated Agriculture in Raigarh District of Chattisgarh	2004							✓		
21	TSRDS, Jamshedpur	Participation of Tribals in Irrigated Agriculture in Saraikela-Khasrawan District of Jharkhand	2004							✓		
22	Krishi Gram Vikas Kendra, Ranchi	Participation of Tribals in Irrigated Agriculture in Ranchi District of Jharkhand	2004							✓		
23	Sanjeev Gupta	Pani Chetna Manch: A Study in Palamu District of Jharkhand	2004							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
24	S C Rajshekhar	Participation of Tribals in Irrigated Agriculture in Phulbani District of Orissa	2004							✓		
25	Sanjiv J. Phansalkar and Shilp Verma	Improved Water Control as a Strategy for Enhancing Tribal Livelihoods: A Synthesis of Studies undertaken as part of CInI	2004							✓		
26	Sanjiv J. Phansalkar and Shilp Verma	Improved Water Control as a Strategy for Enhancing Tribal Livelihoods: Outline of a Proposal	2004							✓		
27	Sanjiv J. Phansalkar and Shilp Verma	Improved Water Control as a Strategy for Enhancing Tribal Livelihoods:	2004							✓		
28	Sanjiv J. Phansalkar and Shilp Verma	Water Management and Tribal People in India: Opportunities, Constraints and Strategies	2004							✓		
29	Shilp and Sanjiv J. Phansalkar	Tribal Agrarian Economies in Transition: Contours of the Problematique	2004							✓		
30	Sachin Mardikar	Irrigation Service Providers as a Model for Livelihood Promotion in Tribal India	2004							✓		
31	Advaita Marathe	Tribal Women and Intensification of Tribal Agriculture	2004							✓		
32	Manas Satpathy and Guru Naik	Search for Appropriate Water Control Mechanisms: A Technical Assessment	2004							✓		
33	Shilp Verma, Pratibha Nair and Satyendar S.	Mapping the Tribal Agrarian Economy: Evidences from farmer surveys in Rajasthan, Gujarat and Maharastra	2004							✓		
34	Shilp Verma, Arindam Dasgupta and Sasanka Singh	Mapping the Tribal Agrarian Economy: Evidences from farmer surveys in Madhya Pradesh, Chattisgarh, Jharkhand and Orissa	2004							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
35	Shilp Verma, Shantanu Ghosh and Arun S.	Basin Level Simulation Modeling as a Decision Support System for CInI	2004							✓		
36	Girish Sohani and Bharat Kakade (BAIF)	Reflective Paper on BAIF's Experience in Promoting Water Based Livelihoods amongst Tribals	2004							✓		
37	Apoorva Oza and Umesh (AKRSP, India)	Reflective Paper on AKRSP (I)'s Experience in Promoting Water Based Livelihoods amongst Tribals	2004							✓		
38	Arindam D, Sasanka Singh and Shilp Verma	Developing an action plan Agrarian Transformation among Tribals in Central and Eastern India	2004							✓		✓
39	Pratibha Nair, Satyander S. and Shilp Verma	Developing an action plan for Agrarian Transformation among Tribals in Western India	2004							✓		✓
40	Manas Satpathy	Small Scale Community managed irrigation development for tribals in Jharkhand	2001	✓						✓		
41	Rakesh Pandey and Harmeet Saini	A study of Land and Water Resources Development Program Promoted by Sadguru Water and Development foundation in the Tribal Regions of Gujarat and Rajasthan	2002							✓		
42	Shilp Verma, SK Singh, and PK Singh	Issues in Developing Livelihoods Based on Irrigated Agriculture Among Tribal Poor in Central India	2003							✓		
43	Sanjiv Phansalkar, Shilp Verma and Vaibhav Bhamoriya	What Works and What does not in Irrigation Based Livelihood Enhancement among Tribals: A Synthesis of six Case studies	2003							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
44	Arpan Sharma	Irrigation Interventions in Tribal Communities: A Review of Literature	2003							✓		
45	Harnath Jagawat and Kanhaiya Chaudhary	A study of Government installed Lift Irrigation in Jhabua, MP	2002							✓		
46	Sachin Mardikar	Community Lift Irrigation Schemes in Wardha and Yavatmal Districts of Maharastra	2002							✓		
47	Sanjiv Phansalkar, Shilp Verma and Vaibhav Bhamoriya	What works and What Does not in Irrigation based Livelihood Enhancement in Tribal regions: A synthesis of six case studies	2002							✓		
48	Aditi Mukherji, Shilp Verma and Prabhat Rath	Impact of Participatory Irrigation Management on Tribals in Gujarat	2002		✓							
[6] INTEGRATED WATER MANAGEMENT												
1	M Dinesh Kumar	Food Security and Sustainable Agriculture in India: The Water Management Challenge	2002					✓		✓		
2	M. Dinesh Kumar	Demand Management in the Face of Growing Water Scarcity and Conflicts in India: Institutional and Policy Alternatives for Future, <i>Kanchan Chopra, CH Hanumantha Rao and Ram Prasad Sengupta (Eds.)</i> Water Resources, Livelihoods and Ecosystem Services. <i>New Delhi: Concept Publishers</i>	2003								✓	
3	T Shah, I Makin and R Sakthivadivel	Limits of Leapfrogging: Issues in Transposing Successful River Basin Management Institutions in the Developing World	2001					✓				

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
[7] BASIN STUDIES												
1	M. Dinesh Kumar and O. P. Singh,	Physical Choices for Integrated Water Management in Sabarmati Basin,	2003					✓				
2	M. Dinesh Kumar, Rahul Ranade, Arun Joshi, R. Ravindranath and Jayesh Talati	Large Water Projects in the Face of Hydro-Ecological and Socio-Economic Changes in Narmada Valley: Future Prospects and Challenges*	2004									✓
[8] WATERSHEDS												
1	R Sakthivadivel	Watershed-based Water Resources Management to Increase Water Productivity for Improved Livelihood Outcomes	2003							✓		
2	Bekele A Shiferaw, V. Ratna Reddy, Suhas P. Wani and G. D. Nageswara Rao	Watershed Management and Productivity Benefits from Soil and Water Conservation: Investments in the Semi-Arid Tropics (SAT) of India***	2004									✓
[9] GROUND WATER SOCIO-ECOLOGY IN ASIA												
1	Rajindra de S Ariyabandu & M.M.M.Ahuyar	Comparative analysis of using groundwater & surface irrigation for cultivation in the North Central Dry Zone of Sri Lanka	2002							✓		
2	Shah, T and Aditi Deb Roy	Groundwater Socio-'Ecology of India	2001	✓			✓				✓	
3	Aditi Mukherji and Shah, T	Overview of Groundwater Governance in South Asia	2002		✓							

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
4	Sanjiv Phansalkar and Mansoor Khorasi (AMOL)	Cotton Cultivation and Groundwater Development in Vidarbha	2003							✓		
5	P.N.Ballukraya & R.Sakhivadival	Over Exploitation & Artificial Recharging of Hrd Rock Aquifers of South India: Issues & Options	2002							✓		
6	C.R.Punabokke & R. Sakthivadivel	Coastal Sand Aquifers of Sri Lanka: General Characteristics, Present Utilization and Gaps in Knowledge	2002							✓		
7	R. Sakthivasivel & C.R.Panabokke	Groundwater Resources Estimation, Potential for Abstraction and Agro-well Performance in Regolith Aquifers of Sri Lanka	2002							✓		
8	M.Kikuchi, P.Weligomage, R.Barker, M.Samwad, H.Kono and H.M. Somaratha	Agro-well and pump in Irrigation Schemes in the Dry Zone of Sri Lanka : Past Diffusion, Present Status & Future Proposals	2002							✓		
9	S. Janakarajan, Shah, T	Critical Issues facing Groundwater sector of Sri Lanka & South India	2002							✓		
10	P.K.Viswanathan	Groundwater Development in Kerela: An Analysis of potential Constraints & Institutional Alternatives	2002							✓		
11	Jan W K van der Wall, Joseph L Plalkootam, R Ratnakar, S.V Govardhan Das	Community managed Groundwater Systems: Lessons from the APWELL Project	2002							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
12	A.D.M.Karunarthne	Government Policies & Programs for Groundwater Development in Sri Lanka	2002							✓		
13	Mahesh Jayaweera	Managing Groundwater Quality with Special Emphasis on Heavy Metal Removal in Ratmalana-Moratuwa Area, Sri Lanka	2002							✓		
14	Verghese Chumna	Groundwater Recharging & Temple Tanks- Some Practical Experience from Tamil Nadu	2002							✓		
15	S. Janakarajan	Wells & Illfare : An Overview of Groundwater use & abuse in Tamil Nadu, South India	2002							✓		
16	L. Venkatachalam	Pollution, Economic Damage and the Institutional Set-up: A critical analysis of groundwater sector in Tamil Nadu	2002							✓		
17	Tushaar Shah, O. P. Singh and Aditi Mukherji	Groundwater Irrigation and South Asian Agriculture: Empirical Analyses from a Large-scale Survey of India, Pakistan, Nepal Terai and Bangladesh*	2004									✓
18	M. Dinesh Kumar, O.P. Singh	Socio-ecological Consequences of Groundwater Depletion in Sabarmati Basin, presented in SYNEX Conference Spain and accepted for IAH selected paper series	2002									✓
[10] SUSTAINABLE GROUNDWATER MANAGEMENT												
1	Scott, Christopher	Visualizing the Invisible: Harnessing Local Initiative for Conjunctive Management of Surface and Groundwater.	2001									✓
2	Khepar, S.D.	Strategies for Ensuring Hydrological Sustainability of Rice-Wheat Cropping System in Punjab.	2001									✓

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
3	D D Tewari	Prepaid Electricity cards for viable electricity of small consumers: An assessment of South African experience and prospects in India	2001	✓					✓			
4	R. Sakthivadivel & A S Chawla	Artificial recharging of river water: An experiment in Madhya Ganga Canal project	2001	✓			✓					
5	Shah, T, Aditi Deb Roy, Asad S Qureshi, Jinxia Wang	Sustaining Asia's Groundwater Boom: An Overview of issues and evidence	2001						✓			
6	K Palanisami	Techno-economic Feasibility of Groundwater over-exploitation in Tamilnadu	2001							✓		
7	Sharma, B.R	Availability, Status of Development and Opportunities for Augmentation of Ground Water Resources in India	2001									✓
8	Sharma, S.K	Status of Ground Water: Constraints and Policy Issues for its Sustainable Exploitation in India.	2001									✓
9	Samra, J. S	Policy Framework for Groundwater Recharging in India.	2001									✓
10	Badiger, S.; Sakthivadivel, R., Aloysius, N and Sally, H	Preliminary Assessment of a Traditional Approach to Rainwater Harvesting and Artificial Recharging of Groundwater in Alwar District, Rajasthan.	2001									✓
11	Khan, M.A. and Narayana, P	Traditional and Improved Techniques for Groundwater Recharge and Storage in Arid Regions.	2001									✓
12	Shah, T.; and Deb Roy, A	Intensive Use of Groundwater.	2001									✓

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
13	Tyagi, N.K.	Application of Hydraulic and Economic Optimization for Planning Conjunctive use of Surface and Saline Ground Water: A Case Study.	2001									✓
14	Sondhi, S.K.; Kaushal, M.P. and Agarwal, R.	Management of Groundwater Resources in Punjab.	2001									✓
15	Gupta, S.K.	Agro-hydro-salinity Modeling for Salt and Water Dynamics in Irrigation Commands.	2001									✓
16	Kumar, R and Singh, J	Regional Water Management Modeling for Prediction of Water logging in Semi-Arid Regions	2001									✓
17	Minhas, P.S.; Tyagi, N.K. and Sharma, D.R.	Approaches and Technologies for Use of Poor Quality Ground Waters in Agriculture.	2001									✓
18	Bhatnagar, P.R.; and Sharma, B. R.	Ground Water Pollution through Agricultural Practices and Agro Industries in India.	2001									✓
19	Taneja, D.S.	Improving the Performance of Shallow Tubewells and Pumping Sets.	2001									✓
20	Tushaar Shah	Governing the Groundwater Economy: Comparative Analysis of National Institutions and Policies in South Asia, China and Mexico*	2004									✓
21	P. Narayana and Christopher Scott	Effectiveness of Legislative Controls on Groundwater Extraction***	2004									✓
22	Tushaar Shah, Mark Giordano and Jinxia Wang	Water Institutions in a Dynamic Economy: What is China doing Differently from India?*	2004									✓
23	Abhisek Sharma	Does Water harvesting help in water scarce Regions? A case study of two villages in Alwar district Rajasthan	2001	✓								

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
24	Sanjiv Phansalkar & Vivek Kher (AMOL)	A decade of Maharashtra Groundwater legislation analysis of the Implementation Process in Vidarbha	2003							✓		
25	Neetha N	Alternative Irrigation Institutions in Canal Command	2002		✓							
[11] WATER PRODUCTIVITY IN AGRICULTURE												
1	O. P. Singh, Amrita Sharma and Rahul Singh	Virtual Water Trade through Dairy Products: Analysis using Regional Estimates of Irrigation Water Productivity of Milk Production in Gujarat, India*	2004									✓
2	OP Singh and Avinash Kishore	Groundwater-intensity of North Gujarat's Dairy Industry: Why Dairy Industry should take a Serious Look at Irrigation	2003						✓			
3	Amrita Sharma Rahul Singh and OP Singh	Water intensity of Gujarat's dairy industry: Why dairy industry should take a serious look at water?	2004									✓
4	M. Dinesh Kumar and O. P. Singh	Virtual Water in Global Food and Water Policymaking: Is There a Need for Rethinking?*	2004									✓
[12] GROUND WATER MANAGEMENT IN EASTERN INDIA												
1	V Ballabh & K Choudhary	Groundwater Development and agriculture production: A comparative study of Eastern UP, Bihar & West Bengal	2001		✓					✓		
2	Niranjan Pant	Groundwater Issues in Eastern and Western alluvium of Ganga basin	2001							✓		
3	Niranjan Pant (CDS)	Key Trend in Groundwater Irrigation in Eastern and western UP	2003							✓		


(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
4	Verma, H.N. and Sharma, B.R.	Policy Prescription for Ground Water Development and Utilization in Eastern India.	2001									✓
5	Singh, S.R.; Gautam, U.S.; Kumar, U.; Rahman, A. and Sinha, S.K.	Groundwater Development to Enhance Surface and Rain Water Utilization and Agricultural Productivity in Southern Bihar.	2001									✓
6	Sharma, H.C.	Over exploitation of Ground Water in Western Uttar Pradesh - Assessment and Management Options.	2001									✓
7	Niranjan Pant	Control of and Access to Groundwater in Uttar Pradesh**	2004									✓
8	Niranjan Pant	Groundwater Irrigation in Gangetic Alluvium of Uttar Pradesh: Trends and Strategies for Development**	2004									✓
9	Aditi Mukherji	Groundwater Markets in the Ganga – Meghna – Brahmaputra (GMB) Basin: A Review of Literature*	2004									✓
10	Amit Saha, Kumar Abhishek and Avinash Kishore	Groundwater Development: Can it break the Agrarian impasse in Bihar?	2004									✓
11	T Shah	Wells and Welfare in the Ganga Basin: Public Policy and Private initiative in Eastern Uttar Pradesh	2003						✓			
[13] ENERGY IRRIGATION NEXUS												
1	Shah, T, Christopher Scott, Avinash Kishore and Abhisek Sharma	Energy Irrigation Nexus in South Asia: Approaches to Agrarian Prosperity with Viable Power Industry	2002			✓		✓				

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
2	Avinash Kishore and Abhisek Sharma	Energy Irrigation Nexus in India: An overview	2002		✓					✓		
3	Avinash Kishore and Shilp Verma	Pumping Behaviour under different Tariff Regimes: The Anand Survey	2003		✓							
4	K Palanisami and D Suresh Kumar	Power Pricing, Groundwater extraction, Use and Management: Comparison of Andhra Pradesh and Tamilnadu	2003							✓		
5	P Narayana	Economics of supply of Power to Agriculture Sector to Establish Linkages for Energy-Water Co-Management	2003							✓		
6	DN Rao and S Govindarajan	Micro-Retailing of Power in Rural areas: Experiences from Orissa and Karnataka *								✓		
7	Animisha Singh, Sanjoli Batra and Avinash Kishore	Evolving a Proactive Supply Management Regime for Agricultural Power Supply	2003							✓		
8	Sanjiv Phansalkar and Pradyumna Deshpande (AMOL)	Patterns of Farmer Irrigation Behaviour under conditions of water insufficiency and fixed electricity tariff: Evidence from Vidarbha	2003							✓		
9	Tushaar Shah, Christopher Scott, Avinash Kishore and Abhishek Sharma	Energy-Irrigation Nexus in South Asia: Improving Groundwater Conservation and Power Sector Viability*	2004									✓
10	Bekele A Shiferaw, David Zilberman and G. D. Nagaswara Rao	Irrigation Investments and Groundwater Depletion in the Indian Semi-Arid Villages: The Effect of Alternative Water Pricing Regimes***	2004									✓

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
11	Shirish Sinha, P. Narayana, Ahsan Uddin Ahmed and Christopher Scott	Energy- Water Nexus Community Institutions Models: A Co-Management Solution?***	2004									✓
12	M. Dinesh Kumar	Impact of Electricity Prices and Volumetric Water Allocation on Energy and Groundwater Demand Management: Analysis from Western India, M. Dinesh Kumar, forthcoming, <i>Energy Policy</i> , Elsevier Science.	2004						✓			
13	P Narayana	Power sector reform using energy and water use nexus	2002							✓		
14	KJ Joy and Suhas Paranjpe (SOPPECOM)	Energy-Water Co-Management Opportunities and Challenges in the Tembu Lift Irrigation Scheme, Maharastra	2003							✓		
15	Chrisopher Scott, Shah T and Stephanie Buchler	Energy Pricing and Supply for Groundwater Demand Management	2002		✓							
[14] WASTE WATER IRRIGATION												
1	Stephanie Beuchler and Gayathri Devi Mekala	Innovations among Groundwater Users in Wastewater Irrigated Areas near Hyderabad, India**	2004									✓
2	Vaibhav Bhamoria	Waste water Economy of Peri-urban Vadodara	2001	✓							✓	
3	Vaibhav Bhamoriya	Wastewater Irrigation in Vadodara: Economic Catalyst for Marginalized Communities								✓	✓	
4	H. Panda	Assessing the impact of power sector reforms in Orissa	2001							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
[15] TANKS IN INDIA												
1	Vanya Sinha, Hitesh Jain and Sanjoli Batra	Improving the productivity of India's tanks: Comparative study of local tank management institutions	2004									✓
2	M.P.Vasimalai, R.Seenivasan, C.R.Shanmugham, A.Gurunathan & N. Venkatesan	Rehabilitation of Tanks & Groundwater Recharge: DHAN Foundation's Experience in Thani District, Tamil Nadu	2002							✓		
3	Abhishek Sharma	Rethinking Tanks: Opportunities for Revitalizing Irrigation Tanks – Empirical findings from Anantpur District, Andhra Pradesh, India*	2004									✓
4	Sanjoli Batra, Hitesh Jain and Vanya Sinha	Improving the Productivity of India's Tanks: Comparative Study of Tank Management Institutions*	2004									✓
5	R. Sakthivadivel and P. Gomathinayagam	Institutional Analysis of Best Performing Locally Managed Tanks in India**	2004									✓
6	R. Sakthivadivel and P. Gomathinayagam	Best Performing Locally Managed Tank Systems in Tamil Nadu**	2004									✓
7	Pradyumna Deshpande	Synthesis of Best Performing Tanks in Vidharbha Region**	2004									✓
8	Shah, T & K V Raju	Rethinking Rehabilitation: Socio-Ecology of Tanks in Rajasthan, North-West, India	2001					✓		✓		
9	Manas Satpathy	Who should manage the tanks? Irrigation department, Users' organisation or Private management agency	2001							✓		

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
10	KV Raju	Tank Rejuvenation in Karnataka – Why it should be a community based approach	2001							✓		
11	Manas Satpathy, Arvind Malik, Ujjal Ganguly and Ved Arya	Who should Manage the Tanks? Irrigation Department, Users' Organisation, or Private Management Agency? A Quest to Find a Sustainable Institutional solution	2002							✓		
12	Abhisek Sharma	Cock-Eyed View of Tank Management – Results from a Study of 5 Tanks in Andhra Pradesh	2003				✓			✓		
13	T Shah	Who Should Manage Chandeli Tanks?	2002		✓							
[16] DRINKING WATER STUDIES												
1	Jayasri Soni	Gender dimension of water scarcity : Result of a study in no source villages of four districts in Gujarat	2001							✓		
2	R Indu	Groundwater degradation and Human Health: The rise of Reverse Osmosis Plants in North Gujarat's Cottage Sector	2002							✓		
3	M Dinesh Kumar	Roof-Water Harvesting for Domestic Water Security in India – Who gains and Who Loses?	2002					✓		✓		
4	Jayesh Talati, M. Dinesh Kumar and Devang Shah	Quenching the Thirst of Saurashtra and Kachchh Regions through Sardar Sarovar Project*	2004									✓
5	Keshab Das and Ruchi Gupta	Rural Drinking Water Supply in Gujarat: Policy, Praxis and Perspectives**	2004									✓

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
6	K. V. Raju, Veerashekarappa, S. Manasi and Rajeev Kumar	Rural Water Supply in Karnataka- Moving Towards Organized Complexity**	2004									✓
7	Londhe A , <i>et al</i>	Urban-Hinterland Water Transactions: A Scoping Study of Six Class I Indian Studies	2004							✓		
8	K. K. Ganapathy, Bhavna Rawlley and Robin P. Mathew , Jayesh Talati and Archana Londhe	Town-Hinterland water transactions: A scoping study for three cities in Western and southern India (Ahmedabad, Bangalore and Chennai)	2004									✓
9	Sanjay Dhaunta, Mathew V. and Lokesh Singh, Jayesh Talati and Archana Londhe	Town-Hinterland water transactions: A scoping study for three cities in Western and southern India (Indore, Jaipur and Nagpur)	2004									✓
[17] WATER AND HEALTH												
1	O P Singh	Irrigation and Malaria Incidence in Gujarat, India *	2002							✓		✓
2	M. Dinesh Kumar, Deepinder Mohan, Rajnarain Indu and Tushaar Shah	Captive Demineralization Plants: Towards Sustainable Solutions to Address Drinking Water Scarcity in Rural and Urban Areas*	2004									✓

(Continued)

Annex 3 Table
Continued.

Sl No	Author	Title	Year of publication	Discussion Paper	ITP Highlight	IWMI RR	IWMI Working Paper/Policy briefings	Journal Article	Internal Journal Article	Paper available	Book Chapter	Paper presented
[18] HYDRAULIC HISTORY												
1.	Sachin Udepurkar and Karamveer Rathore, T Shah/ OP Singh	Hydraulic history as a tool for Comprehensive Assessment: Understanding the Evolution and Impact of Water infrastructure and Institutions in India	2004									✓
2.	Samita Vasudevan and Awani Sarogi, T Shah/OP Singh	Hydraulic history as a tool for Comprehensive Assessment: Understanding the Evolution and Impact of Water infrastructure and Institutions in India	2004									✓

Annex 4 IWMI-Tata Water Policy Research Program Office Staff List

Anand Gujarat – Staff List - 21 Feb 2004

Sl No	Name	Designation	Qualification	Experience
1.	Tushaar Shah	Principal Scientist	MA (Economics), Fellow,IIM	26 years
2.	Bhawana Upadhyay	Associate Expert	Masters in Public Policy & Com Dev.	6 years
3.	Dinesh Kumar	Consultant	Master of Engg (Water Res. Management)	13 years
4.	Shilp Verma	Junior Consultant	BA (Econ), Hons, PGDRM (IRMA)	2 yr 9 mths
5.	Vaibhav Bhamoriya	Junior Consultant	B Tech (Mining), PGDRM (IRMA)	2 yr 9 mths
6.	Avinash Kishore	Junior Consultant	BSc (Chemistry) Hons. PGDRM (IRMA)	2 yr 9 mths
7.	Abhisek Sharma	Junior Consultant	BA (Econ) Hons. PGDRM (IRMA)	2 yr 9 mths
8.	OP Singh	Junior Consultant	MSc (Agri) , Phd (Agri Econ)	8 years
9.	Jayesh Talati	Junior Consultant	MSc (Agri)	12 years
10.	Sanjoli Batra	Junior Consultant	PGDRM (IRMA)	7 months
11.	Archana Londhe	Junior Consultant	PGDRM (IRMA)	7 months
12.	Rahul Ranade	Junior Consultant	B Construction Tech	2 yrs 6 months
13.	MM Kapadia	Junior Consultant	BSc (Forestry)	8 years
14.	Pankaj Kole	Consultant (Project Monitoring & Admn)	BVSc & AH, Adv dip in Management	45 years
15	P Reghu	Executive Asst	BSc (Math)	25 years

Annex 5: List of ITP Partners

GOVT. OF INDIA/OTHER GOVTS

Mr VK Duggal
Secretary, Ministry of Water Resources,
Government of India,
Shram Shakti Bhawan, Rafi Marg,
New Delhi – 110 001.
(o) 011-3710305, 3715919
(f) 3710253 (r) 011-6255604
(e) sccywr@mowr.nic.in

Mr OP Misra, Director (Statistics)
Ministry of Water Resources,
6, B-Wing, Ground Floor, Shastri Bhawan,
New Delhi 110 001
011-23389496, 25631656

Mr ME Haq, Commissioner (Policy & Planning), Ministry of Water Resources,
Government of India, Room No. 404, Shram Shakti Bhawan,
New Delhi – 110 001
Ph/Fax 011-3711946

Prof. ST Patil., Director WALMI,
Dharwad 580 001, Karnataka
0836-2486893(O) 2775965 ®
2486889 (Fax) Mob: 94483 86889
patilst@sancharnet.in

Mr. Manoj Tiwari
Central Water Commission
Block 3, Paryawas Bhavan, Jail Road, Bhopal – 11

Dr. J S. Samra
Dy. Director General (NRM)
Indian Council of Agricultural Research,
Krishi Bhawan, New Delhi- 110 001
(o)011-3382306, 3388992-5
(f) 3382306, 3387293
jssamra@icar.delhi.nic.in

Dr Rakesh Hooja,
Joint secretary,
Ministry of Home Affairs,
Room No. 126 North Block
New Delhi 110 001,
Phone: (011) 23092361, 24676103(R)
rakeshhooja@yahoo.com

NABARD

Mr. John Kurien
General Manager (Minor Irrigation)
Technical Services Department, 3rd Floor,
NABARD C-24, G Block,
Bandra Kurla Complex,
Mumbai 400051
022-26539403, 26615576 (R)
john_kurien_in@yahoo.com

Central Groundwater Board

Shri A K. Sinha, Regional Director,
Central Ground Water Board,
Swaminarayan College Building,
Shah Alam Tol Naka,
Ahmedabad – 380 022.
(o) 5394464, 5396007
(f) 5329379

Dr. Salim Romani, Member (SML)
Central Groundwater Board
A2W3, Curzon Road Barracks
KG MArg
New Delhi – 110 001
Ph: 011- 23385620

Mr. J.S. Burjia, Chairman
Central Groundwater Board
Jamnagar House, Mansingh Road,
New Delhi – 110 011
(e) nicegwb@sansad.nic.in

Mr.M.Mehta
Regional Director & Director (Admin)
Central Groundwater Board
C.G.O Complex, NH-IV,
Faridabad
(o) 0129-2419105, (R) 0129-2434204, Fax: 0129-2418518
(e) nicegwb@sansad.nic.in, (e) cgwb@reno2.nit.in

Dr. P.K. Parchure, Scientist
Central Groundwater Board
West Central Region
Swami Narayan College Building
Shah Alam Tolnaka
AHMEMDABAD 380 022
pkcharchure@sify.com

DONOR AGENCIES

Sir Ratan Tata Trust

Mr. Arun Pandhi,
Senior Programmes Manager
Sir Ratan Tata Trust,
Bombay House, Homi Mody Street,
Mumbai- 400 001.
(o)022-5665 8282 (f) 022- 5665 8013
(e)apandhi@tata.com

Ford Foundation

Dr. Doris Capistrano,
Deputy Representative,
Ford Foundation, 55, Lodi Estate,
New Delhi- 110 003.
(o)011-6419441 (f) 011-4627147
(e) d.Capistrano@fordfound.org

SDC

Mr. Kurt Vogeles,
Swiss Agency for Development and Cooperation,
Embassy of Switzerland,
Chandragupta Marg, Chanakyapuri,
New Delhi – 110021.
(o) 011-6877819 / 20 (f) 6873631
(e) delhi@sdg.net

Ms. Lucy M. Maarse
Head NRM Sphere and IC-Delegate,
Swiss Agency for Development and Cooperation,
Embassy of Switzerland,
Chandragupta Marg, Chanakyapuri,
New Delhi – 110021.
(o) 011-6877819 / 20 (f) 011-6873631
(e) delhi@sdc.net

Ms Preeta Lall, Program Officer
Swiss Agency for Development and Cooperation,
Embassy of Switzerland,
Chandragupta Marg, Chanakyapuri,
New Delhi – 110021.
(o) 011-26877819 / 20 (f) 011-26873631
(e) delhi@sdc.net; preeta.lall@sdc.net

DFID

Dr. Ian Curtis,
Infra Structure, Urban Development and Environment (DFID),
British High Commission, B28, Tara Crescent,
Qutub Institutional area,
New Delhi – 110 016.
Tel: 011-2652-9123
Fax: 011-2652-9296
(e) Ian-Curtis@dfid.gov.uk

Mr. Ramesh Mukalla
Embassy of Sweden
Chandragupta Marg Chanakyapuri
New Delhi 110 021
Ph: 24197123/24197100
(e) ramesh.mukalla@foreign.ministry.se

Ms. Sarojini Thakur
Rural Livelihood Advisory Board
DFID – Delhi
British high Commission
B-28,Tara Crescent, Qutub Institutional Area, New Delhi – 110 016
Tel: 011- 6529123
Fax: 011- 6529296

Dr. Liz Faber
International Development Research Centre
South Asia Regional Office
208 Jor Bagh
NEW DELHI 110 003
Phone: 011-24619411, 24622707 (F)

Dr. Ir. Khin Ni Ni Thein
Senior Advisor
United Nations Environment Programme
Dams and Development Project
PO Box 47074
Nairobi, Kenya
Phone: +254-20-624517,
Fax: +254-20-623859/3545 (Fax)
Knn.thein@unep.org

Mr. Shashikant Chopde
Senior Program Officer
Natural Resources Management
Winrock International India
1, Navjeevan Vihar
New Delhi 110017,
Tel: 91-11-26693868 , 26693859-62; Fax: 91-11-26693881
shashikant@winrockindia.org

Mr. S.N. Batliwalla
Secretary & Chief Accountant
Sir Dorabji Tata Trust,
Bombay House,
Homi Mody Street,
MUMBAI 400 001.

Ms. Tara Sabavala
Program Co-ordinator.
Sir Dorabji Tata Trust
Bombay House,
Homi Mody Street,
Mumbai- 400 001.

Dr. Somnath Bandhopadhyaya
Programme Officer
Aga Khan Foundation
1st Floor, Sarojini House
6, Bhagwan Daas Road
New Delhi 110 001
Tel: 23782173 ext 22
Fax: 23782174
Email: somnath@akfindia.org

GOVT OF GUJARAT/OTHER STATE GOVTS

Mr. M S Patel, Secretary, Water Resources,
Block-9, New Secretariat,
Department of Water Resources,
Gandhinagar- 382 010
(o) 079-3220032
(f) 079-3220406
(e) secwr@gujarat.gov.in
secwr@guj.nic.in

Dr. V M. Yagnik, Managing Director,
Gujarat Water Resources Development Corporation Ltd., Sector-10A
Gandhinagar 382 000.
(o) 079-3220402, 3220988
(f) 079-21049
(e) gwrdc@satyam.net.in

Mr. S. J. Desai
Executive Director (Dam and Planning)
Block No. 12, First Floor, New Sachivalaya,
Gandhinagar-382010
Contact numbers – 079 – 3223508 (O), 3226187 (R), 3223056 (Fax),
9825300374 (Mobile)

Mr Bharat Lal, Jt Secretary (Water Supply),
Water and Supply Management Organisation,
Jal Seva Bhawan, 4th floor,
Sector 10A, Gandhinagar- 382 010

Mr. A. Santosh Mathew
Registrar Cooperatives,
Government of Bihar
Vikas Bhawanm, Patna, Bihar 800 015
Tel: 0612-2223884 (o) and 0612-2201550 (r)
9835461293 (M)
asmathew@sancharnet.in

Mr. Sudhir Tripathi
Secretary, Water Resources,
Govt. of Jharkhand,
Nepal House, Doranda,
Ranchi-834002
Ph: 0651-2491056
tripathi_sudhir@hotmail.com

Mr. Ashok V Gajjar
Dy Executive Engineer
Sardar Sarovar Narmada Nigam Ltd
NP Dam Sub Dn. No.2/5
New A.D. Block, Kevadia Colony 393 151
Dist Bharuch
Phone: 02640-232288 (O), 232131 (R)
232136 (F)

NGOs

Mr. Anil Shah, Chairman,
Development Support Centre,
2, Prakruti Apartments, Opp. Red Rose Restaurant,
HL Commerce College Road,
Navrangpura, Ahmedabad – 380 009.
(o) 079-6305285, 6306144
(f) 079-6303296 (r) 079 6853724.
(e) dsc@satyam.net.in
acshah@icenet.net
Res: 401, Block “C”, Prestige Tower
Bodakdev, Vastrapur, Ahmedabad 380 054

Shri Harnath Jagawath, Director,
Sadguru Water & Development Foundation,
P.B. 71, Dahod-389 151
(o) 02673-238601, 238602
(f) 02673-246749 (r) 02673-247367, 240800
(e) nmsadguru@yahoo.com

Mr. Apoorva Oza, AKRSP (I),
Swastik Cross Road,
Choice premises Navrangpura,
Ahmedabad – 380 009.
(o) 079-6427029, 6427205, 6427729
(f) 079-6870319 (r) 079-6870319
(e) akrspi@icenet.net
(Res) B-102, Alaukik Apartment,
Bodakdev, Near Judges’ Bungalow,
Ahmedabad
Ph: 079-6878104

Mr. Ved Arya, SRIJAN,
4, Community Shopping Ctr.,
Anupam Apartments,
1st Floor, Saidullajag,
New Delhi – 110 068
(o) 011-251664521 and
251664522.
(f) 011-26868411
(e) srijannd@nda.vsnl.net.in
vedarya@srijanindia.org

Mr. Deep Joshi, PRADAN
3 Community Shopping Centre,
P.O. Box 3827, Niti Bagh,
New Delhi – 110 049.
(o) 011-26514682, 26518619
(f) 011-26518619
(e) pradhanho@del2.vsnl.net.in

Mr. Srinivas Mudrakarta, Director,
VIKSAT, Nehru Foundation for Development,
Thaltej Tekra, Ahmedabad.
(o) 079-6856220/88007-9
(f) 079-6856220 (e)mail@viksat.org

Mr Amitabha Sadangi
International Development Enterprises,
C-5/43, SDA, New Delhi – 110 016
Ph.: 011-2696-9812/813/2689-9449
26527151 (direct)
(f) 011-6965313 (M) 98110 - 17425
(e) ide@ide-india.org
(e) amitabha@ide-india.org

Mrs. Nafisa Barot,
Executive Trustee, UTTHAN,
Development Action Planning Team,
36, Chitrakut Twins, Nehru Park,
Vastrapur, Ahmedabad 380 015.
(o) 079-6751023, 6732926
(f) 079-6763624
(e) utthan@icenet.net
nafisa@icenet.net

Mr. M. P. Vasimalai, Executive Director
Dhan Foundation, 18, Pillayarkovil Street,
S. S. Colony, Madurai Tamil Nadu 625 010.
(o) (0452) 610794/ 805
(f) (0452) 602247
(e) dhan@md3.vsnl.net.in

Ms. Nilima Khetan, Chief Executive,
Seva Mandir, Old Fatehpura
Udaipur-313004
(o) 0294-2450960, 2451041
(f) 0294-2450947
(e) smandir@vsnl.com
smandir1@sancharnet.in

Mr. Ajay Pandey, Director, PROGRESS
H No 362. opp : Maharshi Devanand Sevashram,
Near Marg No 8, Ratitalai
Banswara, Rajasthan – 327 001.
(o) 02962-248512
Mob:94141-62359
(Fax)02962-240050 PP
(e)progressbsw@rediffmail.com
progress21@sancharnet.in

Dr. Niranjan Pant, Director,
Centre for Development Studies,
B-2/68, Sector 'F'
Jankipuram, Lucknow – 226021.
(o) 0522-361339 / 363880
(f) same as phone
(e) pantn@sify.com
pantniranjan@hotmail.com

Mr Srinivas Chokkakula
Environmental Planning Collaborative,
Paritosh, Usmanpura,
Ahmedabad 380 013
Ph: (O)7550102 (F) 7550649
(e) svas@sancharnet.in
(M) 9825605771

Dr KJ Joy, SOPPECOM,
16, Kale Park, Someswarvadi Road,
Pashan, Pune 411 008
(Telefax) 020-2588 0786, 2588 6542
(e) soppecom@pn3.vsnl.net.in

Ms. Seema Kulkarni, (In place of KJ Joy)
SOPPECOM,
16 Kale Park, Someshwarwadi,
Pashan, Pune 411008;
Phone: 020-5880786 (O); 020-25465939; 9822004258
Email: soppecom@vsnl.com

Ms. Sunita Narain, Director
Centre for Science and Environment (CSE)
41, Tuglakabad Institutional Area,
New Delhi- 110 062
(O) 011-29955124, 29956110
Fax : 011-2608 5879
csesunita@yahoo.com

Mr Amrish Vora
Gujarat Ecology Society
5,Golden Apartment
Subhanpura
Vadodara -390023
Ph: 0265-283329,283341
Fax: 0265-284664
(e) gesbrddad@sancharnet.in

Mr. R. Doraiswamy
Executive Director
Pragathi-Farmers Society for Rural Studies and Development
72, 7th Cross, Chikkathayappa Street
Vasanthnagar, Bangalore 560 052
Phone: (080) 2286161, 9845787038
Email doraiswamy@vsnl.net

Mr. Ashis Mondal, Director
Action for Social Advancement
2nd floor, Utkarsh Apartment
Sahyog Nagar
DAHOD 389 151
Phone: (02673) 221546/246484,
223891 (R) asa@satyam.net.in

Dr V Ratna Reddy
Centre for Economic and Social Studies
Nizamiah Observatory Campus,
Begampet, Hyderabad 566 016

Mr. Anupam Mishra,
Gandhi Peace Foundation,
221-223, Deendayal Upadhyaya Marg,
Delhi 110 002

Mr. Rajender Singh,
Tarun Bharat Sangh,
Bheekampura - Kishori
Via- Thana Gazi - 301022
Alwar (Rajasthan)
Phone : 014 65-250 43
(e) watermantbs@yahoo.com
jalbiradari@rediffmail.com

Mr. Digant Oza
Jalseva Satyajeet Trust
B-1, Neeldeep Appt. Opp. Sandesh Press
Laad Society Road, Vastrapur,
Ahmedabad 380 015
Phone: 079-6851230
satyajeet1@icenet.net

Mr. R. Seenivasan,
Programme Leader
DHAN Foundation
18, Pillaiyar Koil Street
S.S. Colony, Madurai- 625 010
Ph: 0452-2610704
Fax : 0452-2602247
E-mail: dhan@md3.vsnl.net.in; rseeni@eth.net

Mr. Girish Sohani
Executive Vice President
BAIF Development Research Foundation
Dr. Manibhai Desai Nagar
NH No.4, Warje
PUNE 411 052
Phone: 020-25231661, Mob. 9422306338
baif@vsnl.com gimate@rediffmail.com

Mr. Ravi Chopra Director
Peoples' Science Institute
252, Vasant Vihar, Phase 1
Dehradun 248006
Uttaranchal.
(o) (0135) 763649/773849
(f) (0135) 762140
psiddoon@sancharnet.in

Mr. Manas Satapathy, PRADAN,
60 Circular Road, K. P. Dutta Compound,
Ranchi -834 001. Jharkhand
(O) 0651 2560615/2561552, 9431186772(m)
(e) pradan_khunti@yahoo.co.uk

Prof. C .R. Shanmugam
Dhan Foundation,
18, Pillayarkovil Street,
S. S. Colony, Madurai 625 010
Tamil Nadu
Phone: (0452) 2610794/ 805

RESEARCH AND EDUCATIONAL INSTITUTES

Dr Alok Sikka,
Director, ICAR Research Complex,
Phulwarishariff
Patna 801 505 Bihar
(e) aloksikka@yahoo.co.in

Dr. Biksham Gujja
International Crops Research Institute
for the Semi-Arid Tropics (ICRISAT)
Patancheru 502 324,
Andhra Pradesh
Phone 040-23296161 (Extn 2761)
bgujja@wwfint.org

Dr Prem S Vashishtha, Director,
Agricultural Economics Research centre
Delhi School of Economics Campus
University of Delhi, Delhi 110 007
Tel: 011-2767588 27667648 (O)
011- 0120-2525 839
Fax- 0120- 2530 378
(e) premsv@rediffmail.com
aerc@nda.vsnl.net.in

Dr. Pratap Reddy, Director,
Institute of Rural Management,
Anand – 388 001
(o) 02692-260181, 260186
(f) 02692-260188
(e) kpr@irma.ac.in

Dr. Vishwa Ballabh, Professor,
Institute of Rural Management,
Anand – 388 001.
(o) 02692-260181, 260186
(f) 02692-260188
(e) vb@irma.ac.in

Dr. Rohit Desai, Professor of Economics,
Sardar Patel Institute of Economic and Social Research,
Thaltej Road, Ahmedabad – 380 054
(o) 079- 6581428, 6850598
(f) 079-6851714
rddesai@icenet.net

Dr.K.V.Raju, Professor and Head
Ecological Economics Unit
Institute for Social and Economic Change
Nagarabhavi, Bangalore-560072, India
Email: kvraju@isec.ac.in, kvr88@hotmail.com
Ph: 0091-80-3215468, 23217013, 23215804
Fax: 0091-80-3217008
Ph: (R) 080-23214998

Dr. A Narayanamoorthy,
Gokhale Institute of Politics and Economics,
BMCC Road, Pune 411 004
Maharashtra.
(o) 020-5650287 (f) 020-5652579
(e) na_narayana@hotmail.com

Ms. Vasudha Pangare
Director, World Water Institute,
Flat No.6,Pentium Classic Apartments
NDA-Pashan Road
Bavdhan, Pune-411 021
Tel: +91 20 2953409

Dr Sudarshan Iyengar, Director,
Gujarat Institute of Development Research
Near Gota Char Rasta
Ahmedabad 380 060
Tel: 079-374-2366/69 (O) 685-4389 ®
(Fax) 079-374-2365
gidrad1@sancharnet.in
iyengars@icenet.net

Dr. R Parthasarathy, Associate Professor,
Gujarat Institute of Development Research, GOTA,
Ahmedabad 380 060
(o) 079-7454192-93 (f) 7454191
(e) rpsarthy@hotmail.com

Dr. M S Rathore
Institute of Developmental Studies
8B, Jhalana Institutional Area
Jaipur 302 004
® 0141-2358028
(O)0141- 2706457, 2705726
Fax-0141-2705348
(e) msr@idsj.org

Dr Suhas Wani, ICRISAT,
Pattancheru, Andhra Pradesh
PIN - 502 324
Mob: 9849005546

Dr. P.K. Joshi, Principal Scientist
National Centre for Agricultural
Economics & Policy Research
Post Box 11305, Pusa
NEW DELHI 110 012
Ph: (011) 5731978/5713628/5819731 (O), 7290283(R) Fax 011-5822684
E-mail: pjoshi@iasri.delhi.nic.in
joshiplr@vsnl.net
Res: A-7 Pusa Apartments
Sector 15, Rohini, Delhi 100 085

Prof.Bhaswar Moitra
Department of Economics
Jadavpur University,
Kolkata- 700032
033-2414-6328 (o),2472-96078(R)
bhaswar_ju@yahoo.co.in

Mr.Ganesh Pangare
World Water Institute
Flat No.6,Pentium Classic Apartments
NDA-Pashan Road
Bavdhan, Pune-411 021
Tel: +91 20 2953409
indianpim@vsnl.com
gpangare@hotmail.com

Dr.Sudhirendra Sharma
The Ecological Foundation
7 Triveni, A 6 Paschim Vihar
New Dehi 110063
Tel: 011-25265212,25250494
Mobile: 9811925516
sudhirendra@vsnl.net

Dr.A Vaidyanathan
Madras Institute of Development Studies
79, Second Main Road
Gandhi Nagar, Adyar
Chennai 600 020
(o) 4412589, 4412295, 4411574
(f) 044-4910872 (r) 4926533

Prof. Nilakantha Rath
President
Indian School of Political Economy
“Arthabodh”
968/21-22, Senapati Bapat Road
Pune - 411 016.
Tel: 020-25657132; 25657210
Fax: 020-25657697
E-mail: ispe@vsnl.com

Mr. Dola Mohapatra
National Director, CCF-India
22 Museum Road
BANGALORE 560 001
Phone: 080-25587157, 25550466, 25594271 (F)
ccfindia@ccfindia.com dolam@ccfindia.com

Ms. Shoba Ramchandran
Head, Books for Change
139 Richmond Road
Bangalore 560 025,
Karnataka
Phone: -080-25580346/25321747, 25291732 (R)
25586284 (F) shobaramc@actionaidindia.org

Mr. Vivek Goenka
Ram Nath Goenka Foundation
The Indian Express
C-6 Qutab Institutional Area
NEW DELHI 110 016
Phone: 26511003/5
rng@expressindia.com

Mr Rajesh Shah, Managing Director
Saline Area Vitalization Enterprise Ltd
Shree Apartments,
Next to Manoranjan Restaurant
University Hostel Road, Navrangpura,
Ahmedabad – 380009
Ph / Fax: 079-7913715 / 7913569
Mobile 9824029180
Email: saveltdad1@sancharnet.in

Dr Amita Shah
Gujarat Institute of Development Research,
GOTA, Ahmedabad 380 060
(o) 079-3742366-369, (f) 7454191

Dr. RKP Singh
Dept of Agriculture Economics
Rajendra Agriculture University
PUSA 848 125
Samastipur Dist, Bihar 848 125
Phone: 06274-240507
raupusa@sancharnet.in

Shri Hasmukh Shah, Chairman,
Gujarat Ecological Society
5, Golden Apartment
Subhanpura
VADODARA 390 023
(O) 0265-283329, 283341
(F) 0265-2781 060
(e) hsshahad1@sancharnet.in

Dr. Dinesh Marothia, Prof & Head,
Dept of Agricultural and Natural
Resource Economics,
Indira Gandhi Agricultural University,
Krishak Nagar,
Raipur 492 012
(e) dkmarothia@yahoo.com
Tel (o) 0771 – 2442581, 442515 ext 110
(R) 0771-24422709 (f) 0771 - 2442131

Dr. K. Palanisami, Project Director,
Water Technology Centre,
Tamilnadu Agricultural University,
Coimbatore – 641 003 (TN).
(o) 0422-443679 (f) 0422-431672
(e) kpwtc@vsnl.com
palanisamik@vsnl.net

Dr. P P. Patel, Prof. and Head,
Dept. of Geology, Faculty of Science,
M S University, Baroda – 390 002
(o) 0265-785560, 795329
(f) 795569, 787556 (r)311883
(e) geolpp@yahoo.com

Dr.S.Janakarajan, Professor
Madras Institute of Development Studies
79, Second Main Road
Gandhi Nagar, Adyar
Chennai 600 020
(o) 4412589, 4412295, 4411574
(f) 044-4910872 (r) 4926533
(e) janak@mids.ac.in

Dr. A S Patel
Civil Engineering Department,
Faculty of Technology & Eng.,
Kala Bhuvan, MS University,
Vadodara
(o) 02662-22653, 22089
(r)0265-464568

Dr Devi Tewari,
School of Economics and Management
University of Natal,
King George Vth Avenue,
Durban 4001
Tewari@nu.ac.za

Dr PK Singh,
Head, Dept of Economics,
Sardar Patel University
Vallabh Vidyanagar

Dr. Dilip Shah, Professor & Head
Dept of Rural Studies
South Gujarat University
University Campus
Udhna-Magdalla Road
SURAT 395 007
Phone: 0261- 23227141-146, 23227312 (F)

Mr S.C. Rajshekhar
Symbiotec Research Associates
C-6-C, Gangotri Enclave,
Alaknanda,
New Delhi 110019
TEL: 011-26210633; 011-31073217

Ms. Shakti Sharma
Tata Steel Rural Development Society
E Road, Bistupur,
Jamshedpur- 831 001
Jharkhand, India
TEL: +91-657-2425999

Mr N. Ram, Editor-in-Chief
The Hindu
859-860, Anna Salai
Chennai-600 002
Tamil Nadu
Ph: 044-28415377, 28594373, 9841070354
Fax: 044-28415395

Mr. Vijay Mahajan
BASIX,
501-502, Nirmal Towers,
Dwarkpuri Colony, Punjagutta,
Hyderabad 500 082
040 26618846/23350171, 23358846(F)
vijaymahajan@basixindia.com

Dr. Jasveen Jairath
Regional Manager, CapNet South Asia
SaciWATERS, Plot No. 70, Phase - III,
Kamalapuri Colony,
Hyderabad - 73.
Hyderabad - 500073
Ph: +91-40-23542411, 55762865
Fax: +91-40-23545330

Dr. Jayshree Soni,
Centre for Social Studies,
South Gujarat University Campus,
Udhana Madala Road,,
Surat – 395 007.
Ph.: 0261-3227173/74

CONSULTANTS

Dr R Sakthivadivel
33, 4/14 I East Street, Kamraj Nagar
THIRUVANMIYUR, CHENNAI 600041
TAMILNADU, INDIA
(0) 044-2441 4170
(e) sakthivadivelr@yahoo.com
(M) 98403-94950

Dr. Sanjiv Phansalkar,
AMOL Management Consultants
Flat number G-2
Laxmi Krupa Apartments,
T-7, Laxminagar, Nagpur-440022
(O) 0712-2231375.
(R) 0712-2241272
(M) 98224-66126 or 94221-10803
(e) sanjv_ngp@sancharnet.in
(e) sanjv@nagpur.dot.net.in

Mr. F.A.Shaheen,
Ph.D scholar,
Department of Agricultural Economics,
Gujarat agricultural University,
Junagadh Campus - 362001,
Junagadh, Gujarat.
fashaheen@gaujnd.org

Mr. Devang P Shah
Himadri Enviro-Protection Consultants, Amdavad
7, Kameshwar Jyot Flats, Vibhag-2,
Nehrunagar, Ambawadi,
Ahmedabad, 380 015
Phone: 079-630 85 98 (O),
98254 44159 (M)

Mr. Rushab Hemani, Ruchini
M/46, Gujarat Housing Board
Opp. Mahila College
Kalawadi Road
RAJKOT 360 001
Phone: 0281-2444038, 9825483211 (M)
ruchini@rediffmail.com

Mr. Sachin Y Mardikar
Management Consultant,
Consult-India, B-7, Vrindavan,
Bharat Nagar, Amravati Road,
Nagpur 440 001,
TEL: 09823056718 (O)

Mr Sanjeev Gupta
Independent Consultant
6/12, Street No. 4,
Vishwats Nagar, Shahdara,
Delhi 110032
TEL: 011-22384475 (Resi);
(M) 9810523350

Col Surajit Rath
Krishi Gram Vikas Kendra
C/O Usha Martin Industries Ltd
Tatisilwai
Ranchi – 835 103
Jharkhand
(T) 0651 – 226 5837

Dr R Indu, Consultant
1 Radhaswami Bunglows II
Opp. Sonpriya Apartment
27 Gam School Road
B/h Nandabhumi, Anand
Phone: 248419, (e) r_indu@hotmail.com
indursv@earth.planet.net.in
rajnarayanindu@yahoo.com

Shri R K Nagar, Consultant,
A-11, Avkar Apartment
Nr. IRMA Gate,
Anand – 388 001.
Phone: 260698
(e) rknagar@indya.com rk_nagar@yahoo.co.uk

Mr. Padyumuna Deshpande
386 Dharampeth
NAGPUR 440 001
Phone: 0712-2521054
Pa_ocp@yahoo.co.in

COOPERATIVES

Shri Sangramsingh R.Choudhary
Managing Director, Banas Dairy,
P.O. Box 20, Palanpur 385 001
(O) 02742-53881-4
(f) 02742-52723 (r) 02742-57386
(e) src@amul.com
srcmd@banas.guj.nic.in

MEDIA PERSONS

Mr Vidyadhar Date,
Special Correspondent,
The Times of India
Dr DN Road,
Mumbai – 400 001
(O) 022-56354614 ® 022-2642-4799

Mr Pallava Bagla
India Correspondent
American Association for the Advancement of Science,
Samachar Apartments
Mayur Vihar Phase I, Delhi 110 091
(O) 011-2271 2896
(M) 98103 01400
(Fax) 011-2271 5964
(e) pbagla@vsnl.com

Mr. Ajay Singh, Assistant Editor,
Indian Agribusiness Systems
E-12, Greater Kailash-1,
New Delhi – 110 048
(O) 011-2644 6663, 2642 3336
(M) 98913 95944
(e) ajay@agriwatch.com

Ms. Padma Prakash
Associate Editor,
Economic and Political Weekly,
Hitkari House,
284 Shahid Bhagatsingh Road,
MUMBAI 400 001

Shri Jagdish Rao, Managing Director,
Foundation for Ecological Securities,
National Tree Growers' Cooperative Federation Limited, P B 156,
NDDDB Campus, Anand – 388 001
(o)02692-262453, 262653
jagdeesh@fes.irm.ernet.in

Mr. Arun Kumar
PA Consulting Group
D-6/12, 1st floor
Vasant Vihar, NEW DELHI 110 057
Phone: 011-26147648/26154733
26154732 (F), Mobile: 9810128975,
arun.kumar@paconsulting.com

OTHERS

Dr. Bekele A Shiferaw, Scientist
Resource & Development Economist
ICRISAT
Patancheru 502 324
Andhra Pradesh
Phone: 040-23296161, 23241239 (F)
b.shiferaw@cgiar.org

Mr. V.B. Patel
Chairman (CCG)
Task Force on Interlinking of Rivers
128 Manekbaug Society, Ambawadi
AHMEDABAD 380 015
079-6401297-98, 6611762(R)
Mob 9824023622,
vbpatel@multimantech.com

Dr. Himanshu Kulkarni, Secretary
Advanced Centre for Water Resources
Development and Management
Sakar, 1206/18 Dr. KP Kulkarni Road
Shivajinagar
PUNE 411 004
Phone: 020-25538719, 25396078
acwadam@vsnl.net himan_6@hotmail.com

Dr. Navroz Dubash, National Institute of Public Finance and Policy
18/2 Satsang Vihar Marg
Special Institutional Area
New Delhi 110 067
e) ndubash@nipfp.org.

Mr. Deepinder Mohan
Environmental Planning Group Ltd
8G Trade Centre
Stadium Circle
Navrangpura
Ahmedabad 380 009
Ph: 95 79 8600670 (Mob), 6431102 (O)

Mr. Gianni Bicego
Water & Sanitation Delegate
Indian Red Cross Society
Red Cross Bhawan, Gungai Road
Opp. Navi Sheri
PATAN 384 265
Phone: 02766-25567
gbicego@amcrossindia.org

Mr. Arun Joshi
10 Classic Purnima Park
Ring Road
Near Bombay Hospital
INDORE, Madhya Pradesh
Phone: 0731-2434985
Ceat_mp@yahoo.com

Mrs. Aditi Mukherji
PhD Scholar, Department of Geography
Fitzwilliam College
University of Cambridge
Cambridge CB3 0DG
Ph: 01233 477187

Prof. S Acharya, School of Planning
Centre for Environmental Planning & Technology
Kasturba Lalbhai Campus
University Road
Navrangpura, AHMEDABAD 380 015
Phone: 442470, 442740

Prof. Darshini Mahadevia
Centre for Environmental Planning & Technology
Kasturba Lalbhai Campus
University Road
Navrangpura
AHMEDABAD 380 015
Phone: 442470, 442740

Dr. Esha Shah,
Centre for Interdisciplinary Studies in Environment & Development
1st Floor, Seminar Block
ISEC Campus
Nagarbhavi P.O.
BANGALORE 560 072
Ph: 0091-080-3217013, 080-3211062 (R)
cised@isec.ac.in.

Dr. Katar Singh,
C-3 Shri Krishna Park,
Near IRMA gate,
Anand 388001

JOURNALISTS COVERING AGRICULTURE ISSUES

Ms Chandrika Mago
Special Correspondent
Times House
7, Bahadurshah Zafar Marg
New Delhi 110002
Tel: 91-11-23492209, 23492083,
Fax: 91-11-23715832, 23351606
Mobile : 9811333745
Email: chandrikamago@visto.com

Ms Sonu Jain, Indian Express
Special Correspondent
C-6 Qutab Institutional Area
New Delhi 110016
Tel: 91-11-26531111
Fax: 91-11-26511615
Mobile: 9810203488
Email: sonujain44@hotmail.com

Mr. P Sunderajan, The Hindu
2/9 INS Building
Rafi Marg
New Delhi 110001
Ph: 23715426, 23715427
Fax:: 23718158, 23723808,
Mobile: 9811176225
Email: hindudel@ndf.vsnl.net.in

Mr. R Ramachandran The Frontline,
203 Ansal Bhawan
16 Kasturba Gandhi Marg
New Delhi 110001
Ph: 23731985 extn (280),
2724263 (R)
Fax: 23739101, 23720009,
Mobile: 9818310554
Email: tkr@ndf.vsnl.net.in,
bajji@thehindu.co.in, bajji@vsnl.com

JOURNALISTS COVERING WATER ISSUES

Ms. Priya Menon Senior Feature Writer
The Indian Express, Express Estates
Mount Road, Chennai-600 002
Tamil Nadu
Ph: 044-28461274, 98840-28006
E-mail: menonpriya_74@rediffmail.com

Mr Rajesh Sinha, Chief Reporter
The Hindustan Times
69/27, Veer Tejaji Marg, Mansarovar
Jaipur-302 020, Rajasthan
Ph: 0141-2784776
E-mail: rajscribe@hotmail.com , rsinha_1999@yahoo.com

Ms. Seethalakshmi S
Senior Correspondent
The Times of India,
S&B Towers
40/1 M G Road
Bangalore-560 001
Ph: 080-25069596/26557451 or 98454-53455
E-mail: sseethalakshmi@indiatimes.com , sseethalakshmi@yahoo.com

Mr. T Ramakrishnan,
City Editor The Hindu
Flat No. 7, Mayyan Builders
1A Dhandeeswaram 9th Cross Avenue
Velachery, CHENNAI 600 042
Phone: 044-22431698 (R) 044-28594373 (O)
Mobile: 098410-70354.
t_ramakrishnan@rediffmail.com rama_krishnan@yahoo.com

Centre Commissioned External Review (CCER) of the IWMI-TATA Water Policy Research Program: IWMI Management Response

This report offers the response of IWMI Management to the conclusions and recommendations of the CCER on the IWMI-Tata Program (ITP). At the outset, we take this opportunity to place on record our appreciation of a candid, incisive and thorough review of the Program carried out by the distinguished members of the review team. We are particularly pleased that we could put together a team which has right balance of inputs from science as well as from the world of practice and institution building. Dr. Jacob Burke of the Food and Agricultural Organization is a leading observer of the global groundwater scene and brings technical expertise and a global policy overview. Mr. Deep Joshi of PRADHAN is one of the best known development practitioners and NGO leaders in India. Dr. Ravi Chopra, Director of Peoples' Science Institute, Dehradun, brought a strong environmental perspective to the review of the ITP.

We are happy that, overall, the review team has taken a fairly strong positive view of what the ITP has accomplished so far. The report concludes that ITP 'fills a critical gap in Indian water research and is an important program within IWMI's portfolio and the larger framework of the CGIAR family'. Further, "it fills a significant gap in India's scientific and economic research by probing at the sometimes controversial boundary of India's water management initiatives". Based on their findings, the reviewers "strongly recommend the concentration of resources to complete the current phase of action-oriented research and policy analysis".

The CCER report further notes that "the goals of ITP, within the broad mission of IWMI and SRTT, are appropriate and the underlying research questions addressed are valid and fit into internationally agreed development targets relating to a livelihoods approach to water management. Therefore, ITP should be maintained as a key element in IWMI's portfolio of partner programs".

RECOMMENDATIONS (SECTION 12 OF CCER REPORT AND EXECUTIVE SUMMARY)

- [1] We are gratified that the review team was impressed by the scope and quality of research in most areas it reviewed. We agree that while some areas are relatively new, they fulfil their potential and should be continued. (ES 2)
- [2] We also agree that the ITP outputs on groundwater socio-ecology are of international repute (ES 5) and the North Gujarat Action Research Program contains seeds of a potentially significant policy and action coalition (ES 6).
- [3] We also agree that ITP's Central India Initiative presents an opportunity for breaking new ground in both conceptual and policy terms, affecting some of the poorest and socially, most vulnerable, people across a large geographic region (ES 7).
- [4] On partnerships and networks, we agree with the review team's contention that effective partnerships need time and effort to manage and that the future development of partnerships under ITP needs to be managed more strategically by creating a wider water community and significant policy changes (ES 10). There are, however, important issues of strategy in implementing the CCER suggestion that ITP consider adopting a 'field-building approach' that the founding partners need to consider together. These are outlined later in this report.

SPECIFIC RECOMMENDATIONS

The review team identified four areas of concern:

- [a] broad scope of the research themes,
- [b] balance of research themes from micro-economic to macro-policy focus,
- [c] communication strategy and
- [d] sustaining the ITP momentum into a second program cycle.

We agree that each of these deserves systematic thinking and action.

- [a] As a policy research program trying to inform generalists and lay public, ITP research has steered clear from highly technical and quantitative research; it has focussed on larger issues of policy. While this broad policy focus is still continuing, we agree with the team's suggestion to strengthen and improve scientific and analytical rigor in ITP's work;
- [b] ITP has undertaken a fairly large volume of micro-level research; however, effort has always been made to commission micro-level research to establish and support a new macro-level policy view point¹;
- [c] We agree completely with the team's concern about the ITP's investment in effective dissemination of its policy research. Indeed, we have already acted on some of the CCER recommendations with considerable success;
- [d] We also agree with the CCER concern about sustaining the ITP's momentum into a second program cycle. However, with the visibility and recognition that the program has earned from various quarters based on three years of work, we hope that support for continuing ITP into a second cycle will become available from existing and new partners.

Another concern that the reviewers expressed is ITP's neglect of water management questions in certain regions, (such as in the mountains and in eastern India), certain issues (gender, political economy, domestic water, water quality), and certain phenomena—such as land-water-forests interactions. We fully agree with the CCER's view point. While we have been able to do some work in the Eastern Gangetic basin, ITP has done little in the hills and mountains. We also agree that ITP needs to strengthen gender dimensions of its research and incorporate a strong political economy perspective. It is not that these aspects are purposely ignored. However, in keeping the

¹For example, ITP researchers carried out farm-level surveys to estimate water use in livestock production systems; however, the purpose of these studies was to highlight that intensive dairy production in semi-arid India has emerged as highly water intensive livelihood system, a finding that came as a surprise to most policy makers, including those in India's dairy industry. Likewise, recently, ITP carried out a detailed study of groundwater pumping behavior by tube well owners in two *talukas* of Gujarat. The researchers were not interested in these two *talukas* per se, but in adducing evidence in support of a major policy argument put forward about the management of energy-irrigation nexus (see IWMI RR 70).

ITP research focus manageable, the programme has had to make thematic choices, without which the CCER would have found ITP's research focus even broader and more diffuse.

Even so, ITP is committed to fill several of the gaps identified by the CCER. We have just begun some research on Wular lake in Kashmir; ITP's annual meeting in 2005 plans to have a clutch of studies on "Women, Water and Welfare". The approval of the CP proposal on Groundwater Governance in IGB and the Yellow River basin will also help us to expand and deepen our work on water and poverty issues in flood prone Ganga-Brahmaputra-Meghna basin.

On the North Gujarat Initiative, while the CCER takes a positive view of several activities, it recommends that the ITP needs to "simultaneously examine the macro-construct that drives the present resource management/livelihood strategies in the region and the likely public policies that would catalyze change." We agree with this opinion. Happily, ITP's work on groundwater intensity of North Gujarat Dairy Economy has since generated so much concern among policy makers that new opportunities are now opening up for the ITP to work with dairy industry stakeholders to gradually work towards a macro-construct (ES6).

The CCER's concern that flood management issues and the role of forestry policy on upland hydrology and their impacts on rural livelihoods downstream, also need to be explored. We agree with this concern and will explore opportunities to initiate work on these issues during 2005 (ES 9).

PARTNERS AND NETWORK

The review team was appreciative of ITP's operational strategy of working through partnership with NGOs and researchers. However, it is concerned that ITP research has tended to become increasingly in-house and closely supervised. The team is concerned that this could limit the opportunity for building a broad community of researchers which was one of the original objectives of ITP. We agree with the recommendation that the ITP should gradually adopt

- [a] a field-building approach of broad-based participation more vigorously. To this end, CCER has recommended a constellation of three to four senior persons and an Advisory Committee to guide the governance of the program. We agree with all these recommendations. During 2003, ITP created a constellation of three senior researchers; however, we expect to strengthen this arrangement in 2005. At the time of its' establishment, IWMI Management did consider some kind of advisory committee to assist in the governance of the program. However, ITP's Annual Partners' Meeting emerged as a major instrument for feedback and seeking consultation and for studying research priorities. Therefore, the need for an Advisory Committee was not felt. However, IWMI management will now reconsider the matter
- [b] The CCER has also advocated "a longer-term perspective" for ITP in developing partnerships and building capabilities for a meaningful engagement with the problem of water scarcity. IWMI Management agrees with the need for a more long-term perspective for the ITP. However, since ITP itself is a partnership between IWMI and SRTT, it will be important for the two partner institutions to jointly decide the future of ITP. A welcome development has been the interest shown by SDC, New Delhi, in providing long-term support to the ITP as a possible third partner. The ITP Management will raise this issue with its' present and potential partners.

[c] In advocating a ‘field-building approach’ for ITP, a general refrain of the CCER is that ITP might aim primarily at capacity building of research groups, NGOs and institutions in the field of water policy analysis and in doing so, tone down its emphasis on research output and productivity. In our view, this would mark a major strategic change and requires detailed review by IWMI and SRTT together. One major concern is that the resources presently available with ITP are far from sufficient for it to support major capacity building initiatives in the water research establishment². A related concern may also be ITP’s own competence base which, at present, is stronger in promoting guided policy research than in institutional capacity building. In any case, this is one of the most far reaching recommendations of the CCER which, the IWMI Management suggests, needs detailed review and consideration. What ITP can easily do is to restore the emphasis it originally gave to partnership-and-networked research. It can also play a field-building role through catalytic actions/support—such as it has offered to the new Watershed Network and through its work on CInI.

COMMUNICATION AND DISSEMINATION

The CCER identifies communication and dissemination as a major area that needs further work and improvement in the ITP. It recognizes as ITP’s key strengths, its large volume of output, the diversity of issues on which it has worked and its’ practical policy orientation. It also recognises ITP’s success in publishing policy briefings, IWMI RRs, ITP Highlights and Comments, as well as journal articles. Yet, the CCER suggests that “much of the communication effort has concentrated on dissemination to researchers and NGOs”, recommending that “ITP needs to devise an effective communication strategy which focuses on decision makers”.

The IWMI Management has taken a serious view of this assertion and the CCER’s suggestion that ITP should organise ‘small focussed workshops’ and secure greater visibility in the media for ITP research. IWMI’s Communication Group has since developed a brief note on communication and dissemination strategy in the ITP which will soon come into effect (see Annex 1). ITP has also put into operation the CCER’s recommendation on “small focussed workshops” for its Central India Initiative (CInI) to a significant effect. A state level policy dialogue for senior government secretaries was held in the state of Jharkand to discuss CInI’s results; this led to a request from the state government for an MOU with IWMI. A similar workshop was held in Orissa which was attended by the state Chief Minister, its’ top bureaucrats and some 15 NGO leaders. Again, the state invited IWMI to implement some CInI recommendations in the tribal states. A similar workshop is now being planned in Rajasthan where the new Chief Minister has shown much enthusiasm about CInI. One fallout of these workshops has been that the target audience has come back to ITP with expectations which the latter is finding it difficult to manage. Jharkand, as well as Orissa, expect ITP to either take a major implementation role or a significant training role—both of which lie outside the purview of ITP’s mission.

²For instance, a group of research institutions and NGOs have recently come forward to form a Watershed Network with exciting and important objectives. They approached ITP for support; and ITP readily offered to facilitate a workshop of members with donors and other institutions, including government. However, the overall budget of the network is InRs 25 million over 3 years—which is over half of SRTT contribution to ITP for the first five year cycle. Similarly, several requests and proposals from ICAR centres and other institutions need financial support on a scale which is quite out of ITP’s reach. Such proposals are best received by donor agencies proper, such as the Ford Foundation.

Since the CCER, ITP has achieved major communication and dissemination successes which have eluded it so far. The 3rd IWMI Tata Annual Partners' Meeting resulted in more than 50 media reports. The efforts made by ITP to get journalists to attend the Meeting also led to several issue-based brief media reports. ITP work on the groundwater intensity of North Gujarat's dairy production made front page news in Gujarat (Annex 2). In a workshop of farmer leaders that followed, the report influenced the decision by dairy cooperative leaders to make dairying more than sustainable. Eleven papers presented at the 2004 Partners' Meeting, were published by the *Economic and Political Weekly* along with a workshop report in a special issue. The popular newspaper *Hindu's* internal review of critical research was led by an invited article on groundwater quality by ITP researchers. There were around a dozen events of television coverage of ITP research during the past year. All these suggest that visibility seems to follow the production of research by a lag of 18-24 months. ITP now seems to have crossed the threshold; and we expect to see better visibility of ITP research as long as it continues to promote and support topical, action-oriented research of broad interest to public policy makers.

FINANCE, PROGRAMMING AND STAFFING

One of the key recommendations of the CCER is that as the ITP approaches the end of its 5 year cycle, it should make a concerted effort to synthesize its' substantial research output and project key policy messages emerging out of the ITP research. We agree with this recommendation fully but suggest that this be done on a continuing basis. Even so, IWMI will work on a small number of overall synthesis products that will showcase ITP's research and its' problem- solving approach.

On the organization side, the CCER's key recommendation is that it may be useful to recruit a senior staff person to assist the Principal Scientists in managing ITP with an expanded network. IWMI agrees with this recommendation and has already decided to hire a senior person at Anand to provide operational leadership to the ITP.

All in all, key actions IWMI management intends taking in response to the CCER are:

1. hire a senior staff member to support improved ITP management;
2. constitute a small Advisory Group that can meet twice every year;
3. produce a clutch of synthesis research products by 2006 to showcase and project key ITP research results;
4. develop and implement a new communication strategy with active support from IWMI IKG and build upon its recent successes;
5. re-establish the primacy of partnership and network-based research and regulate the scale of in-house research activity;
6. assume a 'field-building role' focussing upon catalytic actions (such as ITP support to Watershed Network; ITP work on CInI, etc) and
7. raise the larger 'field-building role' with founding and new partners, provided they agree to supporting a second cycle of ITP starting 2006.

Communication Strategy Concept Note – IWMI-Tata Water Policy Program.

BACKGROUND

Since its inception four years ago, the IWMI -Tata Water Policy Program has evolved into one of IWMI's most innovative research programs producing a wide range of research outputs from India that have scope for influencing decision makers and policy agendas at state, national and international levels. Water management issues are high on the public agenda in India and the ITP's focus and expertise in groundwater governance issues place it in a unique position to influence the water policy debate in the country.

The midterm external review carried out on the ITP raised a number of issues relating to the communications components of the ITP which, in the reviewers' opinion, requires strengthening. The reviewers acknowledged the fact that the focus of the ITP in its' formative years has been on applied research, but felt that the time had come to develop a sustained communications effort aimed at disseminating sound knowledge to policy makers based on the conclusions of its' research.

The midterm review inferred that sufficient priority was not been given to developing communications and dissemination activities and recommended a number of measures that could be taken to strengthen this aspect of the program. Perhaps the most prominent recommendation was that the ITP needs to devise an effective communication strategy which provides 'critical knowledge inputs to the variety of actors associated with influencing water policy'. The ITP is keen to act on the recommendations of the review team and this document is intended to provide some initial guidance on the key components that should be integrated into such a strategy.

Despite their comments, the review team has understated some of the communications impacts achieved by the ITP to date. Some of these have been planned, while many others have been spontaneous or incidental. The reputation alone of the ITP's Principal Researcher, Tushaar Shah, as a leading authority in Groundwater issues has yielded a number of significant outputs. Amongst these are editorials written by Dr. Shah in influential media such as the *Economic and Political* weekly and the *Hindu* newspaper. Dr. Shah has also had an impact at policy levels, having been invited to deliver presentations at various fora and participate at meetings attended by high level decision makers in government, corporate and donor circles. As the reputation of the ITP has evolved, the media, particularly the vernacular media in Gujarat, have produced a steady stream of unsolicited print and TV reports, in recognition that the profile of the ITP has grown organically without relying on many proactive media relations activities. Some strategic efforts were made to court the media through events such as the Annual Partners' Meetings which have attracted increasing media coverage. A large volume of publications has been produced and disseminated and a number of policy roundtables have been organized to which policy makers, donors and NGOs have participated.

The course of action proposed by the review team is ambitious and would require considerable mobilization of additional human and financial resources to implement successfully. In an attempt to improve the visibility of the ITP, a graduate of mass communications from a local university was recruited on a short term contract. He had some successes with securing coverage amongst

local media but his brief tenure with the ITP meant that he was unable to take a strategic approach to developing communications activities. Despite the absence of any permanent communications expertise within the ITP, a lot has been achieved; however, a prerequisite towards increasing the communications capacity of the ITP lies in recruiting a communications coordinator whose role will be to develop and implement a realistic strategy.

STRATEGY GOAL

To implement a range of communication and dissemination activities that make a measurable contribution to the water policy debate in India by positioning the research recommendations and knowledge base of the IWMI-Tata program amongst key stakeholders.

KEY TARGET AUDIENCES

The various projects under the ITP research portfolio offer communications and dissemination opportunities that could be targeted at a wide base of stakeholders including academia, research organizations, policy makers in government, influencers in the corporate sector, NGOs and INGOs, the media and farmers' groups.

Objective 1: Build the communications capacity of the IWMI-Tata Program

Activities:

1. Develop a job description and recruit a graduate of communications to the position of communications coordinator for the ITP primarily to implement a range of marketing / awareness activities that raise the profile of the ITP research agenda.
2. Select a group of experienced communications professionals to act as a 'communications committee' for the ITP. The role of the committee will be to provide support to the Communications Coordinator by helping to guide and define the overall ITP communications strategy. They will also be expected to use their influence in media / policy making circles to facilitate meetings, policy dialogues and special events. Members could be drawn from partners of the ITP and individuals associated with the ITP who have a solid background in communications.

Objective 2: Raise the profile of IWMI-Tata research recommendations within policy circles at state and national levels

Activities:

1. Develop a comprehensive mailing list of key contacts and decision makers with an influence over water management issues at state and national levels to build a 'community of practice'. Such contacts could comprise Government officials at various levels including MPs and MLAs—scientists, engineers, administrators, senior officers and department heads.

Researchers, donors, NGOs and INGOs, media representatives, individuals from the corporate sector and people's fora could also be included.

2. Produce a standardized range of branded ITP publications including ITP Water Policy briefings, and distribute these products in a regular and timely fashion to contacts on the mailing list.
3. Develop a bimonthly e-bulletin (in English and Hindi) highlighting the latest research outputs, publications and general news emerging from the ITP. The e-bulletin would be circulated to contacts on the mailing list.
4. Build on the reputation of the IWMI-Tata annual Partners' Meeting and invite wider participation from government and donor representatives.
5. Identify and capitalize on specific opportunities at national, regional and international fora (conferences, seminars, workshops) to disseminate ITP research recommendations
6. Organise a minimum of two state or national level roundtable policy consultations with key stakeholders on single issue research topics (e.g., Energy-Irrigation Nexus, Central India Initiative)
7. Further develop and maintain the ITP website as a tool to share information and knowledge that will increase the profile of the ITP and help to create a wider water community.
8. Consider the production of an authoritative publication on the 'State of India's Water Resources' every two years. This would have popular appeal to a wide cross section of audiences and could prove to be a highly effective marketing and advocacy tool in the same vein as certain UN publications, such as UNDP's 'Human Development Report' and UNICEF's 'State of the World's Children'.

Objective 3: Conduct a range of media relations activities designed to raise the profile and visibility of the ITP research agenda

Activities:

1. Develop a network of media correspondents sympathetic to water management issues from the print, broadcast and online media. Contacts should be drawn from state and national vernacular- and English-speaking media.
2. Liaise with key media contacts to provide story ideas for news and feature articles on ITP related research issues. Where possible, facilitate media visits to the field.
3. Service media contacts with a regular flow of ITP information materials.
4. Arrange ad hoc meetings between the Head of ITP and editors of leading newspapers and media organizations within Gujarat with the aim of positioning ITP research issues high on the media agenda.

5. Identify key journalists from across India to participate in the ITP Annual Partners' Meeting.
6. Arrange media briefings and / or distribute press releases to coincide with key ITP events, e.g., state / national level policy consultations, publication of research reports or policy briefs etc.
7. Capitalize on opportunities arising in the world water calendar e.g., World Water Day and Earth Day by generating publicity around ITP research issues.
8. Submit feature articles and editorials written by ITP researchers to selected newspapers and magazines.
9. Identify and capitalize on media opportunities surrounding topical issues relating to the water debate in India that are high on the public agenda (e.g., Rivers linking proposal, Narmada canal).
10. Explore options for placing adverts that profile ITP research recommendations in publications reaching audiences within the ITP target groups e.g., *Down To Earth* Magazine

Objective 3: Develop Public Education communication activities to improve the outreach of ITP research outputs

Activities:

1. Build on the success of the outreach communication activities achieved under the North Gujarat Initiative Project by identifying partners associated with the ITP who are well placed to develop a pilot project that uses innovative communication techniques to promote the adoption of technologies or ITP research recommendations amongst civil society groups including farmers' groups, women's groups, people's fora, NGO activists etc. water saving technologies.

Holy cow! Milk's a groundwater guzzler

RICHA BANSAL

TIMES NEWS NETWORK [THURSDAY, JUNE 03, 2004 11:25:16 PM]

AHMEDABAD: The 'White Revolution' may have placed Gujarat on the world dairy map. But milk production is now posing a serious threat to the future of farmers in water-starved North Gujarat. The booming dairy economy of the region has emerged as a groundwater guzzler, using up an estimated 2,500 to 3,000 litres of water to produce a litre of milk.

A recent study has revealed that very high "virtual use of groundwater" for milk production—water used as cattle drink and for growing fodder—is leading to rapid depletion of groundwater in Mehsana and Banaskantha districts.

Researchers involved in the study, conducted by the IWMI-Tata Water Policy Research Programme (ITP), have calculated that dairy cooperatives in Mehsana and Banaskantha "exported 1.8 billion cubic metres of virtual groundwater annually in the form of milk". The study argues that this rate of groundwater depletion could seal the fate of dairying and dairy cooperatives need to take remedial measures.

"Dairies use water in three ways—heads of cattle drink water, water is used to grow green fodder and to generate dry fodder. Growing green fodder is very water-intensive. It is not advisable in this region," says researcher Avinash Kishore. ITP has suggested partial import of dry fodder from neighbouring areas and implementation of drip or micro-irrigation.

Banas Dairy chairman Parathibhai Bhatol admits, "it is serious problem... We have been trying to educate farmers to carry out drip irrigation. But there has been little progress as drips are expensive. Though the government has introduced subsidies on drips, they are still beyond the reach of most farmers."

In Mehsana, a Doodhsagar Dairy initiative to deepen ponds and dig new ones did not yield results due to lack of rainfall. "We will hold a workshop with ITP to work out a solution," says a Mehsana dairy official.

Central Ground Water Board officials agreed that the condition was "precarious and groundwater depletion was going on at a rate of two to three metres per year". In addition to usage of drips and shifting to less water-intensive crops, they also suggested "artificial recharging of groundwater through rain-water harvesting and the Narmada canal water".

Irrigation department officials claimed schemes were under way to artificially recharge the groundwater of this area both through the Narmada canal and the Sujalam Sufalam scheme. Banaskantha district collector RR Chauhan said, "Though I have not received any complaint regarding high usage of groundwater for the production of milk, there is a definite shortage of groundwater and the irrigation department is taking remedial action."

Postal Address

P O Box 2075
Colombo
Sri Lanka

Location

127, Sunil Mawatha
Pelawatta
Battaramulla
Sri Lanka

Tel.

+94-11 2787404

Fax.

+94-11 2786854

E-mail

iwmi@cgiar.org

Website

<http://www.iwmi.org>