THE POLITICS OF POLICY

Participatory Irrigation Management in Andhra Pradesh

BALA RAJU NIKKU



Propositions

- 1. Participatory Irrigation Management in Andhra Pradesh is designed to transfer irrigation management functions including the financing of irrigation works from irrigation agency to the users. Its proponents stress that this aspect has to be made very clear when the process of transfer is introduced. This is precisely what is not being informed to users under the Andhra Pradesh irrigation reforms. (*This Thesis*)
- 2. The critical thing to understand is not where the seed comes from, but what makes the soil fertile. (John Kingdon, 2002, Agendas, Alternatives, and Public Policies. John Wiley). The critical thing to understand is not only where a policy comes from, but also what makes this policy translate on the ground in what ways and in which directions. (This Thesis)
- 3. There can be no one definition of policy analysis (Aaron Wildavsky, 1979:15, Speaking Truth to Power: The Art and Craft of Policy Analysis, Little Brown)
- 4. Policy analysis is where the daily concerns of ordinary people interface with the most fundamental questions about the nature of reality and knowledge. (Goktug Morcol, 2002. A New Mind for Policy Analysis, Greenwood Publishing House)
- 5. Participatory Irrigation Management (PIM) cannot become a reality nor can it become self-sustaining without restructuring of the state irrigation departments, and the bureaucracy is unlikely to initiate such change. (K.K.Singh,2000. Participatory Irrigation Management: Paradigm for the 21st Century, Rawat Publications).

- 6. Reform should be neither too fast nor too slow. In some cases, reforms have been more successful on paper than on the ground. Hasty handover and speedy reforms, as in Andhra Pradesh, tend to deny new institutions the time they need to mature and become sustainable. (Asian Development Bank, *Final Synthesis Report* 2005: 31-32).
- 7. Leadership is one of the most observed and least understood phenomena on earth.

(James Macgregor Burns, *Leadership*, 1978, Harper and Row Publishers)

Propositions attached to the thesis:

The Politics of Policy:
Participatory Irrigation Management in Andhra Pradesh

Bala Raju Nikku

Wageningen University Monday 18 December 2006

THE POLITICS OF POLICY

Participatory Irrigation Management in Andhra Pradesh

BALA RAJU NIKKU

Promotor:

Prof. Dr. Linden F. Vincent, Hoogleraar in de Irrigatie en Waterboukunde, Wageningen Universiteit

Co-promotoren:

Dr. Peter P. Mollinga, Associate Professor, ZEF, University of Bonn, Germany

Dr. Dik Roth, Universitair Docent, Leerstoelgroep Recht en Bestuur, Wageningen Universiteit

Promotiecommissie:

Prof. Dr. L.E. Visser, Wageningen Universiteit.

Prof. Dr. R. Parthasarathy, Gujarat Institute of Development Research, India.

Dr. J. Oorthuizen, Learning For Change, Wageningen.

Dr. I. van der Molen, Universiteit Twente.

Dit onderzoek is uitgevoerd binnen de onderzoeksschool CERES

THE POLITICS OF POLICY

Participatory Irrigation Management in Andhra Pradesh

Bala Raju Nikku

Proefschrift

Ter verkrijging van de graad van doctor op gezag van de rector magnificus van Wageningen Universiteit Prof. Dr. M.J. Kropff in het openbaar te verdedigen op maandag 18 december 2006 des namiddags te 13:30 uur in de Aula THE POLITICS OF POLICY: Participatory Irrigation Management in Andhra Pradesh. Wageningen University. Promotor: Professor L.F. Vincent,-Wageningen: Bala Raju Nikku 2006. p. 284.

ISBN 90-8504-543-6

Copyright© 2006, by Bala Raju Nikku, Kathmandu, Nepal

This thesis will also be published by Orient Longman, Hyderabad, India in the Wageningen University Water Resource Series.

Dedicated to

My late Grandfather My Parents: Ramulamma and Harisatyanaryana Nikku My mother in law Pramila Udas And to my Teachers

Contents

L	ist of figures	vii
List of tables		viii
List of maps		×
L_{I}	ist of boxes	xi
	lossary	xii
Abbreviations Preface		xiv
		xvi
1	Introduction	1
2	Understanding Policy Processes	16
	A Conceptual Framework	
3	Legislation and Policy	48
	The Emergence of Participatory Irrigation Management	
4	Madhira Branch Canal	82
	The Social Organisation of an Irrigation System	
5	Maintenance and Rehabilitation	106
	An Arena of Policy Contestation	
6	The Myth of Irrigation Expansion	146
7	Joint Azmoish	174
	An Arena of Irrigation Revenue Generation	
8	Bureaucracy and Irrigation Reform	211
	Public Duties and Social Settings	
9	Conclusions	238
	Epilogue	247
	References	256
	English Summary	281
	Curriculum Vitae	284

Figures

2.1	Analytical Framework	39
3.1	Organisational Structure of the Irrigation Department	63
3.2	The Channels of Communication	72
4.1	WUA Structure	87
5.1	Line Diagram of Punyapuram Major	124

Tables

3.1	Plan investments, irrigation potential created and irrigation potential utilised in AP	61
3.2	Irrigation Potential Created under Different Plan Period in Andhra Pradesh	64
4.1	Abstract of WUAs formed in the State (1997)	86
4.2	WUA Jurisdiction and Command Villages under Madhira irrigation sub-division	88
4.3	Formation of WUA per District under NS Left Canal	89
4.4	Leadership and Caste Representation in WUA 174 (2002)	94
5.1	Pattern of state budget expenditure on different sectors	110
5.2	Profile of AP plan expenditure and Irrigation Potential Created	111
5.3	Funds allocation to WUAs for MR works (Rs/ha)	119
5.4	Pattern of funds utilisation by WUAs in MBC	120
5.5	Irrigation structures and budget allocation (in Rs)	123
5.6	Competent Authority and financial powers	130
5. 7	Analysis of Irrigation works under pre and post IMT scenario	137 138
6.1	Irrigation command area development by source (million ha)	154
6.2	Command development under N.S Left Canal ('000ha)	155
6.3	Circle Level Data (1996- 2000) in ha	156
6.4	Rainfall Pattern in NSP left canal command (in nm)	156
6.5	Pattern of Command development in Tekulapally Circle (in ha)	157
6.6	Command area development 1998-99 and 1999-2000 (ha) per WUA in Madhira irrigation sub-division	160
6.7a	Command development in Madhira sub-division 1997-98 (in ha) by major canal	161
6.7b	Command development in Madhira sub-division 1998-99(ha) by major canal	161

7.1	Changes in the water charges in A.P (1989-1996)	187
7.2	Cess collection across irrigation systems(1997)	189
7.3	WUA183, Madhira Mandal, Khammam District	191
7.4	Cess Collection in Kalluru and Madhira Irrigation Sub-division (2001-2002)	193
7.5	WUA Jurisdiction in Madhira Irrigation subdivision	197
8.1	Policy prescription and actual practice	216

Maps

1.1	Location of Nagarjunasagar Dam on River Krismia	4
1.2	Location of Madhira Branch Canal and major canals	7
	on MBC	

Boxes

3.1	Pipe committees under SRSP, Andhra Pradesh	58
4.1	Rangam Banjara V illage	90
4.2	Kesavapuram Village	95
4.3	Cropping pattern in WUA 171	96-97
4.4	Utukuru Major Canal	100
5.1	Punyapuram Major	122
6.1	Water distribution at night	164-165

Glossary

Ayacut Ayacutdars ... irrigated or irrigable area

Azmoish

village irrigators supervison

Bandh

strike

Canal gasti

canal watch

Cess Crore water fee ten million rupees

Dharna

sit-down strike

Gram Panchayat

village panchayat; the third tier of the

Green Revolution

panchayat raj system introduction of modern technological inputs

and high yielding varieties of paddy and rice in agriculture in the late 1960s

Kharif

first season of the agricultural year; starts May/June when the monsoon rains begin

Lakh

One tenth of a million or one hundred thousand

Lok Sabba

Mandal

Lower House of Parliament (Central

Government)

Mahalwari system

village based land revenue system in Punjab restructured middle-tier of the Panchayat Raj

system in Andhra Pradesh

Mandal Praja Parishad

Panchayati Raj

middle tier of the Panchayat Raj system system of rural local government with

ascending tiers, viz., Gram Panchayat, Mandal

and Zilla Parishad

Pani Panchyat

Water Users Association

Prajala Vaddeku Paalana

taking administration to the door steps of the

people

Rasta roko

road blockade - a form of protest

Rabi

second season of the agricultural year; starts August/September towards the end of rainy

season

Ryot

cultivator/farmer

Ryotwari system

land revenue system based on full survey and

assessment of cultivable land

Sangham

Association

Sarpanch

chairman of the Gram Panchayat - the lower

tier of the Panchayat Raj system

Sramdanam

labour contribution

Vana Samrakshan Samiti forest protection committee

Warabandi

proportional distribution of water over outlets by maintaining full supply levels in distributary canals by systematic on and off rotation of these

canals

Zamindar

landlord

Zilla Praja Parishad

elected district council

Abbreviations

AD Agriculture Department

AIBP Accelerated Irrigation Benefit Programe

AP Andhra Pradesh

APERP (IC) Andhra Pradesh Economic Restructuring Project

(Irrigation Component)

APERP Andhra Pradesh Economic Restructuring Project
APFMIS Act Andhra Pradesh Farmer Management of Irrigation

System Act

CADA Command Area Development Authority
CADProgram Command area development program
CNA National Water Commission (Mexico)

CMEY Chief Minister Employment (schemes) for Youth

DC Distributary Committee
DEE Deputy Executive Engineer

DWCRA Development of Women and Children in Rural

Areas

DWCUA Development of Women and Children in Urban

Areas

EE Executive Engineer FO Farmer Organisation

GoAP Government of Andhra Pradesh

I&CADD Irrigation and Command Area Development

Department

IMT Irrigation Management Transfer

INCORA Institute of Agrarian Reform (Colombia)
IndiaNPIM Indian Network on Participatory Irrigation

Management

IP Irrigated potential

IRDAS Institute of Resource Development and Social

Management

ISF Irrigation service fee

IUC Irrigation Utilisation Committee

JBIC Japan Bank for International Cooperation

MBC Madhira Branch Canal MC Managing Committee

mha million hectare

MLA Member of Legislative Assembly

MR Minimum Rehabilitation

NGO Non-Governmental Organization

NIA National Irrigation Administration, the Philippines

NSLC Nagarjuna Sagar Left-bank Canal

NSP Nagarjuna Sagar Project

NWMP National Water Management Project

O&M Operation and Maintenance

PC Project Committee

PIM Participatory Irrigation Management

PRIs Panchyati Raj Institutions PWD Public Works Department

RIDF Rural Infrastructure Development Fund

SHGs Selfhelp groups

TC Territorial Constituency
TDP Telugu Desam Party

TMC Thousand Million Cubic Metres

VRO Village Revenue Officer VSS Vana Samrakshan Samiti

VTDC Village Tribal Development Committee
WALAMTARI Water and Land Management Training and

Research Institute

WALMI Water and Land Management Institute, India

WB World Bank

WCRC Water Charges Review Committee

WUA Water Users Association

Preface

This PhD thesis is a memorable chapter in my life's book. During my master studies in Social Work at Andhra Loyola College, I used to wonder when I read about government orders to clear slum dweller settlements in Vijayawada, a city I lived for 7 years for my studies. At that time I used to question- what is a policy? Where does it come from? Who makes it and what makes it so powerful? My interest in public policy grew and led me to School of Planning in Ahmedabad, Gujarat. When I graduated from school in 1999 I gained some grip on the seemingly invisible policy but there were many questions still unanswered.

My interest in policy further grew and strengthened and I was very fortunate to have an opportunity to work with Prof. R. Parthasarathy on a research project focused on IMT in Andhra Pradesh and Gujarat. This was the time that I was introduced to the arena of irrigation management. At that time I never knew that I would do a PhD thesis on irrigation management transfer policy. I deeply acknowledge the contribution of Prof. Parthsarathy who was not only instrumental to begin this journey of PhD but also his supervision of this research. I am indebted to Dr. Peter Mollinga and Dr. Dik Roth for their supervision and sharing of their understanding and knowledge on how to deal with policy. They helped me to steer, understand and analyse the seemingly invisible policy and role of actors in Andhra Pradesh irrigation reform. I am very grateful to Prof. Linden Vincent for her unconditional support and valuable guidance. All my supervisors dedicated much of their time and without their efforts this thesis would not have been consistent and logical. I thank all of them for their valuable critique and encouragement at times of need. The journey from Vijayawada to Wageningen took a long time but gave me an immense satisfaction and confidence to continue myself in

the work of understanding policy that influences our day to day life.

Many people helped with this research. I extend my sincere thanks to the water users' association members and leaders and irrigation department staff members from Madhira branch canal. Without their willingness to answer my questions and share their knowledge and views on various issues raised by me, the thesis would never have matured. They graciously accepted me and extended their friendship and hospitality for which I am indebted always.

Further I want to thank faculty members and colleagues at Irrigation and Water Engineering Group and Law and Governance Group at Wageningen University, GIDR at Ahemedabad, CESS and Saciwaters at Hyderabad, Kadambari Memorial College of Science and Management and St.Xavier's College of Social Work in Kathmandu for their sharing and support during various phases of this research. I would like to take this opportunity to formally thank my colleagues at the Matching Technology and Institutions (MTI) group for their comments and suggestions on my earlier work in progress presentations in regional workshops and for their friendship. I extend my thanks to the Ford Foundation for providing me with the fellowship that made this endeavour possible.

And last but not least my family: I thank Pranita for being my partner in life and academia, my parents and sisters in Andhra Pradesh and extended family members in Kathmandu, and friends and host families in the Netherlands for their unconditional love and support.

Bala Raju Nikku Kathmandu, August 26, 2006

Introduction

Andhra Pradesh is known as the rice bowl of India.¹ The state has been a leading participant in the Green Revolution in the country. The state also has been benefited by the development of irrigation infrastructure, which took place during both pre and postcolonial governments. However, decline in public investment and lack of users' participation in irrigation system management has led to deterioration of irrigation infrastructure. To address the issue Andhra Pradesh (AP) has adopted the route of irrigation management reforms. The reforms, which have come to be known as participatory irrigation management programme (PIM) has been labelled as the 'AP model' of irrigation reforms.

This study investigates the process of irrigation reform policy implemented since 1997 in the state of Andhra Pradesh. The objective is to understand the nature of the policy process i.e. the role of different actors such as water users, water users' association leaders, politicians, irrigation bureaucrats, and their contestation of policy and shaping of courses of action and outcomes. The study thus aims to contribute to the general debate on reform policies and particularly irrigation reform policy in the state of Andhra Pradesh. A primary research was conducted on Nagarjuna Sagar, a multipurpose major irrigation project i.e. for use of drinking water, irrigation and power constructed on the river Krishna. The project is located in Nalgonda district in Andhra Pradesh.

The reform initiatives especially under the Chandra Babu Naidu led Telugu Desham Party (TDP) government, have earned a name for Andhra Pradesh as a fast growing state in the forefront of economic reforms. The AP state is often referred to as the

'champion of reforms' in the country. Mr Naidu was chosen by Time magazine as South Asian of the Year in 1999 and the New York Times described the state of Andhra Pradesh as an 'international model'. In addition to media statements regarding AP reforms, institutions and individual researchers involved in water sector state that:

Indian discussion on irrigation reform is abuzz with Andhra Pradesh Chief Minister Chandrababu Naidu's statewide program of transferring management of surface irrigation systems to Water User Associations (WUAs). The scale and speed with which these changes have been implemented have attracted worldwide attention (IWMI, 2000:7)

Water sector reforms are underway in many countries of the world today. Mexico, Turkey and Philippines are some of the countries where the concept of PIM has been tried and tested. In India, Andhra Pradesh is the first state to have gone in with the 'big bang' approach of uniform and simultaneous introduction of PIM throughout the state. Today, the Andhra Pradesh model is being watched with great interest and is being replicated in other states of India as well (Italics mine) - quotes a book titled Users in Water Management: The Andhra Model and its Replicability in India, 2002 edited by Rakesh Hoo ja, Ganesh Pangare and K.V. Raju

According to a press note issued by the Chief Minister's Office here [Andhra Pradesh], the Chief Ministers of Maharashtra, Tamil Nadu, Karnataka, Haryana, Assam, Uttaranchal, Tripura and Punjab besides Lok Dal leader Ajit Singh and social activist Swami Agnivesh were present [in National Integration Council meeting in Delhi on Wednesday, 31st August 2005]. Assam Chief Minister Tarun Gogoi told Dr. Reddy that Prime Minister Manmohan Singh had advised him to study the Andhra Pradesh irrigation models. They enquired how Andhra Pradesh embarked on taking up so many projects when other States were not in a position to complete two or three, the note said (Italics mine. The Hindu dated 1st September 2005).

As evident from the above statements the reform initiatives raised high expectations both within India and abroad about its performance. The irrigation reform was supported by the highest political executive (the chief minister), and state bureaucrats have earned national and international recognition very quickly after its initiation. However 'models' offer easy solutions and promote replications that are often likely to fail, so there is a need to study the AP model critically.

Andhra Pradesh was the first state in the country to enact legislation known as the Andhra Pradesh Farmers Management of Irrigation Systems Act (APFMIS Act) in 1997.³ The Act legalised the formation of WUAs and their mandatory participation in the management of irrigation systems. As a result more than 10,200 WUAs were democratically elected as part of the reform programme; covering 4.8 million ha of irrigated areas in the state. The state government could raise financial resources both from internal and external sources. As an external funding agency, the World Bank played a crucial role in the design and implementation of the reform.

1.1 Focus of the Thesis

There is abundant literature available on the main issues affecting irrigation sector performance in many countries, often described as a vicious circle caused by low budgets, lack of maintenance, poor irrigation services, lack of users' participation, and poor fee collection. To break this cycle, governments, donor agencies and non-governmental agencies have begun new forms of management by introducing institutional and financial reforms. Against this backdrop, the need for irrigation reforms seems to be well understood. What is less understood are the process dynamics of implementation of these reforms. Research on irrigation has traditionally focused on technological and management problems and solutions for them, but not focused on the policy process. The focus of this thesis is the irrigation management reform process in Andhra Pradesh, a south Indian state.

The thesis focuses on the main actors in the irrigation reform programme and their reshaping of implementation process and outcomes envisaged in the reform policies. The main outcomes and implementation arenas investigated are those of the policy itself-finance mechanisms for better operation and maintenance, improved water delivery and irrigated area, and more accountable and realistic local irrigation revenue collection. The main focus is on actors within the irrigation system: they are the water users or

mainly the irrigators, WUA representatives, political leaders and the irrigation and revenue bureaucrats. The relationships among these various actors and how they contested the policy within the irrigation reform policy space, forms the subject of the thesis. The socio-political embeddedness of these actors is studied across both village and system bureaucracy domains. The field research was focused on Madhira Branch Canal (MBC) located on the Nagarjuna Sagar Left Bank Canal (see Map1.1). The following sections introduce the research concerns, methodology and research area.

MAF 1.1 Location of Nagarjunas agar Dam on River Krishna



5

1.3 Choice of Research Site

The choice to study a major irrigation system was based on four reasons. First is the vital contribution to irrigated agriculture by major irrigation systems.4 About 40 percent of the state gross cropped area is irrigated and the irrigation contribution to state agricultural production is about 60 percent. 5 Secondly, the study of a major irrigation system network offered the opportunity to study dimensions of horizontal and vertical linkages. Major irrigation systems in the state represent a hierarchical bureaucracy. Only under the major irrigation systems, we find the formation of a three tier institutional structure i.e. WUA, distributary and project committees. Thirdly, the focus of the reforms was largely on the major irrigation sector. The government stated that as a result of reforms, the gap command area under major irrigation systems was considerably reduced.6 Fourthly, the major irrigation projects received a major share of budgets under reforms for irrigation works.

Selection of Research Location

The Nagarjuna Sagar irrigation project (NSP) was selected for the study. The NSP is one of the major multipurpose River Valley Projects in AP, built across the river Krishna at Nandikonda village, Pedavoora mandal of Nalgonda district. It is the highest stone masonry dam built in India. Built across the river Krishna, it has one of the largest networks of canal systems irrigating over 0.9mha of land in Guntur, Prakasam, Nalgonda, Khammam and Krishna districts. The project produces seasonal power of 960MegaWatts. The project comprises of a dam with two main canals taking off, one on either side, namely Nagarjuna Sagar Left Main Canal (named as Lal Bahadur Canal) and Nagarjuna Sagar Right Main Canal (named as Jawahar Canal) (see chapter 4 for more details).

The irrigation reports of 2000 stated that the NSP recorded a better performance in bridging the gap ayacut or command area among other major irrigation systems in the state as a result of the reforms. Out of ten major irrigation systems, NSP reported the highest bridged gap command a total of 70,040 ha.⁷

The NSP left canal was selected for two reasons. Firstly, the canal has claimed a total of 36,438 ha as bridged command, which is more than the right canal. Secondly, the left canal represents three distinct cropping patterns i.e. a wet cropping pattern with rice in Nalgonda, a mixed cropping pattern in Khammam and part of Krishna, and an irrigated dry (ID) cropping in Krishna district.⁸

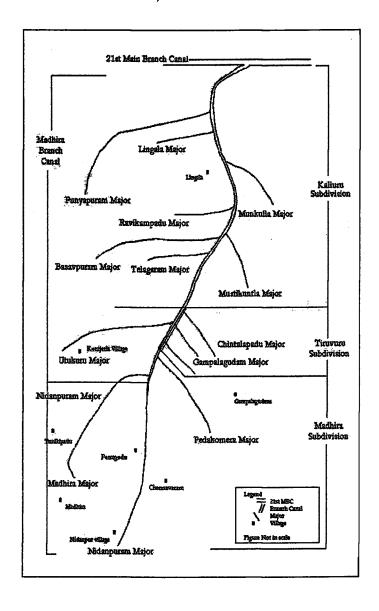
The location with highest gap command bridged within the left canal was identified from secondary data analysis. Out of four branch canals⁹ in Tekulapally irrigation circle¹⁰, Madhira branch canal (MBC) in Kalluru irrigation division registered the highest (i.e. 95 percent) development of command area, compared to other branch canals in the year 2000-2001.¹¹ MBC in addition, reported the highest non-localised command area development i.e. 800 ha of wet and 653 ha of irrigation dry in the year 2000-01.¹² Thus MBC was selected for in-depth study.

The total localised command of the MBC is 39,387 ha, with 15,653 ha of wet and 23,734 ha of irrigated dry command according to the localisation schedule. The command of MBC falls in three irrigation subdivisions: Kalluru, Tiruvuru and Madhira under the Kalluru irrigation division (see Map 1.2). The MBC traverses two districts namely Khammam and Krishna Districts. A total of nineteen WUAs have been demarcated under the MBC command area (see chapter 4 for detailed discussion).

1.4 Methodology

To address the concerns outlined above, an intensive case study was conducted in the Madhira Branch Canal (MBC) located on the Nagarjuna Sagar Left Bank Canal (NSLC). The research adopted an interdisciplinary approach, using a combination of qualitative research tools such as participant observation at the village and WUA level, semi-structured interviews with irrigation bureaucrats and WUA leaders; and group and key informant discussions with WUA members. Field research was conducted during March 2001 to July 2002. Additional fieldwork was conducted at different intervals during 2002-2004.

MAP 1.2: Location of Major Canals on Madhira Branch Canal



Miles and Huberman (1994) discuss that qualitative analysis deals well with the complex network of events and processes in a situation. It can sort out the temporal dimension, showing clearly what preceded what, either through direct observation or retrospection. It is well equipped to cycle back and forth between variables and processes- showing that 'stories' are not capricious, but include underlying variables, and that variables are not disembodied, but have connections over time (1994:147 cited by Punch 2005:53.also see Punch 2003; Hammersley 1992).

The case study method offers an opportunity to gain insights and can derive understanding of wider implications from investigation of an individual case. Denscombe (1999) defines a case study as a 'study that focuses on one instance or a few instances of a particular phenomenon with a view to providing an in-depth account of events, relationships, experiences or processes occurring in that particular instance'. A case study is used to 'paint a portrait of particular social phenomenon' (Hakim 1987, 1982).

Yin (1984:23) stresses that a case study is 'an empirical enquiry that investigates a contemporary phenomenon within its real life context when the boundaries between phenomenon and context are not clearly evident and in which multiple sources of evidence are used'. The case study method gives a unitary character to the data being studied by inter-relating a variety of facts to a single case. It also provides an opportunity for the analysis of many specific details that are often overlooked with other methods.

Choosing the case study as the method of research provided an opportunity to draw data from different sources. These included secondary sources such as newspaper statements, published articles, government gazetteers and official correspondence notes, and primary data from semi structured interviews and focus group discussions.

I conducted focus group and individual interviews with WUA leaders and irrigation bureaucrats. Focus group discussions are carefully planned and conducted in order to obtain information on the perceptions of the WUA leaders, implementation of PIM and later amendments made to the APFMIS Act.

Observation is another tool that has been an important method of inquiry in this research. Observations provide a systematic description of events or behaviours in the social setting chosen for study. Using the tool of participant observation required the researcher to see everyday life activities, probing the values, beliefs

and day-to-day practices of the individuals and organisations for the purpose of this study.¹³ Bogdan and Taylor define participant observation as immersing oneself in an alien way of life in order to gain knowledge, an understanding, of that way of life. It is an intense social interaction between researcher and the subjects, in the milieu of the latter (Bogdan and Taylor 1975:5).

Geer (1969) defines the participant observation method as the 'method in which the observer participates in the daily life of the people under study, either openly in the role of researcher or covertly in some disguised role, observing things that happen, listening to what is said, and questioning people, over some length of time'. During the fieldwork, I had short periods of stay in Madhira, Utukuru and Kalluru villages. The idea was to be in constant touch with the water users, leaders and irrigation staff members all along the MBC. In Kalluru, I had the opportunity to stay in the irrigation housing colony along with other irrigation staff. This gave me an opportunity to observe the day-to-day practices of work and life of the irrigation staff members.

The fieldwork was carried out at two levels. The day-to-day management of irrigation activities at the local, within-system level was studied first. For this purpose, I discussed with bureaucrats from irrigation and revenue departments. I had an opportunity to participate as an observer in the WUA meetings held occasionally. I conducted semi-structured interviews with WUA leaders, different categories of farmers, community leaders and political party representatives in command area villages. The second level was the state level. Discussions at this level were carried out with higher-level irrigation bureaucrats, consultants, researchers, and members of the political executive and NGO representatives.

The qualitative research method provided an opportunity to reflect on the data collected and making preliminary analysis simultaneously. Coffey and Atkinson (1996:2) suggest that in qualitative research we should never collect data without substantial analysis going on simultaneously. In qualitative research, doing data analysis while collecting data is called the 'principle of interaction' between data collection and analysis (Erlandson et al 1993: 114).

As a member of the Matching Institutions and Technology (MTI) program, I had the opportunity to present my research work in the regional workshops. These workshops were conducted every six months as part of the program at different locations in India and Nepal and provided an opportunity to present the research

findings as field research progressed. The faculty supervisors and fellow researchers commented and provided the feedback on the work presented. The process helped me to reflect and analyze the data simultaneously.

1.5 Limitations and Ethics of the Research

The field research started in March 2001 with a reconnaissance survey of irrigation systems and WUA activities in the state. This was about four years after start-up of irrigation reforms in the state. After finalising the research location for in-depth study, I focused on the study of WUA activities and moved to distributary committee (DC) level. At the state level, the project committees as the highest decision making bodies were not formed. The study is therefore limited to WUA and DC level. At the start of my field research the Rabi season (2000-2001) faced acute shortages of irrigation water supplies due to the low rainfall and drought conditions. Though unfortunate, the situation actually enhanced opportunities to study social relations reshaped by the reforms through local actions to get water, and to investigate questions about the process of the irrigation reform.

The study draws its conclusions from one major irrigation system but recognises the variation of irrigation systems in different regions. The regional variations and their influence on policy were beyond the scope of the present study. Due to the restricted access to information in policy corridors, to senior bureaucrats and heads of the political offices, the data to analyze the macro scenario was not sufficient. I could not conduct interviews with the Chief Minister who is considered the main architect of the irrigation reform, or with irrigation ministers who served during the reform period.

I have used the real names of the canals where the study is located. I am aware that the findings of the research might become a reference to individual water users associations, irrigation, revenue staff and their functioning. I have changed the names of the people who did not want to be identified at certain places, but they are always traceable with some effort. I have left no opportunity unused to explain about the research objectives. I hope this research results will not have any negative consequences on the key informants. The research objective is not to criticize or

run down a particular government policy, but to contribute to deeper understanding of the reform policy process in the state.

1.6 Outline of the Thesis

The thesis contains nine chapters and an epilogue. After this introductory chapter, chapter 2 presents the conceptual framework used for the analysis. The literature review focuses on conceptualisations of policy processes and analysis of implementation of irrigation reform policies in different countries. The review of country case studies on the implementation of irrigation reform programmes offered possible themes and issues for analysis in the context of Andhra Pradesh. The chapter concludes with the main research question. The subsequent empirical chapters set out to study the key means of policy implementation and related irrigation management policy process arenas.

Chapter 3 discusses the emergence of PIM policy in the state of Andhra Pradesh. In order to provide a historical perspective, a brief discussion on the colonial and postcolonial irrigation policies is presented. A detailed discussion on the APFMIS Act of 1997 and resulting new local institutions is the main component of the chapter.

Chapter 4 introduces the details of the irrigation and social organisation of Madhira Branch Canal (MBC). The chapter shows how irrigation organisation is linked with local social organisation. It also opens the study of social embeddedness of actors with a study of village level relations. Chapters 5, 6, 7 and 8 are based on empirical analysis. Together, the chapters answer the main research question.

Chapter 5 focuses on the first management arena studied that is the irrigation works. It analyses the process of carrying out physical works (operation and maintenance and minimum rehabilitation works) after the introduction of the PIM programme in the state, and the key actors reshaping outcomes. The WUAs were given power to implement the works with funds sanctioned by the government. The reform policy aimed to strengthen the user associations by transferring duties that were traditionally under the control of the irrigation department. The shift in roles, duties and powers of the irrigation department, and their day-to-day

engagement with the policy world is analysed. The chapter discusses how WUAs have performed their functions in the context of reform policy. The chapter analyses the emergence of new relationships, the process of alliance building among different actors, and the implications for local water distribution and access to canal water.

Chapter 6 focuses on the second irrigation management arena of irrigation expansion and government claims on bridging the gap command. The government claimed that more than 0.45 million ha gap command area that existed earlier was bridged in the first two years of implementation of reforms. By analysing the irrigation department and published data sources and local water distribution practices at secondary and tertiary level canals, I show the contradictory nature of the government claims. The role of water users associations and how decisions of irrigation staff at different levels have influenced water distribution is discussed. The chapter shows that the irrigation department retained its control over allocation and distribution of irrigation water, rather than becoming a service provider for WUA and Distributory Committee.

Chapter 7 discusses the third irrigation management arena of reform in joint irrigation supervision and revenue collection (Joint Azamoish). It examines the role and participation of the Irrigation, Revenue, Agriculture departments and the WUA in a new process created under the reforms through which the extent of area that received canal irrigation in a crop season will be jointly finalised. The reform policy empowered WUAs to participate in this process. Joint Azamoish as a policy tool or mechanism was emphasised to check the underreporting practices on irrigated area and to facilitate inter-agency coordination. As an incentive mechanism government issued orders, authorizing WUAs to receive a share of the cess collected from their command area. But the power to collect this cess remained with the Revenue Department rather than the water users associations. The chapter discusses the different practices and politics of the participating departments and shows how they engaged with the policy.

Chapter 8 returns to the issue of socio-political embeddedness as it reshapes reforms, looking this time at the system-bureaucracy domain and irrigation bureaucrats, especially the field level staff. The lower level staff members who are in direct contact with the irrigators often determine the policy outcome. The chapter analyses the everyday activities of the field level bureaucrats, especially the

assistant engineer who is the competent authority for the WUAs, and subordinates. The field level bureaucrats give shape to their daily work in the context of departmental orders, users associations' needs and political demands. Furthermore, the chapter analyses how policy decisions were changed and manoeuvred by irrigation staff within the given policy space. The chapter shows how different networks of the irrigation bureaucracy lobbied with the state in a move to protect their identity and interests.

Chapter 9 is the concluding chapter and summarises the key findings of the research. The chapter first discusses the policy process and how policy outcomes were influenced by the interrelationships of different actors. This chapter is a summary answer to the central research question. The chapter concludes with an agenda for future research.

Many changes have taken place in irrigation sector since 2002. The Naidu government that introduced the irrigation reforms stalled the elections for WUAs after the completion of their first term in the office. A Congress government came into power in 2004. As a result there were many changes in the course of irrigation reform policy. I discuss these changes as a brief epilogue to the book. I discuss the process and the content of the amendments made to the APFMIS Act in the second half of 2002. I present views and perceptions of the WUA leaders, irrigation bureaucrats regarding the amendments and conclude how these amendments and change in the policy influence the irrigation reform policy processes in the state.

Notes

¹ Andhra Pradesh is normally a surplus state in rice production and contributes a major share of food grains annually to the central pool. Of the total 25 district in the state, rice is grown in 22 districts. Out of the 22, fourteen districts fall under the high productivity area (more than 2500 kg/ha). These districts together accounted for 3.3 million ha. About 78 percent area is concentrated in the high productivity zone, which accounts for nearly 84 percent of total rice production in the state. The total production of rice in the state is about 11.7 million tonnes resulting productivity of 2782 kg/ha. Despite occasional slowdowns of rice production in 1970s and 80s, it continues to increase up to the present, placing the state in second place after West Bengal.

(source:http://drdpat.bih.nic.in/PA-Table-01 Andhra%20Pradesh. htm).

- ² Time magazine declared Chandrababu Naidu as 'South Asian of The Year' in 1999 (Time Asia, December 30, 1999). The Wall Street Journal saw him as a model for fellow state leaders. The Chief Minister Mr. Naidu was also earlier awarded 'The Business Person of the Year' award in the year 1998, by the Economic Times. The award winning investigative journalist of The New York Times, Mr. Bradsher wrote that Andhra Pradesh was on its way to being an 'international model' for certain public policies, dated December 27, 2002. Similarly, The Financial Times reported on May 2, 2003 that in a country where lower caste women are locked out of decision-making, the government of Andhra Pradesh is sponsoring a social revolution. This was said to be happening in 'thousands of villages' in the state.
- ³ Following Andhra Pradesh, other states in India i.e. Karnataka, Tamil Nadu, Kerala, Maharashtra, Goa, Rajasthan, Madhya Pradesh, Bihar and Orissa have enacted similar legislation.
- ⁴ According to the Andhra Pradesh Farmers Management of Irrigation Systems Act 1997, systems were classified on the basis of irrigated area into three categories i.e. major, medium and minor systems. Major irrigation schemes have command areas of more than 10,000 ha. Medium irrigation projects have command areas ranging from 2,000 ha to 10,000 ha. Minor irrigation projects have command areas less than 2,000 ha and include smaller irrigation schemes such as lift irrigation or gravity schemes from water sources such as tanks, diversion weirs, and open head channels. In AP the minor irrigation and groundwater projects are under the guidance of the Minor Irrigation Department, while the major and medium irrigation projects are under the Major Irrigation Department. At present AP has 15 major irrigation projects, 75 medium irrigation projects, and approximately 12,264 tanks in addition to 60,000 tanks managed by Gram Panchaya ts.
- ⁵ A World Bank study reports that the composition of the net area under canals, tanks, wells and other sources was about 43, 18, 35 and 4 percent respectively (1997:3).
- ⁶The gap command can be explained in simple terms as the gap or difference between the irrigation potential created and area utilized.
- ⁷The total area reported under gap bridged was 408,000 ha in the state in 1997. Out of the total gap, the major irrigation projects reported 71 percent (i.e. 290,434 ha) followed by minor irrigation with 22.2 percent and medium irrigation with 6.6 percent. In terms of gap command bridged, the NSP reported 70,040 ha (24%). The Sriramsagar Project (SRSP) reported 131,983 ha i.e. (45%). Though SRSP reported higher than the NSP, I did not select SRSP for the study. The decision was based on preliminary field work carried out in March-April 2001. The construction and lining of the canal works under SRSP is still continuing.

The stated huge bridged command under SRSP is due to the completion of the secondary canal network. Thus, a new area was brought under irrigation but the command was not actually bridged due to the reform programme. In other hand, construction was completed in NSP and the area reported can be actually taken as the gap command bridged by the implementation of the reform programme.

- ⁸ India has a wide range of soil and climate. Cropping pattern vary widely from region to region and to a lesser extent from one year to another year. Crops like cotton or sorghum are grown in canal commands with less number of water wettings called an irrigated dry (ID) cropping pattern. The main distinction between irrigated wet and dry cropping pattern is that the irrigated dry crops receive much less water than the wet crops. In AP, rice is grown in irrigated wet zones and cotton, chillies, maize are grown in ID zones. The irrigation systems designed and constructed by British in India are mainly meant to grow irrigated dry crops.
- ⁹ An irrigation system is a composite of canals, laterals, structures, and equipment involved in the transport of water from where it is available to where it is required. The irrigation canals can be further classified on the basis of size and function as main, secondary or branch canal and tertiary canals (major and minors).
- 10 The irrigation department has divided the total command area into circle, divisions, sub-divisions, irrigation blocks and beats for administrative purpose. Each irrigation circle consists of four or more irrigation divisions and each division is further divided into four sub-divisions.
- ¹¹ According to the department records, 2000-01, the Bonakal branch canal, Mylavaram branch canal and Nuzvid branch canal showed 87 percent, 81 percent, and 73 percent irrigation development respectively.
- ¹² Localisation is a government water control strategy in protective irrigation systems in Karnataka, Andhra Pradesh and Tamil Nadu (see Mollinga 2003). The plots outside the localisation area are called non-localised and it is not mandatory to supply irrigation water to these plots. Farmers are formally not allowed to take the canal water for these plots. In contrast to the rules, supply of irrigation water to non-localised plots suggests that either there was additional irrigation water available or it was illegally diverted to these plots. The understanding of water distribution to localised and non-localised plots provides further insights into irrigation management realities.
- ¹³ For a description of phenomenological and empirical approaches to participant observation method see Bruyn (1966) and Zelditch (1962).

Understanding Policy Processes

A conceptual framework

2.1 Introduction

This chapter presents the conceptual basis for understanding and analysis of policy processes for irrigation management reform. After briefly discussing the approaches to irrigation studies, in section 2.2, I present an analytical review of the literature on participatory irrigation management (PIM) and irrigation management transfer (IMT). In section 2.3, a brief review of policy process literature focuses on studies that have generated conceptual frameworks to study irrigation management and irrigation bureaucracy, which complement the policy as process approach. Then in 2.4 I discuss the analytical framework for the present study. The chapter concludes in section 2.5 with a discussion on the main research question of the thesis.

The available irrigation literature can be classified according to time periods. Each time period can be seen in terms of a central approach to the study of irrigation. The technical approach in the 1950s and 1960s, the sociological approach in the 1960s and 1970s and since the 1980s the socio-technical approach (see Uphoff 1986, Ramamurthy 1995, Mollinga 2003). Mollinga (1998) classifies the intellectual work on irrigation into three bodies: the irrigation engineering, irrigation economics and irrigation management literature (see also Jurriens and Jong 1989).

Literature published in the early 1970s focused on the disappointing experiences of irrigation systems,⁴ trying to document and analyse the causes of poor performance of irrigation

systems and speculating on the need for greater attention to management. In the 1980s there followed an emphasis on irrigation organisation and farmers' participation in irrigation systems management (Pant and Verma, 1983). In the 1990s the focus on studying self-governing irrigation institutions and reform of management systems was much more evident (see Ostrom 1992; Wade 1988, 1995). During the same period, the failure of the state in managing irrigation systems was strongly emphasised (Repetto, 1986) and neo-liberal reforms were suggested. The introduction of irrigation reforms in many countries led to the production of a vast literature on implementation and impacts of irrigation management transfer (IMT) or participatory irrigation management (PIM) policies. This set of literature focused on the irrigation reform policy, programme and its impacts. In this time period, we also find irrigation studies conducted using social anthropology and legal pluralist approaches (see Pradhan et al., 1996; Roth 2003).

2.2 Irrigation Management Transfer: A Global Phenomenon

In this section, I review the current concept of IMT/PIM and its justification. The objective is to make an analysis of approaches used in the selected IMT/PIM case studies and draw possible directions for the present study.

Irrigation management transfer, or turnover, has become a widespread strategy in Asia, Africa, and Latin America. In more than twenty five countries governments are reducing their roles in irrigation management while farmer groups or private organisations are taking them over (see Vermillion 1992). Most often, governments pursue management transfer programs to reduce their expenditures on irrigation, improve productivity, and stabilize deteriorating irrigation systems (Vermillion 1997: 1). The idea of autonomy-with-accountability seems the core idea of irrigation management turnover policy formulations (see Kloezen and Samad 1995).

In this review, I focused on the reform experiments implemented in Mexico, Colombia, Turkey, Philippines and India. The reason for selecting these countries is that all together they represent three basic approaches of turnover. First, the 'big-bang' approach where water user organisations are made entirely responsible for irrigation management activities in a relatively short

time period (e.g. Mexico and Columbia). Second, the bottom-up gradual approach (e.g. the Philippines) with a strong focus on organising and consensus building; and third a hybrid approach, which adopts a moderate pace adopted by Turkey and India. The selected country cases also represent various levels of transferring functions and responsibilities of irrigation system management to water users.⁵

Definition of IMT/PIM

Irrigation Management Transfer (IMT) or turnover has been defined variously in different countries. This process has been referred to as Turnover in Indonesia and the Philippines, Management Transfer in Mexico and Turkey, Privatisation in Bangladesh, Disengagement in Senegal, Post-responsibility System in China, Participatory Management in India and Sri Lanka, Commercialization in Nigeria, and Self-management in Niger (Vermillion 1997:2 italics mine).

The terms suggest the salient feature of the turnover policy of a country. Some definitions highlight users' control, and financial and organisational aspects, others highlight the role of a state and bureaucrats, and differences between IMT and PIM. In addition, the degree and level of transfer of management responsibilities, control of irrigation resources and motivation to transfer varied from country to country. I now look further at definitions by different researchers:

Almost all irrigation systems have some involvement by water users in system management. When people speak of introducing PIM, they are usually referring to a change in the level, mode, or intensity of user participation that would increase farmer responsibility and authority in management processes. IMT is a more specialized term that refers to a process of shifting basic irrigation management functions from a public agency to a private sector entity, a nongovernmental organization (NGO), a local government, or a local organization with farmers at its base. The most common form of IMT moves management responsibility from a centralized government irrigation agency to a financially autonomous local non-profit organization in which water users have a substantial voice in the control process or control the irrigation system altogether (Svendsen et al. Chapter 6, 2000: 139).

The participants of the FAO and IIMI expert consultation in 1995 defined IMT as 'the expansion of the role of farmers and the private sector and the reduction of the role of government in irrigation management'. They made a distinction between the IMT and PIM. They define:

IMT is 'the replacement of government agencies with farmer organisations or other private sector entities in managing irrigation systems, either at subsystem or system wide levels'; whereas PIM is defined as 'the involvement of farmer organisations as full partners with government agencies in managing irrigation systems'. The latter definition explains the expected role of the user organisations in managing the irrigation systems. It does not talk about the transfer but recognises the equal role of farmer organisations along with government agencies in managing the irrigation systems (Geijer et al. 1996).

From the above definitions, it is apparent that participatory irrigation management (PIM) is only an augmentation of existing agency management with additional farmer participation. The rights to irrigation infrastructure are still with the government. Instead of rights to property, governments are trying to transfer responsibility for the property, while retaining the fundamental ownership rights (see Groenfeldt 1997); whereas IMT represents the replacement of existing agency management with management by a users' organisation. In this process the water users take control from the state, leading to a formal, legal handling over of management functions from a state irrigation authority to associations of water users. I briefly discuss the main motivations stated in the literature for implementation of turnover policies.

Motivations for Turnover

There are various motivations or reasons for governments to implement a turnover programme. The most commonly mentioned reason in the literature is 'to reduce the cost of operation and maintenance of irrigation systems'. By doing so governments are relieved of their huge budget commitments for the irrigation sector. From the literature it is also clear that IMT was introduced to increase users' participation and hence to achieve higher cost

recovery leading to better system performance and productivity. Other motivations to implement turnover policies have been support from international and bilateral funding agencies and political gains. Describing the global trend towards devolution, Vermillion and Garces-Restrepo (1998) discussed that:

Largely driven by government fiscal shortages and a common inability to raise sufficient revenues from collection of water charges, since the 1970s, governments around the world have adopted programs one after another to devolve responsibility for irrigation management to WUAs Consistent with overall structural adjustment programs, irrigation management transfer has been supported by the major international development banks (World Bank 1993; EDI 1996; Arriëns et al. 1996). The reforms generally include efforts to organize WUAs, train future managers, make essential structural repairs, and negotiate and formalize agreements between the government and the water users (Vermillion and Garces-Restrepo 1998:1)

The Government of India has supported the various policy initiatives towards implementation of PIM policies in various states since mid 1980s. Concrete support was extended for implementation of PIM through the central sponsored Command Area Development (CAD) Programme.

Demand for reform

This section looks first at where such demand for reform comes from and then what key means of implementation are presented. The brief case studies below show that the demand for turnover policies can come from different sources and be implemented with different approaches.

Colombia

In Colombia, the transfer of administration of land development districts (LDDs) to water users' associations (WUAs) began as a result of an isolated initiative by a group of farmers rather than as a specific land development policy or program. The farmers from Tolima Valley demanded the transfer of irrigation districts to them.

The farmers asked the government if they themselves could administer the LDDs, because the Colombian Institute of Agrarian Reform (INCORA), the governmental agency responsible for their administration at that time, was expensive and inefficient (Quintero-Pinto 2000: 90).

In 1975, farmers in the Coello and Saldaña irrigation districts in the Tolima Valley, Colombia, petitioned the government for the right to take over management of the districts. They based their argument on the fact that, over the previous 20 years, they had already repaid their agreed 90 percent share of the cost of construction. They were also paying water fees to the government and were dissatisfied with the cost and quality of management that the government was providing. The farmers argued that they could manage the systems more cost-effectively than the government (Vermillion and Restrepo 1996: 1). The government finally agreed to their petition and in October 1976, handed over the administration to the WUAs, but not the ownership of the irrigation infrastructure (Quintero-Pinto 2000: 90).

In this case of Colombia, the demand for turnover came from the farmers. This is known as the bottom up approach to IMT. In contrast, we find a top-down approach to IMT in the case of Mexico.

IMT has been a top-down process motivated by international development banks and implemented by the Government of Mexico (Kloezen et al. 1997: 3). In 1989, a Presidential decree facilitated creation of the National Water Commission (CNA) and granted the status of a national agency. The CNA was made responsible to define water policies for the country. The organisation was also provided with the power to allocate water to users through licenses and permits. The new policy created autonomous and self-financing water utilities to provide water services in cities and in irrigation districts. The policy also encouraged water reuse and water quality conservation, and aimed to promote a new water culture based on the efficient use of resources. As of 31st December 1994, a total area of 2,458,366 ha had been transferred to 319,451 farmers organised into 316 water users' organizations (WUOs). Each WUO operates and manages a modulo, an irrigation subsystem ranging from 5,000 to 20,000 ha in size. Of the total number of irrigation districts, management

responsibilities have been transferred completely in 38 and partially in 16 irrigation districts (Gorriz et al. 1996: 7).

Turkey

Turkey has a legal framework allowing the transfer of management responsibility for publicly constructed irrigation schemes to local control since 1954. The Turkish General Directorate of State Hydraulic Works was established in 1954 and by 1960, it had a programme to transfer operation and maintenance (O&M) responsibility for secondary and tertiary distribution networks to irrigation associations (see Svendsen et al. 2000). The DSI is the main executive agency of the government for overall water resources planning, execution and operation in the country. A budgetary crisis led to a squeeze on financial allocations to the state water resources agency and provided the initial impetus. Turkey began an accelerated programme of transferring management responsibility for large irrigation systems to locally controlled organisations in 1993. Svendsen and Nott document that:

Within three years, the national irrigation agency, the Turkish General Directorate of State Hydraulic Works (DSI), had succeeded in transferring nearly one million hectares or 61 percent of the publicly managed irrigation in the country, to local government units or to special-purpose irrigation associations created at the Important motives driving this implementation were (a) the rapidly escalating labour costs, (b) a hiring freeze in government agencies and (c) the consequent concern over the agency's ability to operate and maintain systems serving the expanding irrigated area for which it was responsible. Also, World Bank pressure for improved cost recovery provided added impetus for change. Bank-funded study tours to Mexico and elsewhere gave DSI managers a vision of what could be accomplished through a program of management transfer to locally controlled organizations (Svendsen and Nott 2000: 27).

Philippines

In the case of the Philippines, the participatory approach was developed initially during 1976 for communal irrigation systems, where the local community legally owned the infrastructure. Operation and maintenance was also a local function (see Groenfeldt 1997). Beginning 1984, the Marcos government introduced the turnover policy in the country, including the national irrigation systems. The Philippines has used the gradual, 'learning process' approach, with intensive use of institutional development mechanisms. Institutional development officers and community organisers were employed as catalysts to work with the local organisations and to build capacities (see Svendsen et al. 2000). These associations then entered into contracts with the National Irrigation Administration (NIA) to perform various management functions such as system maintenance and fee collection within their portion of the larger system. A driving incentive for the program was the need to increase cost recovery by the government, and, in particular NIA's need to fulfill its mandate to be financially self-reliant (Raby 2000: 113).

India

In the case of India, the present forms of turnover policies have evolved over a period of time (see Maloney and Raju 1994; Sivamohan and Scott 1994; Brewer et al. 1999; Joshi and Hooja 2000). The Government of India, since the mid-1980s has induced various moves toward PIM programs to be implemented by different states. However, the progress has been far from satisfactory. The 9th Five Year Plan document noted that:

Amongst the major reasons considered to be responsible for the tardy progress in the implementation of the PIM, are (a) the prolonged prevalence of government-managed systems has sapped the initiative of the farmers and made them dependent on the Government; (b) non-availability of funds for PIM. At present funds are available to a small extent under the CAD programme as one-time subsidy to the WUAs. (c) the farmers are reluctant to adopt the participatory approach unless deliveries of water can be made flexible, practical and responsive to their need; (d) there are apprehensions in the minds of farmers that under the new system they might have to incur expenditure on operation and maintenance in addition to increased water rates; (e) there is often a lack of homogeneity in the composition of farmer population and they are

reluctant to come together, because of differences of castes and classes, to form an association; (f) the present institutional arrangements are not conducive to the introduction of PIM. Properly oriented, trained and motivated officials to implement this programme are lacking and there is no dedicated wing for this purpose; (g) lack of an enabling law for the establishment of WUAs is an important impediment in the introduction of PIM (GOI, 9th Five Year Plan, Vol. 2).8

Naik and Karlo (1998) discuss that in India, too, increasing user participation in the management of irrigation systems is being tried as a means to reduce pressures on government finances, improve performance of irrigated agriculture, and ensure sustainability of irrigation systems.

Permitting farmers to play a greater role in India represents a major shift away from the idea that the government is responsible for taking care of farmers. This change is consistent with other changes being carried out in management of natural resources such as the proposed changes in forest policy to enable joint management of forests (Naik and Karlo 1998:1).

A concrete support was visualised for PIM through the central CAD programme. In 1985, the CAD programme requested each Command Area Development Authority (CADA) of respective states to take up aspects of PIM in at least one small part of each command area as an experiment and funds were made available for this purpose (MOWR 1991). The Ninth five-year plan 1997-2002 highlighted the urgent need to ensure further implementation of PIM and adequate allocation of funds.

To create awareness and implementation of PIM programmes, the Union Ministry of Water Resources organised and supported various conferences in the country. A national seminar held in New Delhi from June 19-23, 1995, adopted a plan of action envisaging conferences at state level for creation of awareness and understanding of issues involved in PIM. This marked the beginning of a new phase of PIM activities in India. 10 Assistance came from external agencies like the World Bank, USAID and international non-governmental funding agencies like the Ford Foundation for implementing PIM programs. 11 The Planning Commission set up a Working Group on PIM for the Ninth Plan and many state governments set up high-level groups. In 1995

Andhra Pradesh has initiated the PIM programme but in 1997, the APFMIS act was enacted to implement PIM programme in the state. ¹² In the following, I briefly explain selected features of the reforms introduced in the above selected countries.

Legislation and Political Will

In the case of Mexico and the Philippines, the governments first enacted a legislation or national water law before initiating the transfer programme. In 1974, the Philippine President Marcos amended the charter of the NIA to enhance its financial separation from the central treasury. The NIA was charged with keeping its own accounts, and becoming financially autonomous over the long-term. The financial pressures to keep administrative costs low encouraged the NIA to shift management control of irrigation systems to the users (see Groenfeldt 2004).

Similarly in Mexico, the President Salinas de Gortari issued a Presidential decree in 1989 that facilitated creation of CNA and granted it the status of a national agency. The decree also granted the agency the responsibility to: a) define the country's water policies and b) allocate water to users through licenses and permits. Two Presidential decrees passed in October 1995 and October 1996 simplified requirements, granted additional benefits and waived sanctions for users who had been without concessions. The political will at the highest level of the government played a crucial role and was a main component in Mexico's IMT program. The Presidential decrees were key instruments in accelerating the regularization process (see Svendsen et al. 1997; Velasco 2001).

In the case of Turkey, the turnover program was introduced on an existing legislation. Though there was no law enacted in the case of Colombia before the turnover, a new land development law was enacted in the year 1993 to strengthen the role of farmers associations. The objective of the law was to grant full control over irrigation district management to farmers' associations (Ministerio De Agricultur 1993, cf. Vermillion and Restrepo 1996).

Among the Indian states, Andhra Pradesh was the first state to enact legislation in 1997 to facilitate institutional reforms in the irrigation sector (see chapter 3). To implement the PIM, the Andhra Pradesh Farmers' Management of Irrigation Systems Act was enacted in 1997 (see Nikku and Bhushan 2004; Raju 2000,

2001; Oblitas and Peter 1999). Other states like Madhya Pradesh and Tamil Nadu also enacted legislation facilitated by political support to introduce irrigation reforms in 1999 and 2000 respectively.¹³

Institutional Arrangements

New institutional arrangements are bound to emerge when turnover policies are implemented. The success of the programme depends on the efficacy of these new arrangements. In the case of Mexico the process of election of leaders and their role in performing WUA activities regularly and without conflicts is evident. A WUA consists of a general assembly, executive council and office bearers. As the membership ranges from 500 to 5,000 farmers, the general assembly selects a few members known as the representative assembly and delegates power to make decisions. The representative assembly functions to make routine decisions without calling for the general assembly. To address leadership conflicts, the users decided to form mixed boards. If the WUA board is headed by a big landowner as a President, it will have a small landowner or ejidatario¹⁴ as the treasurer and vice versa (see Svendsen et al. 1997).

In the case of Turkey, the Irrigators Association is composed of 30 to 70 persons. The general assembly is made up of representatives of the local administrative units and not representatives of water users in an irrigation scheme. Individual water users participate in the general electoral process to elect members for the management committee. The committee includes a chairman, secretary, accountant and four general members. The committee meets once every 15 days whereas the general body meeting is conducted twice a year. The chairman is elected for five years and in almost all cases the chairman is concurrently a village head or mayor of a member municipality (see Gupta and Srivastava 1999). In the case of the Philippines, Kikuchi et al. (2005) refer to the danger in hastily handing over systems from state to community management without considering the limits of local communities' organisational capacity. The mismatch between the state and local community priorities leading to an institutional failure and vice versa, illustrate the causes for deterioration of irrigation systems.

Resource Management

In the case of Mexico, the IMT was part of series of changes in the economy including reduction in subsidies for agricultural credit and inputs, elimination of guaranteed support for agricultural crops, and increases in the energy and fuel prices and transfer of O&M responsibilities to irrigators associations (see Svendsen et al. 1997).

The financial aspects of IMT in Turkey are similar to Mexico. The policy is designed to shift the burden of O&M costs from the government to users. However, the government continues to subsidise maintenance, which is not the case in Mexico and the Philippines.

In 1974, President Marcos approved the NIA's request to increase the irrigation service fees. The fee can be paid in kind or in cash equivalent based on the National Food Authority support price. The National Economic and Development Authority allowed NIA to impose charges to cover O&M costs. The intention is to recover the capital costs over fifty years (Panella 1999). In the early 1980s streamlining policies forced NIA to downsize its staff. Under the pressure to become financially autonomous organisation, NIA was forced to induce cost cutting policies. Different measures to increase the income of NIA were explored. As a result, management tasks were contracted out to irrigation associations and to their federations. As a result of the policy changes, the functioning of NIA was based on mainly two types of budgets i.e. Capital and O&M revenues. The pressures for self-sustenance of NIA led to expansion of activities. The NIA invested heavily in the expansion of new irrigation facilities. The NIA model of concentrating resources at centre and redistributing them to local associations has been faced with difficulties.

In the case of India, some states have increased the water charges but they are far below the required level to meet the full cost of operation and maintenance. As a result, there is a continued need for government funding to implement O&M and minimum rehabilitation works.

Conclusion

The above analysis of IMT/PIM case studies shows that various political, social, economic and institutional motivations influenced

the emergence and implementation of the turnover policies. The policies and programmes have been evolved according to the country specific situations. The legislation, political support, devolution of powers, institutional arrangement and resource management are important features to study to understand the process of turnover programmes implemented in different countries.

It was also evident from the literature that the studies largely focused on the end product of the reform policy implementation rather than answering how and why such outcomes occur (the process questions). There was not much emphasis on the process dynamics. The operational and technical components have been given priority. The emphasis was on outcomes, impacts and quantification of transfer programme results, than the process. Oorthuizen (2003) claims that 'policy studies in irrigation management tend to be rather functionalistic. They often look at what goes in -the policies-and what comes out- the results (2003:1). These studies do not focus on the process elements. Recognising the gap, a few studies have attempted to study the policy processes in turn-over programmes. Below, I present a brief review of literature that focuses on turnover policy processes.

2.3 Studies on Turnover Policy Processes

Research studies focusing on IMT policy processes are few compared to impact studies. One can even ask why policy process oriented IMT studies are essential. The answer lies in the fact that the majority of literature on IMT adopts a neo-liberal standpoint arguing for less state and more market-based solutions (see Repetto 1986; Svendsen 1993). Policy makers who believe in less state approach as a solution will tend to have an impression that IMT is an irreversible, efficient, unproblematic and will lead to participatory management of resources (Rap2004:7). This approach to IMT is bound to have imitations as neo-liberal approaches argue for less state but to implement reforms a strong state is needed. Secondly, transfer policies aimed to bring decentralisation of power. Long and van der Ploeg (1989) show that neo-liberal models are problematic, because transfer interventions enter into the existing lifeworlds and affect the interests of social groups such as water users, state bureaucrats and local leaders and are therefore

contested and transformed in some quite unexpected ways.

The institutional literature is inadequate to account for the concrete social intricacies and conflicts between different social actors in everyday organisational life (Rap 2004). The legal literature assumes that the legal instruments (acts) once formed could facilitate the emergence of institutions and their functioning. Evidence is available that legal mechanisms do not necessarily lead to formation of robust local institutions and management of natural resources (see Kurian 2003; Roth 2003).

Rap (2004) argues that policy and management literature is based on a system analysis that de-politicises policy implementation and irrigation management. In his thesis on IMT in Mexico, Rap made a comprehensive analysis of the entire cycle of the IMT policy and shows that the Mexican IMT policy has a fascinating political history and bureaucratic struggle. He argues that 'policy is political throughout its life cycle and that policy making is a continuous and profoundly cultural undertaking' (2004:349).

Experience worldwide clearly demonstrates that long-term reforms do not proceed automatically or in a linear way and a 'jump start' push is not enough. Policy implementation is an ongoing, non-linear process that must be managed (see Grindle and Thomas 1991, Brinkerhoff 1996). Policies are embedded in social relations, power structures, negotiation and cooperation practices that exist in society. This makes the policy process a complex phenomenon.

Policy Actors

Understanding of policy actors and their dynamics has emerged as an important theme in policy processes studies. Politicians, bureaucrats and funding agencies are important policy actors. The politicians at different level (state leaders, members of legislative assembly (MLAs), local politicians) influence policy formulation at various levels. They promote a particular policy agenda to achieve specific gains and interfere frequently in the day-to-day implementation (see Mooij 2003). Similarly, policies often change as they move through bureaucracies to local level where they are implemented. Bureaucrats charged with responsibility for implementing reforms face: changes in their roles; severe institutional constraints; new interaction patterns with other public

agencies and civil society; and pressure for showing results. Hence to explain the implementation process 'business as usual' or linear approaches will fall short (Brinkerhoff 1996).

Panella (1999) shows the interplay of interests among domestic politicians, foreign donors and NIA in the case of the Philippine reform programme. Within the Philippines different social, economic and political contexts have dictated the content of irrigation policy and its reform. For example, the World Bank and USAID stated in 1966 that NIA needed to reorganise, improve its capacity and have a continuity of leadership before they would provide assistance or lend. The NIA responded positively to the World Bank desires and tried to meet the loan conditions. Donor influence is strengthened through loan conditions. The total level of investment in the irrigation sector in the country was influenced by the availability of external funding (see Panella 1999, 2004).

The World Bank made Mexico's 'speedy-Gonzales' style of management reforms a global example of the twenty first century. Though there might be validity in the bank's approach, it is not a very helpful; neither to the Philippines nor for many other Asian countries where the Asian model of PIM is still to become a reality rather than the American-Mexican model of irrigation management transfer (see Meinzen Dick et al. 1994, 1997). A World Bank report states that:

The Operation and Evaluation Department of the World Bank revealed in its first irrigation sector study in 1981 that the Bank's right hand pressed Turkey hard to get water charges up from 85 percent to 100 percent of O&M costs, while its left hand was making repeated irrigation loans to Indonesia, where water charges recovered 15 percent of O&M and there were no serious efforts to reform the system. Clearly, forces other than the policy rules and statements are shaping the policy (World Bank 1995:38).

Similarly, Reddy (2003) argues that Andhra Pradesh reform policies are also influenced by World Bank lending policies. ¹⁵ Reddy claims that instead of opposing conditions, politicians seeking peoples' mandate, have used statements of reforms and associated funding as a sign of their political credibility.

2.4 Understanding the Bureaucracy

In this section, I briefly discuss scholarly work available on the nature of bureaucracy and its role in the policy process. The classical sociological view of bureaucracy, as promoted by Max Weber is essentially of bureaucrats are selfless purveyors and enforcers of the policies of elected governments. The conception of bureaucracy is that it is neutral and rational. At the same time, Weber attacked the pretensions of the Prussian bureaucracy to be an objective and neutral servant of society, above politics, and emphasized that every bureaucracy has interests of its own, and connections with other social strata, especially among the upper classes (see Weber 1947). Weber's classic model of bureaucracy and especially its implication for the relationship between politicians and bureaucrats or administrators has been an issue of enduring theoretical interest (see Wright 1999; Hansen and Ejersbo 2002; Wilson and Barker 2003; Huque 2003).

The notion that the bureaucracy can be used as a neutral instrument of service to act on and change society is challenged¹⁶ (see Toye 1981). Scholars argued that the characteristics of bureaucratic rationality have profound implications in democratic reforms.¹⁷ Vroom (1980) showed that bureaucratic rationality is much more complex and ambiguous than assumed. In a critical analysis of the Weberian ideal type of bureaucracy he writes that the perception of modern organizations as 'instruments' of the authorities is incorrect (cited from Quarles van Ufford 1988: 77). Bureaucracy itself is not an instrument of policy; Quarles van Ufford goes onto point out, 'because bureaucracy is an independent generator of ideas, goals and interests' (Quarles van Ufford 1988; cited from Mosse 2005: 103).

As du Gay argues 'the reform of bureaucratic organisations important to government policy and purpose needs more attention and understanding than a perfunctory reference within the contemporary rhetoric of organisational efficiency and privatisation. This requires attention to complex work processes within these public institutions, the way they discharge their executive duties and the ethos and accountability of the organisation concerned' (du Gay 2000 cited from Makwarimba and Vincent 2004:241). Makwarimba and Vincent showed how job satisfaction of extension workers was shaped by the structures and

processes of their work organisation and the field realities of the work environment (2004:241).

Bureaucracies may or will have interests or values that differ from those of elected politicians (see Wilson and Barker 2003). Thus while following government policies, bureaucrats generate their own ideas and power which do not necessarily coincide with the official goals. They deal with different goals at the same time (see Mintzberg 1983). Bureaucracy tries to bend, change and interpret these official goals to protect its own survival goals. The balance of power between the political executive and bureaucracy will determine the direction of policy process.

Thomas and Grindle (1990) present that the success of policy implementation depends on the capacity of the bureaucracy and their support to policy implementation. The resistance or opposition to policy changes vary according to the position of a bureaucrat in the hierarchy. Bardhan (1997) argues that for government policies to be effective, bureaucrats need to perceive positively the programmes implemented by them. Implementation suffers if regulations and bureaucratic allocation of scarce public resources breed corruption. ¹⁸

Smith (1988) approaches bureaucracy as the study of political power. Accommodation of interests will take place during policy formulation as well as in implementation. The outcome of policy is determined by the actions of participating actors. Allison and Halperin's bureaucratic politics model also see no unitary actor but rather many actors as players. ¹⁹ These players make governmental decisions not by single rational choice, but by pulling and hauling (see Allison and Halperin 1972).

Bureaucrats as Policy Actors

The work of Uphoff et al. (1991) and Wade (1982, 1984) has contributed to our understanding of the functioning of the irrigation bureaucracy in India. They have analysed the performance of bureaucracies and suggested strategies to improve its performance.²⁰

The Philippine experience has documented in the 1980s as a successful case of bureaucratic transformation (Korten and Siy 1988). By the mid 1990s the weaknesses of the Philippine PIM experiment were evident. The bureaucracy was highly centralised

and authoritarian. The World Bank, as one of the important stakeholder tightened its policies for the consideration of further funding. The lower-level staff and their morale were affected by the frequent changes in the leadership. The staff also did not like non-engineering people as heads of the NIA (see Sun and Groenfeldt 1995; Panella 1999).

Oorthuizen's (2003) research on irrigation reform in the Philippines highlighted that the capacity of NIA to transforms into an autonomous organisation needs to be questioned. He further shows how boundaries between the 'political' and the 'administrative' are blurred and give way to alliances brought together by interpersonal relations based on political patronage and friendship. He puts forward the view that frontline workers (lower level irrigation bureaucrats) become accountable and committed actors under certain circumstances. They can be committed to their jobs; play important roles in making the system work represent farmer interests within the agency and give meaning to the reform policies.²¹

Donor, Research and Academic Community as Actors

In the case of the Philippines, the role of academic, research and non-governmental organisations was visible in policy formulation and implementation. The NIA, to develop the PIM programme, had representatives from the Ford Foundation, the Institute of Philippines Culture from Ateneo de Manila University, the Asian Institute of Management, the International Rice Research Institute, UPLOs Banos Economic Development Foundation and Central Luzon State University formed the Communal Irrigation Committee. The committee members became important stakeholders in the programme through the investment of their own research efforts. They were drawn from engineering, agriculture, sociology, economics; anthropology, institutional management and training disciplinary backgrounds (see Panella 1999). In addition, the civil service bureaucracy has played a major active role in influencing the policy. The strategy of using the services of the academic and research communities to document and disseminate the PIM experience added to the legitimacy and credibility of the Philippine PIM experiment. These actors played a crucial role in shaping the policy and its midcourse corrections.

From the process literature it is clear that analysis of policy processes from different conceptual lenses shows the continuous interplay of institutions, multiple actors and their interests. ²² Policy actors do play an important role and we cannot discount their influence in the policy process. Drawing from the above literature reviews, in the following section, I present the analytical framework for the present research study.

2.5 Analytical Framework for this Study

This research aims to contribute to the policy process literature in irrigation. The objective is to study the irrigation reform policy process in the state of Andhra Pradesh. I will incorporate a number of concepts from the 'policy as process' framework in the analytical framework. I focus on the political nature of irrigation reform policy. I investigate how different actors mobilise support and lobby for their own interests, form alliances and gain control over resources. I am particularly interested in the functioning of water users associations as newly crafted institutions by the state and the role of WUA leaders who are elected to the WUA positions. I am also concerned regarding the changed roles of the irrigation bureaucracy under reforms and the actions of the political executive.

Conceptualising Policy

Policy is a process of 'becoming' rather than 'being' (Dye 2001).²³ Ham and Hill (1984:12) note 'policy is dynamic rather than static and that we need to be aware of shifting definitions of issues'. Policy is a contested resource being shaped by different stakeholders participating in the policy process (Mollinga 2001).

Conceptualising 'policy as a process' means an explicit acknowledgement of the importance of the social and historical context in which policy is shaped and implemented (Mooij 2003). Mooij and de Vos (2003) argue that the idea of policy process does not assume that policies are 'natural phenomena' or 'automatic solutions'. A policy is never fixed but is always evolving and changing. Policies are embedded in social relations, power structures, negotiation and cooperation practices that exist in

society.24 This makes the policy process a complex phenomenon.

As we see there are different ways or approaches to study the policy process. The approaches can be broadly grouped into two: policy as arenas and bargaining, and policy as a discourse. The literature on policy as arenas and bargaining can be further grouped into: public choice, pluralism, interface theory and policy networks, subsystems and advocacy coalitions. In this thesis, I use 'policy' as a process of consultation, contestation, translation and implementation of courses of action rather than prescription.

The available frameworks also diverge significantly in analysing policy actors involved in the process. The rational choice framework treats the individual actor as rational, self-interested and actively searching for best outcomes. No attention is paid to the internal belief systems of individuals, or to how they gather, process and synthesize information (Schlager and Blomquist 1996).

Some scholars see policy as essentially a process of bargaining and competition between different groups in society (Dahl 1961). The recognition of roles played by individuals and groups of individuals in policy space led to the construction of actor-centred models. Policy actors can be individuals or a collective influencing the policy to achieve their own or collective material and non-material interests. The interaction between the actors and policy has been explained with the concepts of policy networks, pluralist interest groups or policy pressure groups²⁵ (Keeley 1997).

State and Society Centred Models

The 'society centred approach' can be explained in both Marxist and pluralist beliefs. The interest group having belief in the Marxist approach (class analytical model) argues that the policy process is influenced by opinions of bourgeoisie (middle classes), dominating the process and acting against those of other classes. They do not believe in the argument that the policy is primarily reflecting the interests of groups within society. In contrast, the pluralists argue that the role of the government is to provide a playing field for the expression of social interests, and allow these to shape policy. According to the pluralists, policy change simply reflects changes in the balance of power between interest groups in society (see Sutton 1999; Keeley and Scoones 1999; Turner and Hulme 1997).

Smith (1990) criticises the pluralists' interpretations to the understanding of the policy making process. The interpretations by pluralists are: they see all pressure groups as being of equal influence; they discount the importance of economic resources; and they regard the state as neutral. According to Smith, the pluralists placed over emphasis on pressure groups (interest groups) and under-emphasised the role of the state in the policy process. The common characteristic of all pluralist theories is that pressure groups are supposed to exercise a major influence over the political process. But the fact is that not all the interest groups exert the same pressure or power to the policy making process. Hence the shortcoming of the pluralist model is in it's over reliance on pressure groups to explain change in the policy process.

The failure of pluralist approaches has led to the construction of 'state centred approaches'. Through this approach, an effort was made to bring the state back in. Within this approach the 'bureaucratic politics model' focuses on conflict and negotiation between actors within the state machinery. The contests are driven by individual career incentives and for control over policy arenas. Different players or actors compete over preferred options and use the resources available to them through their positions-hierarchy, control over information and access to key decision makers to achieve their goals (see Grindle and Thomas 1991).

The proponents of 'state interests approach' argue that the state has specific interests in the policy outcomes, such as the interests of regime authorities to remain in power and the maintenance of its own hegemony vis a vis societal actors (Turner and Hulme 1997). These interests may or may not correspond to the interests of particular classes or groups in society. In this model the 'state' is significantly more than an arena for societal conflict nor it is an instrument of domination employed by the dominant class or class alliance. It is potentially a powerful actor in its own right (Grindle and Thomas 1991). The interests within the state may be diverse and conflicting. The state also exercises considerable influence on the policy process.

The strength of the 'state interests approach' is that although its analytical focus is the state, the nature of state-society relations is also of concern as this will determine the degree of autonomy of policy elites in the state (Turner and Hulme 1997). The criticism of the state-centred approach is that in some cases, the states are weak and are dominated by societal interests. The state would not have

the authority to make decisions that reflect their own interests (Sutton 1999). With this background review, below I discuss the 'politics of policy' approach to study policy processes.

Politics of Policy

The politics of policy framework provides a broader perspective to analyse individuals' actions in different policy arenas. By choosing this approach, I go beyond the discussed shortcomings of state and society centred models by treating state, bureaucrats and other actors as equally important actors in the policy space. In this case the state's interests may or may not correspond to the interests of other actors. In some cases the state politicians and bureaucrats may align to seek benefits from the state policies.

Grindle (1977) sees 'the politics of policy' as including 'politics of implementation', referring to the political nature of the policy formulation and implementation process. Different interest groups and individual actors contest policy, at all stages of its existence and try to shape it in particular ways. In this study I specifically focus on the execution of the irrigation reform policy at (within system) local level. The day-to-day implementation is seen as an arena in which actors responsible for allocating resources (politicians and bureaucrats especially at the state level and implementing bureaucracy at local level) and those who receive (water users at local level) engage in influencing the allocation decisions.

Mollinga and Bolding (2004) suggest that 'the word 'politics' is virtually absent in the formal policy discourse on irrigation reform.²⁶ It sometimes appears in euphemistic terms and sometimes appears as a black box. Explicit analysis of the political dimensions of irrigation and irrigation reform is rare' (2004:4). In this thesis 'politics' does not refer to the party politics but is used as 'everyday politics', which is about the debates, conflicts, decisions, and co-operation among individuals, groups and organisations regarding the control, allocation and use of resources, and the values and ideas underlying these activities (see Kerkvliet 1990; Mollinga and Van Straaten 1996; Oorthuizen 2003). Mollinga and Bolding suggest that:

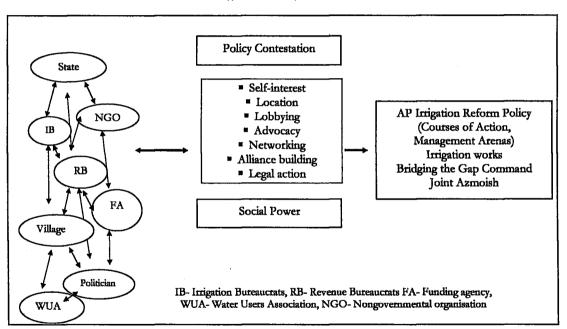
when reform processes are conceptualised as social processes in which different interest groups negotiate institutional transformation through a variety of strategies, using an array of resources, resulting in intended and unintended consequences and with other issues than strictly institutional ones implicated, it becomes crucial to understand, particularly for advocates of reform, how all these differences come together (or fail to come together), at different levels and stages of the reform process(2004: 291-92).

I use the theoretical notion of power (political and social), a multi-layered concept to explain the process of policy contestation.27 The concept of power is essentially contested. Lasswell and Kaplan (1950:75) note, 'the concept of power is perhaps the most fundamental in the whole of political science: the political process is the shaping, distribution, and exercise of power'. Agreeing with Lasswell and Kaplan (1950), Arts and Van Tatenhove (2004) consider that 'the concept of power is of the utmost importance to understand and explain policy practices' (2004:340). They put forward the policy arrangements approach referring to 'the way in which a policy domain is shaped, in terms. of organisation and substance, in a bounded context' (2004:341). The understanding of social power is that of politics as negotiation, struggle and contest (Mollinga and Bolding 2004). The change in policy is attributed to the changes in the balance of power between interest groups participating in a policy arena. 28

Policy contestation is a form of collective and individual actions in space and time.²⁹ It involves the notions of socio-economic and political power sharing, and resource distribution. Policy actors mobilise individual and collective resources, networks and location in order to be able to intervene and influence the policy process. If power is always constituted and exercised in social relationships the policy contestation by the actors is directly proportional to the ability to use and mobilise power.

Merging these concepts into a workable framework, I study irrigation reform policy process in the context of local rural power relationships. Using this framework, I distinguish that the policy change is a function of sum of actions of participating actors in the given policy space. The framework is helpful to address some of the weaknesses of earlier research by enlarging it to the analysis of intersection of political, bureaucratic and institutional boundaries.

Figure: 2.1 Analytical Framework



2.5 Central Research Question

Instead of taking for granted the role of the state and the impact of PIM, the present research aims to contribute to the existing knowledge on policy processes, specifically to the understanding of irrigation reform policy processes. Analysing local and higher level activities, the thesis investigates the dynamics of interest groups and their role in policy translation.

The thesis analyses the articulation of management transfer policies in the case of a protective irrigation system named Nagarjuna Sagar, a major irrigation system in Andhra Pradesh, India. The focus of analysis is summarised in the central research question for the case study of the Madhira branch canal of Nagarjuna Sagar Left main bank canal irrigation system in the state of Andhra Pradesh.

How and why are irrigation reform policy choices contested and mediated by different actors and what have been the outcomes of this policy contestation in key arenas of irrigation management namely: irrigation works, irrigation expansion (i.e. bridging the gap command) and irrigation revenue assessment (known as Joint Azmoish) in Madhira branch canal?

I analyse how irrigation reforms were initiated and implemented in Andhra Pradesh. Who are the important policy actors and what are their roles? The second part of the question aims to answer the different ways of policy shaping and transformation from the state centre to the local ground. The thesis thus identifies the interests, struggles and motivations of the different policy actors and shows how they shaped the policy and vice versa. To answer the main research question, I further divided it into sub research questions:

- How did the irrigation reform policy evolve and how was it implemented?
- 2. What factors influenced policy translation?
- 3. What were the key arenas of irrigation management? What are the outcomes of the policy aimed to decentralise the power relations and promotes participatory ways of irrigation management?
- 4. How did different actors react to and get engaged with the policy? Is the present irrigation policy an outcome of contested interests and resources?

Notes

- ¹ The sociological literature highlights the social processes, relations and conflicts between farmers and between the users and irrigation department and shows how these processes affected irrigation management. Some of the earlier works (Wittfogel, 1957; Leach, 1961; Hunt and Hunt 1976; Wade 1979; Eggink and Ubels 1984) contributed to sociological thinking on irrigation.
- ²The work of some of the research students and the staff at the Irrigation and Water Engineering group at Wageningen University has been strengthening the socio-technical approach to irrigation (see Vincent 1997, 2001; Mollinga 1998; Narain 2003; Khanal 2003; Shah 2003).
- ³ Since the 1970s scientists of various disciplines, particularly social scientists, started writing more about the performance, the problems involved and possible approaches for irrigation improvement. This evoked a rapid growth of a new type of literature, which can be termed as 'irrigation management literature' (Jurriens and De Jong 1989). This literature differed from the prevailing irrigation literature, which was largely contributed by engineers presenting technical and physical aspects of irrigation schemes. The emergence of management literature is useful as a wide variety of issues like organisational forms, structures, farmers' participation, user organisations, water distribution, control, water pricing, and legislation.
- ⁴ Evidence can be observed from the reports of international funding agencies and research centres (see USAID 1980 and 1983; CGIAR 1982, OECD 1983).
- ⁵ For example in Mexico the transfer programme started much later than the Philippines and was completed earlier (i.e. it started in 1991 and by 1997 eighty-nine percent of systems had been transferred). In Mexico, though farmers associations established with government assistance, assumed much deeper sets of management functions than their Philippine counter parts (see Groenfeldt 1997). Associations in Mexico employ their own technical and administrative staff and control much larger irrigated areas (3,000 to 80,000 ha) with memberships ranging from 500 to 5,000 farmers.
- ⁶ See Meinzen-Dick *et al.* (1994) for further discussion on the Asian model of PIM. In brief, they characterise this model as having small holdings, socially cohesive, homogenous and multi-purpose organisations.
- ⁷ A report by the Central Water Commission states that there seems to be a commitment of the Government of India to reform the basic character of irrigation management from a paternalistic, top-down system to a water user operated and managed system (CWC 1992). However, the policies

and programs that are adopted by the states, although influenced by national policies, differ considerably. Each state has adopted or is considering adoption of irrigation management transfer policies that are adapted to a) cultural traditions and prior policies in the state, b) physical and ecological conditions in the state, and c) the goals of the irrigation agencies (Brewer and Raj u 1996).

⁸ The document accessed at http://planningcommission.nic.in/plans/planrel/fiveyr/9th/vol2/v2c4-2.htm on Jan 21, 2004.

⁹ Brewer et al. (1999) argue that the change in the priority from irrigation works to IMT or PIM in India is due to the change in the policy of foreign donors. The donors signalled that they would not continue to fund projects for system rehabilitation without this.

¹⁰ The national seminar was held in Delhi in 1995. The Federal Ministry of Water Resources sponsored the seminar in collaboration with the Economic Development Institute of the World Bank. The seminar was a follow-up to the first national seminar on PIM held in June 1994 in Aurangabad in Maharashtra. The seminar provided a forum for detailed discussions about how to implement PIM in the various states (see India NPIM Newsletter no 2, 2004). Additional conferences were organised in 1995, 1997 and 1999 in different states. The first of these was held in Jaipur, Rajasthan October 5 and 6, 1995. This seminar was primarily for Rajasthan, but also included Harvana and Gujarat, whose irrigation sectors share many similarities. The Rajasthan seminar was the first of thirteen state and regional PIM seminars planned during 1996 fiscal year, which began in July 1995. Five other seminars had already been held in Andhra Pradesh, Tamil Nadu, West Bengal, Orissa and Maharashtra. Representatives from GO, NGO, donor representatives and academicians participated. These workshops served the purpose of sharing of information and showed the commitment of the central government. The creation of IndiaNPIM (Indian Network on Participatory Irrigation Management) a national NGO was another outcome of these deliberations. The mandate of IndiaNPIM is to work towards Irrigation Sector Reforms in India, through efforts outside of the Government, but working closely with government; and influencing and supporting the appropriate policy decisions. Source : www.inpim.org/leftlinks/ Newsletters/N2/Newsletters/N2/n2a.

¹¹ The creation of Water and Land Management Institutes (WALMIs) in several states in India was made possible by the financial support extended by the World Bank. The institutes have under taken experiments and studies in IMT in the respective states. The Ford Foundation also supported PIM initiatives in India. The experiments on tank management carried out by PRADAN, an NGO in Tamil Nadu, Bihar, Aga Khan

Rural Support Programme (India) in Gujarat and by Water Resources Centre at Anna University in Tamil Nadu are some of the outcomes of the support extended by the Ford Foundation. Other NGOs (IRDAS in Andhra Pradesh and SOPPECOM in Maharashtra) also carried out pilot studies on PIM. SOPPECOM was started by retired irrigation department officials in 1980s and was the first to initiate a water users association in Ahmednagar district of Maharashtra in the command area of a major project the Mula minor 7, and the subsequent scaling up by setting up almost 15 such societies on another distributary. In Andhra Pradesh, IRDAS took up a Government sponsored Action Research Programme in the Sri Ram Sagar Project. A pilot project for promoting farmers' participation in management of irrigation system through WUA was initiated in the distributaries D-51 and D-64 with a command area of 700 acres and 14,800 acres respectively under SRSP. D-51 has 12 minors with 90 outlets and 38 direct outlets. Under D-64 there are 13 minors with 170 outlets and 67 direct outlets, along its length. For further information see Water Users Association, Pilot Project -SRSP, D-51 & D64, Annual Report - for the year ending June 1996, IRDAS, September, 1996.

¹² In 1995, the Government of Andhra Pradesh laid down a policy for implementing PIM (Government Order number 101-PW (SRSP) II of I and CAD Department dated 19.7.1995) in the state. The broad features of this policy are: 1. Irrigation system upto a minor or group of minors covering a command area of 750 ha or more (a hydraulic unit) will be placed under the management of a Water Users' Association. 2. WUA will be autonomous bodies which will function on democratic lines within the purview of AP Irrigation Utilisation and Command Area Development Act, which will be suitably amended so that these associations can function effectively and 3. A Memorandum of Understanding will be entered into between the WUA and the irrigation agency to enable independent functioning of the farmer. These features were incorporated later into the APFMIS Act enacted in 1997 in the state.

¹³The state of Gujarat passed government orders in 1995 to implement the PIM programme in the state (Parthasarathy 1998). In Rajasthan, legislation has been passed but rules are yet to be framed. In the state of Karnataka, WUAs are formed and are registered under the Karnataka Cooperative Societies Act of 1959.

¹⁴ The *ejido*, or communally farmed plot, emerged as a unique Mexican form of redistributing large landholdings. Under this arrangement, a group of villagers could petition the government to seize private properties that exceeded certain specified sizes-initially 150 hectares for irrigated land and 200 hectares for rain-fed holdings. Assuming a favourable review of the petition, the government then expropriated the

property and created an ejido. The state retained title to the land but granted the villagers, now known as ejidatarios, the right to farm the land, either in a collective manner or through the designation of individual parcels. Ejidatarios could not sell or mortgage their land but could pass usufruct rights to their heirs. Ejidatarios had to work their land regularly in order to maintain rights over it. Under the new law, an ejido can award its members individual titles to the land, not merely usufruct rights to their parcels. Ejidatarios can, inturn, choose to rent, sell, or mortgage their properties. Ejidatarios do not need to work their lands to maintain ownership over them. They also may enter into partnerships with private entrepreneurs. The law also effectively ends the redistribution of land through government decree. Finally, the processing and resolution of land disputes are decentralized. (source: http://www.photius.com/countries/mexico/society/mexico_society_rural_society.html).

15 Mr. Chandra Babu Naidu was known as a believer in reforms and market oriented approaches. His belief in reforms was clear when he submitted a deficit budget in March 1995 in his capacity as Finance Minister in the N.T. Rama Rao government. Mr. Naidu argued that the budget would be a surplus one, if the subsidies on rice and power are included together with the losses made due to the prohibition policy of the state. When Chandrababu Naidu became the Chief Minister of the state in September 1995, the ban was lifted on prohibition and the government reduced the subsidies on rice and power. The power sector is another sector along with irrigation undergoing reforms in the state (see Reddy 2003 for detailed explanation).

¹⁶ Weber also noted the dysfunctions of bureaucracy. Weber (1968) proposed eight bureaucratic characteristics that pose problems for democracy and democratic reforms. They are: first, in a bureaucracy roles and responsibilities are defined and organised under different categories of specific function; and these functions are rigidly arranged in a hierarchical fashion. Individuals working in a bureaucracy are required to perform tasks that are already predetermined. Second, the relationships between people who work in a bureaucracy are defined strictly in terms of their roles and responsibilities. Third, in a bureaucracy the powers are centralised at the top of the hierarchy. Fourth, within a bureaucracy, the functional responsibilities and relationships, and the general working of the organisation, are dictated by prescribed rules and regulations. Fifth, bureaucracy attempts to maintain neutrality often run the risk of making bureaucracy irresponsive and intensive to the needs of the individual and the community. Sixth, bureaucracy is characterised by its own official language. It is unidirectional and authoritative, legitimised and used by its own self-assured authority. The language is instructive rather than

consultative. It does not permit open dialogue. Seventh, bureaucracies operate on the belief that administration is content free. It is assumed that administrative procedures are universal and therefore are relevant and applicable to any field. Eighth, bureaucracies are believed to be value free, independent of particular moral or political concerns, bureaucracy itself is thought to be merely a technical instrument and not a cultural phenomenon.

- ¹⁷ For example, Rizvi views bureaucracy and its mode of thinking as a major barrier to democratic reform. Democratic reforms cannot become a reality unless we can rescue ourselves from the clutches of bureaucratic rationality. Rizvi argues that bureaucracy should be understood as both structure and process (see Rizvi 1986; 1989).
- ¹⁸ Corruption, if defined very generally, would include all kinds of opportunistic behaviour, where a particular agent breaks certain rules in order to gain a private advantage. In a narrow sense corruption is 'the use of public office for private gain' (Bardhan 1996).
- ¹⁹ The central metaphor of the Bureaucratic Politics Model, as stated by Freedman is that of the game. The different players occupy positions within the government. Their perceptions and preferences stem both from individual characteristics and their particular positions. Differing interests lead the payers to see quite different facets of any particular issue. Their interests define their states in an issue and following from that, their stakes will determine their stands (Freedman 1976:437).
- ²⁰ The literature in the 1980s focused on the rent-seeking behaviour of the bureaucracy (Wade 1982, 1985; Repetto 1986). Much of the administration literature focused on the higher level bureaucrats. The upper levels are certainly important to understand but not to the exclusion of frontline workers in the field who daily confront the problems about which the upper officials make policy. For studies on the roles of lower level of bureaucrats refer to Tendler 1997; Lipsky 1980; Oorthuizen 2003 and Rap 2004.
- ²¹ Lipsky (1980) showed how the working conditions of street level bureaucrats influence policy implementation. He argues that the peculiar character of their work structures policy transformation. They are squeezed between the demands of their superiors and clients. Oorthuizen (2003) showed how understanding frontline workers and their social roles are crucial in understanding field level outcomes of irrigation reforms in the Philippines.
- ²² Literature on the research-policy link is shifting away from the old assumptions towards a more dynamic and complex view. Garret and Islam (1998) suggest a two way process between research and policy, shaped by multiple relations and reservoirs of knowledge. Providing a

detailed description, Weiss (1977) describes a process of percolation in which research findings and concepts circulate and are gradually filtered through various policy networks and circles. As a result some of the recent research has been focused explicitly on types of policy networks, advocacy coalitions, pressure groups and policy communities. The question that needs to be addressed is how to make research useful for policy or how research can influence and shape the policy discourse? For an overview of policy research linkage see Keeley and Scoones (1999) and Sutton (1999).

²³ Dye (2001) criticises the pluralist argument that in a democracy, public policy is a response to the demands of the people. According to him, in reality policy is made from the top down. Dye proposes a top down policymaking model in which he distinguishes four different processes, namely the policy formulation process (dominated by think tanks, commissions, and task forces), the interest group process (dominated by organised interest groups and lawyers, lobbyists and consultants operating on their behalf), the political candidate selection process (driven by money coming from firms, media conglomerates, insurance companies etc), and the opinion making process (dominated by national mass media elites). Dye explains in his book how these four processes work in the context of USA.

²⁴ The tendency to separate policy-making and implementation is evident in linear models of analysis. There is a notion of a divided, dichotomous and linear sequence from policy to implementation (Clay and Schaffer 1984). The dichotomy between policy formulation and implementation exists because of the notion that decision making is done by the political executives and implementation was seen as an administrative activity, implemented through the lower levels of bureaucracy (Grindle and Thomas 1990).

²⁵ A policy network is a group of individuals and organisations who share similar belief systems, codes of conduct and established patterns of behaviour. The system works on an open and flexible system of relationships. A policy or epistemic community is a more tightly knit group of elite experts who have access to certain information and knowledge, which excludes those who do not have such access.

²⁶ Mollinga and Bolding (2004) emphasize that 'policy as process' and 'politics of policy' are not synonyms. 'Policy as process' is the broader term whereas 'politics of policy' the narrower one. They do not claim that a 'politics of policy' as a specific perspective will uncover all elements or dimensions of policy processes (italics as in original).

²⁷ Power like Policy has many explanations. Russell (1938) defines power is the ability to produce intended effects. Weber introduces a pluralistic notion in regard to the analysis of power in society. Although he agrees with Marx in crucial respects, he refines and extends Marx's analytical scheme. For Marx, power is always rooted, even only in the 'last analysis', in economic relations. Those who own the means of production exercise political power either directly or indirectly. Weber agreed that quite often, especially in the modern capitalist world, economic power is the predominant form. But he objects that 'the emergence of economic power may be the consequence of power existing on other grounds'. For example, men who are able to command large-scale bureaucratic organizations may wield a great deal of economic power even though they are only salaried employees. Source:http://www2.pfeiffer.edu/~lridener/DSS/Weber/WEBERW7.HTML).

²⁸ For example the role of industrial group like Confederation of Indian Industries can be taken as an example to explain the role of interest group on the policy processes in India. The Confederation though the youngest business association with a social base in electronic, software and computer industries could establish a close rapport with concerned ministries especially with the Ministry of Finance and succeeded in influencing economic policies to its advantage. It participates actively in public debates around the economic reform and had been able to influence the economic policy agenda (see Kochanek 1996; Mooij 2005).

²⁹ The term 'contestation' derives from the French word conteste. The meaning is to struggle, to argue, to compete, to call into question, to take an active stand against, to dispute and to challenge (Advanced Learner's Dictionary 1963). These meanings are found in the interactions of water users, bureaucrats and politicians. Reflection on policy contestation is required to understand the intellectual and policy trajectories that a reform policy has taken and will take in future (Bolding et al. 2000).

Legislation and Policy

The Emergence of Participatory Irrigation Management

The 1990s can be called the Golden Decade for the programmes of participatory management of natural resources. It was during this decade that three major programmes in the sectors of forestry, land management and water sector were launched.

Anil C Shah, March 20031

3.1 Introduction

In this chapter I discuss the emergence of Participatory Irrigation Management (PIM) policy and legislation, in the state of Andhra Pradesh. In the following sections, I discuss the evolution of irrigation policies and programmes during colonial and postcolonial periods. I present a brief profile of the state irrigation resources and discuss the emergence of PIM policy and APFMIS Act and its salient features in the main text. All other references as much as possible have been relegated to footnotes.

3.2 Colonial Irrigation Policies

Farmer-owned and managed irrigation systems served most land area in south India during the pre-colonial period (Centre for Civil Society 2003: 4). In contrast, the large irrigation systems built during colonial rule in India were all government-controlled

systems. In India community managed irrigation systems had been largely neglected by the colonial administration until the early 1800s. Later the British took an interest in the reconstruction and maintenance of the irrigation infrastructure.²

The first renovation of the Grand Anicut of the Cauvery delta in Southern India, for example, initially consisted of desiltation, and was only augmented with infrastructure in the 1830s through the efforts of Colonel Arthur Cotton. Similarly, in northern India, restorations to an extensive Mogul canal network commenced in 1817 and continued into the 1830s. Having little capital expenditure costs, the British were able to bring in considerable revenue from the sale of water and taxation on land brought under irrigation (Ebrahim 2004).

In1840s the British initiated construction of new irrigation systems. Under the administration of the Madras Presidency, the dam on the Godavari at Dowleswaram in 1852 and the Prakasam barrage on river Krishna at Vijayawada (Krishna District) in 1855 were constructed. These initiatives helped the farmers of the delta areas, though they could not solve the problem of poverty that plagued the people at large. The massive Ganges canal was opened in 1854 measuring almost 900 miles and irrigating 1.5 million acres of land. This was, however, the first of India's canals to be built with borrowed money (from loans raised in London) and was a harbinger of the increasing investments and decreasing profits that the government was to reap from irrigation (see Ebrahim 2004).

The British had a dilemma to resolve: How to derive as much revenue as possible without causing pauperisation, famine and/or revolt? Modernising Indian society along the principles of English modernity was thought to be the ultimate solution to the dilemma (Bolding et al 1995). As a result, the government appointed an irrigation bureaucracy to control the structures, so that the collection of revenue (for the government) would remain within its control.

During the early phase the British army engineers played a major role. It appears that there was no coherent British irrigation policy in the early phase, but this became visible when they created the federal Public Works Department in 1855. Irrigation policy making was in the hands of civilians, while the army continued to be responsible for executing public works. From 1860, irrigation schemes, as one of the central instruments of colonial rule, were burdened with a load of contradictory goals. In other words, the

fundamental duality in colonial policy was reproduced in irrigation policy: to increase revenues and promote cash cropping, and simultaneously maintain stability and ensure British rule, otherwise threatened by famines and social unrest (see Mollinga 1992; Bolding et al. 1995). The British government increased its commitment to large-scale irrigation after the 1860-61 famine in the north India considering the drought proof nature of the irrigation. As a result in 1880-1900 there was a sixty percent growth in terms of command area that receives irrigation. The British by now adapted protective irrigation as their policy (see Mollinga 2003, Jurriens et al. 1996).

Referring to the work of La Porta et al. (1998a; 1998b; 2000) Benerjee and Iyer (2003) argued that the historical fact of being colonized by the British rather than any of the other colonial powers had a strong effect on the legal system of India and through that on economic performance. The Northern India Canal and Drainage Act of 1873 was an important piece of legislation that influenced the pattern of irrigation development, enacted during the colonial India period. The British tried to foster the emergence of middle-class-cultivators, who would be willing and able to invest capital in agriculture and raise productivity (Ambirajan, 1978 cited in Bolding et al. 1995).

The first irrigation commission was formed in 1900. It found that new construction was likely to prove remunerative only in certain northern regions such as Punjab, and that even the prospects of famine protection were limited to specific areas. The Commission also recommended the government to provide loans for private agricultural improvements such as well irrigation. A series of decentralisation reforms, introduced in 1919, led to the turnover of irrigation to local governments. From 1912 to 1946, state and federal governments continued to invest in major irrigation works across the country, most notably in the south, where high rates of return on major projects led to a doubling of annual expenditure (Ebrahim 2004).

3.3 Irrigation Policies in the Post Colonial Period

Independent India inherited a significant number of capitalintensive large irrigation projects from the colonial period. The management of these systems fell largely in the domain of the states and the national government. The construction orientation continued under successive governments. Irrigation acts like The Bengal Irrigation Act, The North Indian Irrigation Act, and The Bombay Irrigation Act further validated state control over the irrigation sector.³ In view of existence of various facts with different objectives and rules a need was felt to introduce a uniform act to guide the irrigation development in the country.

The Irrigation Commission in 1972 stated that 'there were several statutes, rules and orders in different parts of the country covering different aspects of irrigation management'. The commission recommended unification and simplification of laws. In 1973, the Central Government issued instructions to the states to establish Command Area Development Authorities (CADA) for its irrigation schemes. The establishment of CADA in India was the result of the recommendations of the Irrigation Commission and the National Commission on Agriculture of 1973 (see Mollinga 2003).

On request from the Ministry of Irrigation and Power of the GOI, the Indian Law Institute studied the various laws and rules and came up with model legislation for the guidance of the states. Consequently the Government of India finalised the draft Bill. The bill called *The Model Irrigation Bill 1976* was then circulated to the states for consideration and application with modifications if needed. Independent states have adopted the Bill and enacted legislation with some modifications in respective states. In addition, a number of centrally sponsored programmes have been designed and implemented by the states.

The Command Area Development Programme

The command area development (CAD) concept as perceived in 1973 was viewed as an integrated area development programme. The concept was further emphasised by the National Commission on Agriculture (1976) regarding the need for the integrated development of command areas. Irrigation and Agriculture being state subjects, command area development has to be implemented by the state governments.

On the advice of the central government, the states went about creating CADAs to suit their individual administrative traditions and preferences. By and large, most states located the CADAs under the Department of Agriculture (Sivamohan and Scott 1992). The primary responsibility of CADA was to implement the onfarm development package. Later the focus was limited to the construction of field channels alone rather than to the other items of the package. When the central government took the decision to implement 'rotational water supply' in the first half of 1980s, it was included as a regular item of the CAD programme. To implement CAD activities, the states received central assistance. After a few years of implementation, it was realised that without cooperation of farmers it would be difficult to execute the rotational water supply plan. This has led to the initiation of Pipe Committees, Kolaba Samitis, or organisations known as Pani Panchayats4 in some states. These associations were based on the outlet and were highly vulnerable at times of water scarcity. Subsequently, the need for designing new approaches to create farmer associations surfaced. Over a period of time the CAD programme highlighted the various limitations of different irrigation systems and their management.

The legal provisions and irrigation development programmes have not met with significant success. Probable reasons are that the irrigation department does not want to share its power, that is, control over irrigation system management, with the farmer community. Second, there is popular engineering belief that farmers cannot understand the technical features of the system so as to manage the systems. Third, political interests, policy failures, and lack of active farmer organisations have added to weak CAD programme implementation. However, through the CAD programme concrete support was visualised for implementation of PIM in the country. The Government of India supported various policy initiatives towards implementation of PIM programme since the mid 1980s.

When we see the CAD and PIM initiatives they were contradictory. The CAD approach is top down and centralised. A blueprint approach was designed and given to the states to implement. Independent states announced their support with minor modifications. The PIM is visualised on the basis of participatory approaches. Ironically, the CAD machinery was asked to implement the PIM programme. Subsequent to the CAD programme⁵, two other significant events took place in the form of implementation of the National Water Management Programme and formulation of the National Water Policy in 1987.

National Water Management Programme

In 1987, the National Water Management Project (NWMP) supported by an external credit was initially implemented in Andhra Pradesh, Karnataka and Tamil Nadu. The NWMP's premise was that substantial benefits could be obtained in existing irrigation schemes through a more reliable, predictable and equitable water delivery system. As a strategy NWMP focused on preparation of an 'operational plan' for each scheme to define the principles of water distribution and allocate responsibilities for implementation.

The approach of NWMP can be summarized as 'providing a demand-scheduled supply by means of an irrigation system which is structured in a manner and is manageable under present conditions'. The approach provided hope for a manageable system, which responded to evolving conditions and made relatively efficient use of highly variable and limited water supplies available to many of the schemes of south India (Berkoff 1994). But the objectives of NWMP could not be achieved, due to the existing operational practices. In some cases the objectives of the programme contrasted with the existing localisation approaches.

National Water Policy

The formulation of the National Water Policy of 1987 (amended in 2002) was an important development in India's water sector management. The policy recognises and stresses user participation in irrigation management. Farmer participation as a policy prescription continued in the policy documents. The National Water Policy (2002) states:

Management of water resources for diverse uses should incorporate a participatory approach; by involving not only the various governmental agencies but also the users and other stakeholders, in an effective and decisive manner, in various aspects of planning, design, development and management of the water resources schemes... Water Users' Associations and the local bodies such as Municipalities and Gram Panchayats should particularly be involved in the operation, maintenance and management of water infrastructures/ facilities at appropriate levels progressively, with a

view to eventually transfer the management of such facilities to the user groups/local bodies (National Water Policy 2002).

3.4 Andhra Pradesh: A Brief Profile

On the 1st of October 1953, Andhra State came into existence.⁶ The creation of Andhra State strengthened the general demand for linguistic states. Later, the Telugu speaking state of Andhra Pradesh⁷ was formed on 1st of November 1956 on a linguistic basis, following the recommendations of the States' Reorganisation Commission headed by Justice Fazal Ali.

Andhra Pradesh is the fifth largest state⁸ with a population of 77.5 million people and a total surface area of 2.76 lakh square kilometres, accounting for 8.4 percent of India's territory. The State is bounded by Karnataka, Tamil Nadu, Orissa, Maharashtra, Chattisgarh states and the Bay of Bengal.

The State is conventionally classified into three broad regions namely Coastal Andhra, Rayalaseema and Telangana.⁹ This classification is used to show agro-ecological differences and development challenges and compare the levels of development.¹⁰ The evidence is that there is significant heterogeneity within the regions and imbalances exist in terms of development. The Telangana region was part of the erstwhile Nizam's Hyderabad State, whilst the Coastal Andhra and Rayalaseema regions formed part of the British-governed Madras Presidency.¹¹

The State has the longest coastline (972 km) among all the States in India. The coastal region covers the coast along the Bay of Bengal, comprising 41.7 percent of the state population, the Rayalaseema region covers the southern part of the state with 18 percent of the population and the Telangana region with 40.3 percent of the population comprises the northern part of the state. The scheduled castes, schedules tribes and backward classes account for nearly 60 percent of the total population of the state¹² (Census of India, Andhra Pradesh, 2001).

Water Resources

The state is endowed with rich water resources and is appropriately called a river state. Nearly 75 percent of the total area is covered by

the river basins of the Godavari¹³, Krishna¹⁴, Pennar¹⁵, and their tributaries. There are 17 smaller rivers like the Sarada, Nagavali and Musi, as well as several streams. Godavari and Krishna are the two major perennial rivers, and with their extensive canal system, provide assured irrigation. The climate of the state is described as a tropical monsoon. The water potential of the state is estimated to be 2,746 thousand million cubic metres (TMC). Out of the total potential: surface run-off, evaporation and evapo-transpiration, soil moisture and groundwater recharge are calculated to be 40, 41, 10 and 9 percent respectively (A.P Water Conservation Mission, 2000).

Monsoons play an important role in deciding the agricultural performance of the state. The state receives rainfall primarily from the South West monsoon starting from early June to end September, and the North East monsoon from October to December. Average annual rainfall ranges from 740 millimetres in the south to 2000 mm in the north. Annual fluctuations in the rainfall are sometimes so heavy that several districts are often subjected either to floods or drought.

Andhra Pradesh has been a leading participant in the Green Revolution 16 in the country, especially for rice. This has been greatly facilitated by the availability of irrigation infrastructure developed in the state. The anicuts (irrigation systems) across the Godavari, Krishna, and Pennar rivers were built more than a century ago. It was thanks to these irrigation projects that the Krishna-Godavari tracts of Andhra experienced an 'agrarian revolution' in a manner quite unlike any other part of the Madras Presidency in British India. The changes in the social and political organisation of Andhra people that followed were immense. These early irrigation projects and agricultural development are responsible for the central coastal districts' economic, social and political advancement 17 (see Rao 1985; Srinivasulu 2002; Mollinga 2003).

The ultimate irrigation potential in AP from all sources is estimated to be 9.50 mha. It includes 7.30 mha from surface water and 2.20 million ha from ground water (GoAP 1997). About 40 percent of the state's gross cropped area is irrigated, contributing 60 percent of agricultural production. Out of the irrigated area 70 percent is under cereal crops, mostly rice. Other food crops cover 14 percent includes chillies, fruits, and vegetables. Oilseeds cover

about 12 percent and the remaining 4 percent is made up of non-food crops such as tobacco, sugarcane, and cotton (DES 2001).

However, the existing irrigation systems have deteriorated over time. In addition, nearly 35 percent of ultimate irrigation potential from major and medium irrigation projects in the state is yet to be exploited. In the case of minor irrigation about 40 percent of the ultimate potential remains unutilised (Rao and Dev 2003:9). All these contribute to the gap between potential and actual irrigated area, called the 'gap command'. In the following section, I further explain the irrigation laws and policies in the state.

3.5 Irrigation Laws and Policies

Legislation can be regarded as an important link between the policy and rights of the users. A well-conceived law facilitate implementation of policy decisions and sanctions obligations and rights of the users. In this section, I briefly present the legislation and national policies that played an important role in irrigation development in the state.

In the State of Andhra Pradesh, there were different Acts enacted at different times. The foremost one was The Irrigation Cess Act in Andhra Region, 1865. The Act is only applicable to the districts of Rayalaseema and the Coastal area based on the Old Madras Presidency Act. In the Telangana region, The Telangana Irrigation Act of 1948 (1357 fasli) was applicable to all the projects in the state except the Sriramsagar project. 18 Later, the Andhra Pradesh Irrigation Utilisation and Command Area Development Act, 1984 and Rules (1985) were applicable to the specified major irrigation projects in the state. 19 The Act was prepared on the basis of a model bill circulated by Government of India in 1976. The projects covered under the Act were the Sriramsagar Project on the river Godavari, the Nagarjunasagar project on river Krishna, the Tungabhadra Project and the Delta systems of Krishna and Godavari.

The CAD Act was more comprehensive than the Irrigation Cess Act. Under the CAD Act, it was lawful for the government to levy at will a separate fee for water supplied for irrigation from a river, stream, channel or tank constructed by or on behalf of the government. The important sections of the Act are: a) the construction and maintenance of irrigation works (storage,

conveyance, and delivery systems controlled or maintained) by government, b) the supply or stoppage of water and regulation of water deliveries, c) water tax, and d) irrigation offences (interfering with or damaging the irrigation system) and penalties.

The CAD Act clearly prescribes the responsibilities of the landholders for the maintenance of the watercourses and field channels. The Act also contains the penal actions and punishments for the violations. The issues that the CAD Act aimed to address were evident from the preamble and were stated as:

To provide for an accelerated increase in agriculture and allied production in the state of Andhra Pradesh through a program of comprehensive and systematic development on scientific and modern lines of command areas, comprising measures for optimum use of lands and water, prevention of land erosion and water logging, improvement of soil fertility and regulation of cropping pattern and for proper maintenance and upkeep of irrigation systems in the state for ensuring maximum benefits for the cultivators under the command areas and for the matters connected therewith.

In the initial years of CAD, the state irrigation departments did not take an active interest. In Andhra Pradesh, the Irrigation and CAD Act (enacted in the year 1984) imposed the creation of CAD authorities²⁰ and 'pipe committees'. These pipe committees proved to be quite ineffective as delivery of water at the outlet was quite unrealistic leaving no scope for pipe committees to effect any improvement in the distribution of water (see box 3.1). Pipe committees had no role in maintenance and their responsibilities were not defined and hence they became non functional (see Joshi 1997, Reddy and Reddy 2005).

Recognising integration of irrigation and agriculture departments as a problem in 1981, it was recommended that CADAs in the states be brought under the irrigation departments. Irrigation utilisation (synonymous with CAD) is viewed as an integrated problem from the reservoir or from the diversion point to the farmers' plot. After the introduction of the CAD programme guided by the CAD Acts,²¹ the deterioration of irrigation infrastructure has continued. The CAD policy and its process of implementation in the state bring out several crucial points.

Sivamohan and Scott (1992) argue that the merger helped to improve water delivery but created peculiar problems of its own. The agricultural function of CAD was neglected. The officers of the agriculture department working under CAD were withdrawn. The integrated approach to agriculture in irrigated areas has been abandoned.

Box 3.1 Pipe committees under SRSP, Andhra Pradesh

In Sriramsagar project (SRSP) command area, the concept of irrigation management was initiated in 1978-79. Under the CAD Act, pipe committees were formed on a pilot basis in SRSP commanding the Telangana region. For the first time an opportunity was created through the Act 'to transfer the management of the canal below the pipe outlet (not commanding more than 40 ha of command area) to users'. Formal elections were conducted and *Pipe committees* were formed on an experimental basis. The CAD department took the initiative of implementation and the facilitation was carried out by two NGOs.

Rao (1996) describes four stages of the experiment. As the first stage, the formation of pipe committees took place in 1978. These committees were active till about 1982-83 and slowly declined. The second stage was 1984-87. During this period an attempt was made to revive the informal pipe committees and village irrigators' associations (ayacutdars sangham). The third stage (1987-91) marked the constitution of pipe committees (formal) as per the AP-I & CAD Act 1984 (Act No 15). However, these major committees were kept in abeyance as per the decision taken in the 20th CADA board meeting held on 7.9.1987, and their function was thwarted. The fourth stage (1990-92) marked the formation of minor committees under the action research programme.

Source: Rao (1996)

Mollinga (2003) argues that the CADA-based initiative for water management reform is a 'policy as prescription model' of planned intervention by government agencies. The striking characteristic of the CAD approach is its degree of standardisation. The policy was conceived at the central governmental level influenced by national and international policy makers and advisors. The State governments only made limited adaptations to the central model. The recommendations of CAD policy were highly directive. The government tells farmers and irrigation officials what to do and how to do it. It also defines the legal machinery of fines and other

punishments to control non-adherence to the policy prescriptions, particularly as far as farmers are concerned.

Investments in irrigation

Initially, investments in the irrigation sector led to a substantial increase in agricultural growth, incomes and development, resulting in an increase in the Gross Domestic Product. Later, despite massive investments in the irrigation sector, irrigated area particularly in tail end areas declined in several major commands, due to insufficient maintenance of irrigation schemes.²² The state of Andhra Pradesh was no exception to the above description. In the early 1980s the Irrigation Utilisation Committee (IUC)²³ constituted by the Government of Andhra Pradesh produced a report that was highly critical of canal system performance and management practices in the state (GOAP 1982). According to the IUC report:

The dams and canals are splendid monuments, but they are crippled water distribution systems. They rarely are able to deliver water to more than half their service areas. The problem is engineering partly with leaky and undersized canals. But more fundamentally the problem is political; for the government is unable to prevent farmers at the upper reaches of the distributary systems from taking so much canal wat er that tail ends run dry.

The budgets spent and irrigation potential (IP) created and utilised under different plan periods for major, medium and minor irrigation sectors are presented in table 3.1. From the table it was evident that the plan investments have increased. The total gap by the end of eight plan period was 0.32 million ha.²⁴ It was also evident that the gap command existed almost all years except during 1966-74.

During the Sixth plan period (1980-85), the major and medium irrigation projects received the major share of the budget. The plan outlays on major, medium and minor irrigation projects totalled 71,527 million rupees by the end of the eighth plan period. The Government has approved 60,300 million rupees as plan outlay for the Ninth plan period for the irrigation sector. From table 3.1, it is clear that budget allocations have increased from one plan period

to another. But the irrigation potential created and utilised does not show the same trend. 25

Wallach (1984) who conducted research on irrigation development in the Krishna basin during the post-colonial period argues that 'despite decades of efforts aimed at stopping this kind of irrigation abuse, there is much pessimism'. Pessimism has been increasing as more and more tail end farmers were deprived of their due share of irrigation water to their plots (see for discussion on irrigation history Stone 1984; Attwood 1987; Whitcombe 1972; Wallach 2004). In the following section, I briefly discuss the issue of irrigation disparity and its assumed significance in Andhra Pradesh state politics and policy.

Irrigation disparity

Regional disparities in terms of irrigation development in the state are evident. The reasons can be historical, economic, cultural and institutional or even geographical and related to availability of natural resources.26 I present two possible reasons for the irrigation disparity in the state. First, historical reasons i.e. the land revenue systems that were in use during the British time. All cultivable land in British India fell under one of three alternative systems: a landlord-based system (also known as zamindari or malguzari), an individual cultivator-based system (raiyatwari) and a village-based system known as mahalwari. According to Benerjee and Iyer (2003) almost all canals constructed by the British were in non-landlord areas. It was easier for the colonial government to raise rents in non-landlord areas. The state could capture some of the productivity gains from these areas, and hence had more reason to invest in irrigation, railways, schools and other infrastructure in these areas during the colonial period. For example the practice of raiyatwari system in delta districts might have led to construction of irrigation projects in those districts (see chapter 7 for further discussion).

Second, the emergence of caste based politics in the postcolonial state (see Srinivasulu 2002): it is the control of these castes over agrarian resources such as land and water that has been the most important source of their economic and political power.

Table 3.1: Plan Investments, Irrigation Potential Created and Irrigation Potential Utilised in AP

Period	Plan Investments Million Rs			Irriyation Potential Created (million ba)			Irrigation Potential Utilized (million ha)			- Total Gap
	Major & Medium	Minor	Total	Major & Medium	Minor	Total	Major & Medium	Minor	Total	Command
Prior to plan period	-			1.33	1.37	2.70	1.33	1.32	2.65	0.05
I — Plan (1951-56)	374.7	35.2	409.9	0.08	0.03	0.11	0.06	0.03	0.09	0.03
II Plan (1956-61)	574.3	43.8	618.1	0.18	0.02	0.20	0.13	0.02	0.15	0.06
III–Plan (1961-66)	915.2	186.0	1101.2	0.37	0.05	0.42	0.09	0.05	0.14	0.28
3 Annual Plans 1966-69	608.7	108.1	716.8	0.08	0.04	0.12	0.35	0.04	0.39	+0.27
IVPlan (1969-74)	1187.1	181.5	1368.6	0.19	0.06	0.25	0.22	0.06	0.28	+0.03
V- Plan (1974-78)	2691.1	388.2	3079.3	0.21	0.09	0.30	0.18	0.09	0.27	0.03
2 Annual Plans 1978-80	2576.9	237.9	2814.8	0.15	0.06	0.21	0.15	0.06	0.21	0.01
VI-Plan (1980-85)	7295.9	507.3	7803.2	0.31	0.08	0.39	0.17	0.08	0.25	0.14
VII-Plan (1985-90)	13064	1314	14378	0.09	0.07	0.16	0.08	0.06	0.14	0.02
Annual Plan (1990-91)	2827.5	632.3	3459.8	0.01	0.01	0.02	0.00	0.01	0.01	0.01
Annual Plan (1991-92)	3339.2	57.93	3918.5	0.01	0.01	0.02	0.01	0.01	0.02	0.00
VIII-Plan (1992-97)	27543.5	4315.6	31859.1	0.05	0.03	0.08	0.03	0.03	0.06	0.02

0.19

0.05

0.24

Source: Peter (2001) and Saguneeti Sangham (December 2003- April 2004) Vol 5, No 7-11. p35

IX plan (1997-02)

Note: The above plan figures do not include expenditure on CADA up to the end of the Seventh Plan.

The Reddys and Kammas, comprising 6.5 and 4.8 percent of the state population respectively, are the two politically dominant communities in the state political arena. Although the Reddys are spread across the state, they are dominant in the Telangana and Rayalaseema regions. The Kammas, on the other hand, are traditionally dominant in the coastal districts of Krishna, Guntur and Prakasham. Their presence in other regions is marginal.

The discourse of irrigation disparity in the state assumed significance as a result of increased politicisation of water issues. Agricultural wealth was generated during the post-independence period, and especially following the Green Revolution. Using the surplus wealth, the higher caste land owning groups expanded their activities into other spheres of the economy, i.e. business, transport, contracts and industry (Srinivasulu 2002; see Upadhya 1988, 1997; Rao 1985). The main land-owning communities controlled village political life by occupying important positions.

All Chief Ministers between 1956 and 1973 came from the Coastal Andhra and Rayalaseema regions of the state and belonged to the Congress Party (see table 3.2). In table 3.2, I could not discuss irrigation development by region; rather I tried to show irrigation development that took place under different party regimes. The Telangana politicians and sympathizers claim that the ruling elite representing Coastal Andhra favoured the region in terms of irrigation development projects. What was evident was that the Congress Party in power influenced the policy process as there was no strong opposition. It was in 1984 with the emergence of Telugu Desam Party, and its subsequent electoral victory, the Congress domination in policy making has diminished.

Irrigation Administration

The administration of the irrigation sector is carried out at three levels. First, the highest level of government supervision comes from the Minister of Major & Medium Irrigation, and the Minister of Minor Irrigation. Second, at bureaucratic level there is Principal Secretary of I & CAD Department, and three to four secretaries, each of whom are assisted by three to four deputy or joint secretaries. All of them belong to the Indian Administrative

Service. These bureaucrats influence policymaking and implementation (see Figure 3.1).

FIGURE 3.1 Organisational Structure of the Irrigation Department

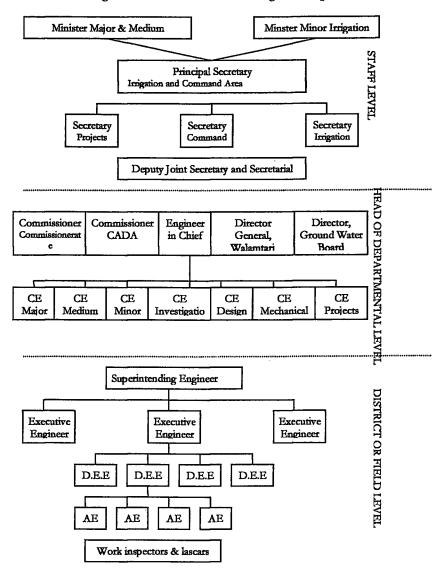


TABLE 3.2 Irrigation Potential Created under Different Plan Period in Andhra Pradesh

Plan period	Chief Minister Tenure	Тепнте	Party	Irrigation Potential Created (m ba)		
				Major & Med.	Minor	Total
Second plan period 1956-61	Neelam Sanjeeva Reddy	01-11-1956 to 11-01-1960	CON	0.18	0.02	0.20
	Damodaram Sanjivayya	11-01-1960 to1 2-03-1962	CON			
Third Plan 1961-66	Damodaram Sanjivayya	11-01-1960 to 12-03-1962	CON			
:	Neelam Sanjeeva Reddy	12-03-1962 to 29-02-1964	CON	0.37	0.05	0.42
•	Kasu Bramhananda Reddy	29-02-1964 to30-09-1971	CON			
Three Annual Plans 1966-69	Kasu Bramhananda Reddy	29-02-1964 to30-09-1971	CON	0.08	0.04	0.12
Fourth Plan 1969-74	Kasu Bramhananda Reddy	29-02-1964 to30-09-1971	CON	0.19	0.06	0.23
	Jalagam Vengala Rao	10-12-1973 to 06-03-1978	CON			
Fifth Plan 1974-78	Jalagam Vengala Rao	10-12-1973 to 06-03-1978	CON	0.21	0.09	0.31
Two Annual Plans1978-80	Marri Chenna Reddy	06-03-1978 to 11-10-1980	CON	0.15	0.06	0.21
Sixth Plan 1980-85	Tanguturi Anjaiah	11-10-1980 to 24-02-1982	CON			
	Bhavanam Venkataram	24-02-1982 to 20-09-1982	CON			
	K.Vijaya Bhaskara Reddy	09-01-1982 to 09-01-1983	CON	0.31	0.08	0.39
	N.T.Rama Rao	09-01-1983 to 16-08-1984	TDP			
	N.Bhaskara rao	16-08-1984 to 16-09-1984	TDP(N)			
	Sri N.T.Rama Rao	16-09-1984 to 09-03-1985	TDP			
Seventh Plan1985-90	N.T.Rama Rao	09-03-1985 to 03-12-1989	TDP	0.09	0.07	0.1
	Marri Chenna Reddy	03-12-1989 to 17-12-1990	CON			
Annual Plan 1990-91	N.Janardhana Reddy	17-12-1990 to 09-10-1992	CON	0.01	0.01	0.0
Annual Plan 1991-92	N.Janardhana Reddy	17-12-1990 to 09-10-1992	CON	0.01	0.01	0.0
Eighth Plan 1992-1997	K.VijayaBhaskara Reddy	09-10-1992 to 12-12-1994	CON			
•	N.T.Rama Rao	12-12-1994 to 01-09-1995	TDP	0.04	0.04	0.0
	N. Chandra Babu Naidu	01-09-1995 to 1997	TDP	****		• • • • • • • • • • • • • • • • • • • •
Ninth Plan 1997-2002	N. Chandra Babu Naidu	1997 to 2002	TDP	0.19	0.05	0.2
Tenth plan 2002-2007	N. Chandra Babu Naidu	2002 to 14-05-2004	TDP			
•	Y.S. Rajshekhara Reddy	14-05-2004 to	CON			

Note: CON- Congress party, TDP- Telugudesam party, TDP(N)- Telugudesam (Nadendla) Source: Compiled from various government resources

The second level is made up of the heads of several departments: the Engineer in Chief of Irrigation and Administration, the Director General of the Water and Land Management, Training, and Research Institute (WALAMTARI), the Commissioner of CADA, and the Director of the Groundwater Board.

The third level is responsible for field operations at the system level. The Chief Engineer (CE) is the head of the system level operations. The CE assisted by Superintending Engineers. One or more districts fall under an irrigation circle and are under the control of a superintending engineer (SE). Each irrigation circle is divided into irrigation divisions headed by an Executive Engineer (EE). A district may have one or more EE heading irrigation division. Traditionally each irrigation division has three to four irrigation sub-divisions, each is managed by a deputy executive engineer (DyEE).

Each sub-division is again divided into four sections headed by the assistant engineer (AE). One or more work inspectors (WI) and five to six *laskars* support an AE or section officer. The *laskars* are the lowest rung in the Irrigation Department who work as gatekeepers and assist in the distribution of water below the outlet level.

3.6 Evolution of Irrigation Management Reform

Several factors led to reforms in the state. Reforms in the irrigation sector are only a portion of a series of reforms initiated in other sectors like power and education over the last five years under the leadership of Chief Minister Chandrababu Naidu in the state.

Reasons for Reforms

In the state about 40 percent of the gross cropped area is irrigated and contributes to 60 percent of total agricultural production. Agricultural growth declined to less than two percent per annum during 1995. The declining performance of existing irrigation systems in the state further led to the introduction of reforms in the state. Rehabilitating and sustaining irrigation and enhancing its agricultural productivity are thus of paramount importance to

Andhra Pradesh (GoAP 1996). Arguing the need for reforms, I quote Raymond Peter (2001):

Despite major plan investments in irrigation by the Government of Andhra Pradesh, which have increased the irrigation potential, most systems are in disrepair and dilapidated due to inadequate maintenance. This has lead to the shrinkage of command areas. Irrigation systems are characterized by low irrigation efficiencies and tail-end deprivation.

An anarchic situation existed in established commands, where head-enders appropriated most of the water for themselves. This situation was exacerbated by a lack of coordination among the various departments of Irrigation, Agriculture, and Revenue. The gap between the potential irrigated area created and the actual utilization, popularly known as the "gap area" has been estimated at about one half million hectares.

Lack of established operation and maintenance (O&M) procedures, inadequate funds for O&M, and ad hoc expenditures by the Irrigation Department have compounded the unsatisfactory performance of the most systems. Most of the agency's O&M funds were being spent on staff salaries; very little was being spent on effective maintenance. This has lead to the siltation of major canals and drains and damage to their lined sections.

In addition, dissatisfied farmers seeking more water, or water deliveries at the appropriate time, have tampered with irrigation structures causing further damage. Such unauthorized irrigation led to a low collection of water charges by the Revenue Department, as the measured water supplied was quite low. The situation in AP is representative of the prevailing conditions in other Indian states. The need for change and reform had become obvious (Peter 2001, italics mine).

Others argued that the irrigation reforms in the state are an outcome of an alliance between the ruling party political heads²⁷ and international donor agencies like World Bank (Reddy 1999; Venkateswarulu 1999). Hence there was no single or convincing account of explaining reasons behind the genesis of and motivations for introduction of reforms in the state. As discussed in section 3.5, no single comprehensive irrigation act was available or applicable to the entire state of AP. The enactment of APFMIS Act 11 of 1997 is a first step in that direction. The reform policy

has three main objectives: achieving increased production, efficiency and equity.

As explained there is large irrigation bureaucracy representing 12,000 engineers and 42,000 other staff in the state. As a result, 80 percent of the total irrigation budget is going to staff salaries alone, raising the issue of scaling down the size of the bureaucracy under reforms. Capacity building and attitudinal change of irrigation bureaucracy is also given importance under the reform programme.

From the above discussion, I conclude that in the case of AP, the evolution of irrigation reform was a combination of genuine need for reforms and a favourable political environment. It was evident that the irrigation sector performance was deteriorating. At the same time, the TDP government headed by Naidu wanted to bring changes in the administration. The low level performance of irrigation systems, political support coupled with timely availability of external funds together led to the implementation of irrigation reform in the state.

Political support

The Chandrababu Naidu government issued a white paper outlining the performance of the irrigation sector over the years in 1996. The white paper was placed for discussion in the state assembly and subsequently the irrigation sector policy paper was prepared to guide sectoral development.²⁸ With this backdrop, APFMIS Act was prepared and enacted in 1997.

The government issued many orders to accomplish progress in implementation of reforms. The political will was evident from the Chief Minister's letter addressed to all the District Collectors, Magistrate and other Government officials in 1996:

As part of the package of reforms in various sectors my Government has initiated, with a view to bringing the human being to the core of the development process, we want to fulfil the public aspirations of distribution of water by peoples groups, formed at different levels with hydraulic unit as the base. I envisage a tight time frame for this peoples' movement to be given a concrete shape and the necessary legislative framework to be approved so that these elected organisations be in place as legal entity, within the next few months, I would like to have your whole hearted

involvement with the this process" Along with the letter a discussion paper titled "Participatory Irrigation Management Programme: A Framework for User's Organization" was also sent (source: D.O Lr No 37601/CAD IV- (II)/96) dated August 28, 1996).

To achieve the stated vision, the Naidu government introduced the concept of Janmabhoomi.²⁹ It is designed as a people centered development process launched in the state in January 1997. Janmabhoomi created an enabling environment to launch several innovative approaches to ensure people's participation in development through WUAs, Vana Samrakshana Samitis (VSS), Development of Women and Children in Rural Areas (DWCRA) and Chief Minister's Employment Youth (CMEY) groups.

Public consultations

The public consultations aimed to elicit the viewpoints of the farmers and staff of Irrigation Department. Retired senior level engineers from the department were hired by the state as consultants. They conducted the public consultation meetings. Peter (2001) reports that beginning in April 1996, a series of public consultations were held in centrally located places in command areas of major projects. These informal discussions gave a tremendous amount of input to the government in designing a suitable plan of action. The first round of public consultations was used to elicit the viewpoints of the farmers and the staff of the department. Subsequent rounds employed a more structured framework for discussion. Initially, the consultations were met with severe cynicism and indifference by both farmers and agency staff. Farmers approached the public consultations with a mixture of curiosity and cynicism (see chapter 8 for further discussion)

Pilot projects

The Government, in addition to the consultations, also commissioned pilot projects to formulate the policy. In 1996, two NGOs, IRDAS and SONAR, conducted separate pilot projects in the Sriramsagar project in Karimnagar District. A key result of the projects was the finding that substantial improvement in the

operation of the irrigation system could be realised when farmers in the head, middle, and tail-end of the command came together to consult and negotiate with each other. The pilot projects also revealed that small interventions, such as removal of accumulated silt, weeds and minor repairs to structures could yield dramatic results.

Financial resources

In this section, I briefly discuss the strategies and criticism in raising resources for the reform. A series of meetings held between the World Bank and state representatives led to financial support for the reform initiative. The meetings and the outcomes were covered substantially in the media. One such occasion was a meeting that was held between the Chief Minister N. Chandrababu Naidu and Mr. Edwin Lim, Resident Representative of the World Bank on 4th June 1997. The meeting assumed importance, as there was an indication for the six components of the AP Economic Restructuring project (APERP). World Bank considered a total of US \$ 550 million (19,000 million rupees) as assistance. Accordingly, the respective state departments in consultation with the World Bank staff and consultants prepared sectoral plans for the implementation of the various components. 32

The state government also secured loan assistance from other agencies in addition to the World Bank. They were from: RIDF (NABARD) 10,470 million rupees, AIBP (Government of India) 10,950 million, Irrigation bonds of 3070 million and JBIC (Japan) 5,550 million rupees. A total of 49,040 million rupees have been raised for the reforms in the irrigation sector alone.

The reforms in the irrigation and other sectors led by the Naidu government were criticised by the Leftist parties, the Congress Party, academicians and activists. Mr. Naidu dealt directly with the World Bank and negotiated huge loans that have been controversial. All the key aspects of the classical liberal agenda are in place in AP (Frontine, June 18, 1999). The Congress Party accused Naidu of taking the state into a vicious debt trap, and the leftist parties criticised Naidu as an agent of the World Bank. To the criticism, the Naidu government argued that the government was considered worthy to procure the loan assistance by the World

Bank while other agencies among many other states that had applied for loans had been turned down by the agencies.³³

The process suggests that the state government made efforts to raise resources and initiating reform activities parallel way. For example, increase in irrigation charges and public consultations took place in 1996. The APFMIS Act was enacted and elections of WUAs took place in 1997.³⁴

Enactment of legislation

The APFMIS Act was introduced by the TDP government and was passed in the Legislative Assembly on 27th of March 1997. A statewide election for WUAs was organised on 17th June 1997. A total of 10,292 WUAs have been constituted. The crux of the reform decentralise irrigation management, management responsibilities to users' associations. In November 1997, elections for the Distributary Committees i.e. the second management tier of the WUAs were held.35 The government launched a massive campaign to make the WUAs functional. The Chief Minister explained the concept of WUAs in every public meeting that he addressed during that time. The government's will to implement reform is evident through more than 100 government orders and memos that were issued in the initial years to create the WUAs and to make them functional.

The Approach

The preparation of the APFMIS Act, 1997 seems based on the experience of the implementation of earlier Acts in the state. The preparation of the Act and inclusion of certain legal provisions were drawn from participatory irrigation experiments that have been carried out on a pilot scale in other states. The APFMIS Act was prepared as comprehensive as possible and applicable for the entire state. In the State Gazette it was published—"An act to provide for farmers' participation in the management of irrigation systems and for matters connected there with or incidental thereto." The Act recognises:

Scientific and systematic development and maintenance of irrigation infrastructure is considered best possible through farmers'

organizations". The Act also empowers that "such farmers' organisations have to be given an effective role in the management and maintenance of the irrigation system for effective and reliable supply and distribution of water (APFMIS Act, 1997).

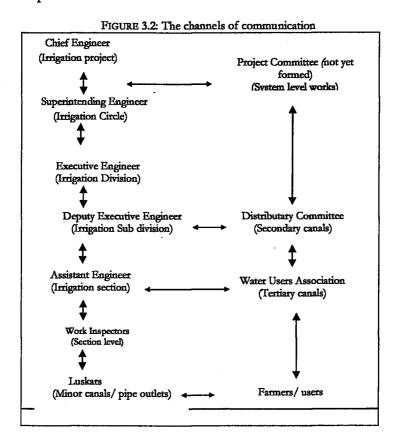
The programme intended to achieve improvements in quality and cost efficiency of irrigation management. With the pooled resources the government decided to carry out minimum rehabilitation activities envisaged at an amount of Rs. 1,350/ha i.e. \$30/ha. The users' associations were empowered to carry out the activities under the overall guidance of the irrigation department officials (see chapters 5 and 6). The government adopted a comprehensive or a big-bang reform agenda and decided not to take incremental or gradual approaches in implementation of the programme. At a time 10,292 WUAs were formed and made functional with a uniform legal back up. The entire irrigated area (except some tribal pockets) in the state was brought under the management of users' associations. The WUAs are local level organisations empowered to do operation, maintenance, water management, distribution and conflict-resolution.

3.7 Institutional Arrangements under the APFMIS Act

In this section, I discuss briefly the salient features of the APFMIS Act, 1997.³⁶ Under the Act, each WUA has a right to receive irrigation water in bulk and information related to water supplies (periods and quantity) and canal opening and closing dates. The members enjoy a right to receive water as per specified quota for use and also have the freedom of growing any crop, other than those prohibited by law, adjusting the areas within the water allocated to them. The members are also ensured with the right to sell or transfer the water share to any other water user within the operational area of WUA (see Rule 5 and 7 of APFMIS Act, 1997). These are crucial provisions for WUA and users especially when the irrigation management is in the hands of irrigation bureaucrats. None of the earlier Irrigation Acts in the state had these provisions.

The reform policy envisages a change in the attitudes of the irrigation bureaucracy. Its role has been defined as a facilitator rather than as a traditional provider. The Act provided additional powers to irrigation bureaucrats to approve financial and technical

matters. The Act also believes that the collective role of the water users makes the Irrigation Department more sensitive to the service role it should be playing than the provider role. One of the main intentions of the Act is to facilitate collective action by users so that they exert the pressure at times of need that makes the department service-oriented and accountable to users.



The Act aims to forge linkages between the different levels of farmer organisations. For example in the case of major irrigation systems, WUAs are responsible at tertiary canal level, a distributary committee at the secondary canal level, a project committee at the system level, and an apex committee at the state level.

The representation of WUA leaders at each level was viewed as a strategy to strengthen the decision-making process. Another important feature is, that the Act authorises the WUA to manage the conflicts and can order fines if found guilty. The Act provides scope for creation of incentives and rewards for individuals and institutions leading to the better management of the irrigation systems. The Act also envisaged two-way communications between the users' organisations and irrigation agency at all levels (see figure 3.2.

3.8 Conclusion

In this chapter I have summarised the history of irrigation legislation and the evolution of PIM policy in the state. The content of the PIM policy is very much benefited by the past policies and their performance. In the case of AP, favourable conditions like political will and external financial support have facilitated the initial implementation of the policy.

Unlike the past policies the reform policy empowered the users to participate in the management of their irrigation systems. The reform policy sought to address the technical, economical, organizational issues of irrigation sector. The APFMIS Act is distinctive in the country, as it proposes not only forming users' associations, also federating them. It has also clearly intended to bring an attitudinal change in the irrigation bureaucracy. As we see in chapter 2, the implementation of policy is not always easy. The day-to-day engagement of different policy actors with the reform policy and the outcomes are discussed in the following chapters.

Notes

- ¹ Shah Anil C (2003) 'Fading Shine of the Golden Decade: The Establishment Strikes Back'. Paper accessed on January 10, 2006 at www.ccsindia.org/Decade.pdf.
- ² Different views exist for the reasons behind the British (dis) interest in irrigation development in India. Protection against famine was an important objective of colonial irrigation policy. Some have argued that this objective was little more than window dressing for the real, surplus extraction, objectives of colonial irrigation (Whitcombe 1972 has this

flavour). Colonial irrigation policy was also seen as the combination of charity and commerce (Ramamurthy 1988:5). The imperial desire to provide famine protection is not primarily informed by charitable feelings (though this is definitely part of the discourse), but by cost and political considerations (Mollinga 2003). Another view was that the British wanted to keep India as a producer of raw materials and hence harnessed the rivers by constructing dams. For an analysis of colonial revenue and other policies as a cause of famine, see Dutt (1900) and B.M. Bhatia (1991). Some others claim that the British wanted to raise revenues and professional development of the British engineers. A further discussion is not possible here. Whatever were the motives of the British; the end result was the state's control over water resources and management (see for different views Ebrahim 2004; Jurriens et al. 1996; Bolding et al 1995).

- ³ Initiatives like *Warabandhi* in Northern India evolved as an answer to management of the scarce canal water resource. In Bombay the *Phad* system was adopted into the block system but proved not successful (Kulkarni and Patil 1984). In 1947, the then Bombay state introduced the concept of a 'canal advisory committee' at canal level, Panchayat committee and *Bagayatdar Sangh*. In 1976 the Maharashtra Irrigation Act provisioned for water users' committees where more than 50 percent of the irrigators come together.
- ⁴ Formation of *Pani Panchayat* in irrigation systems is visible in the state of Orissa. The Government of Orissa states that there is a shift in its approach through *Pani Panchayat*, as the most appropriate institute for efficient water management and agricultural development. The Government enacted the *Orissa Pani Panchayat Act* in 2002 (www.orissawater.com/P.Panchayat1.htm). For a critique Sainath (2002) at www.indiatogether.org/opinions/psainath/panipanchayat1.htm.
- ⁵ Currently, at the Central level the CAD has been renamed as Command Area Development and Water Management programme (CADWM).
- ⁶ It consisted of the districts of Srikakulam, Visakhapatnam, East Godavari, West Godavari, Krishna, Guntur, Nellore, Chittoor, Cuddapah, Anantapur and Kurnool, and the taluks of Rayadurg, Adoni and Alur of the Bellary district.
- ⁷ The state formed with 20 districts and later three more districts Prakasam, Ranga Reddy and Vizianagarm were added in 1970, 1978 and 1979 respectively. The state presently has 23 districts (9 districts representing Coastal Andhra, Telangana region with 10 districts and four districts forming Rayalaseems region).
- ⁸ According to the 1991 census data, the estimate suggests that population has crossed the 70 million level but registered less population growth rate when compared to other Indian states.
- Ocastal Andhra consists of nine districts i.e. Srikakulam, Vizianagaram, Visakhapatnam, East Godavari, West Godavari, Krishna, Guntur,

Prakasam and Nellore. Rayalaseema (the land of kings) region consists of four districts i.e. Chittoor, Cuddapah, Anantapur and Kurnool and the 'Rayalaseema' and 'Telengana' (the land of Telugus) consists of ten districts i.e. Mahabubnagar, Ranga Reddy, Hyderabad, Nizamabad, Adilabad, Karimnagar, Warangal, Khammam and Nalgonda. 10 The chronicle of development in AP can be divided into five different periods. The first period (1950-1969) is characterised by key institutional changes like the abolition of Jamindari system and implementation of tenancy reforms. In the same period, the creation of the Panchayati Raj Institutions took place at the village level for mobilisation of people to participate in the development programs. From 1969 to 1972, AP was rocked by riots, first in Telengana, and then in Andhra on the question of bifurcation of the state. The period (1970-1980) can be characterized by the spread of the green revolution, an increased priority to physical infrastructure, particularly irrigation and power. The third period (1980-1990) is represented by a drastic change of priorities in favour of welfare schemes both centrally and state sponsored programmes. The Panchayat Samitis (330) were abolished and Mandal Parishads (1104) were introduced in the entire state. During the fourth stage (1991-98) the government has adopted the central government's privatisation policy, 1991. The state started withdrawing its responsibilities and transferring them to self-help groups. The fifth stage (1998-2004) relates to the second stage of economic reforms and emphasis on application of information technology for good govern ance (Bala Ramulu 2002).

¹¹ Srinivasulu (2002) discusses that 'this historical background is crucial to an understanding of the political economy of development and the trajectory of social and political processes in each of these regions. Further, these historical differences continue to inform the socio-political processes in modern AP- the articulation of social forces, caste-class dynamics, the nature of social movements, patterns of social mobilisation, and so on'.

12 In India according to the 1991 census, there were 138 million scheduled caste members that are approximately 16 percent of the total population.

13 Godavari, the second largest river in India, is often referred to as the *Vriddh* (Old) Ganga or the *Dakshin* (South) Ganga. The Godavari originates near Triambak in the Nasik district of Maharashtra, and flows through the states of Madhya Pradesh, Karnataka, Andhra Pradesh and Orissa. Although its point of origin is just 80 kms away from the Arabian Sea, its journeys 1,465 kms to fall into the Bay of Bengal. Some of its tributaries include Indravati, Manjira, Bindusara and Sarbari. Some important urban centres on its banks include Nasik, Aurangabad, Nagpur, Nizamabad, Rajahmundry and Balaghat. Source: www.rainwaterharvesting.org/Crisis/river-godavari.htm.

¹⁴ Originating from the western flanks of the Western Ghats near Mahabaleshwar, the Krishna is the fourth largest river basin in the country. The Krishna River is the most important river on the Deccan for irrigation. The basin extends over an area of 258,948 sq.kms that is nearly 8 percent of total geographical area of the country. The basin lies in the states of Maharashtra (69,425 sq.kms), Karnataka (113,271 sq.kms) and Andhra Pradesh (76,252 sq.kms). It flows 1,440 km through the states of Maharashtra, Karnataka and Andhra Pradesh before flowing into the Bay of Bengal. The rivers Koyna, Vasna, Panchganga, Dudhganga, Ghataprabha, Malaprabha and Tungabhadra join the Krishna from the right bank; while the Yarla, Musi, Maneru and Bhima rivers join the Krishna from the left bank

(http://www.rainwaterharvesting.org/Crisis/river-krishna.htm).

¹⁵ The Pennar basin extends over an area of 55,213 sq. kms. That is nearly 1.7 percent of the total geographical area of the country. The basin lies in the states of AP (48,276 sq. kms) and Karnataka (6,937 sq. kms). The river rises from Chenna Kesava hills of the Nandi ranges of Karnataka and flows for about 597 kms before out falling into Bay of Bengal. source: www.wrmin.nic.in/riverbasin.

¹⁶ Delivering a speech at the 93rd Indian Science Congress on Jan 03, 2006, Prime Minister Dr Manmohan Singh said that the nation needs a second Green Revolution as the technologies and strategies unleashed by the first Green Revolution have run their course. He said the focus should now be on non-food crops, horticulture and new plant varieties. "There are three challenges that science and technology must address to promote rural development - agricultural productivity, affordable technologies for energy and water, and efficient and relevant farm and non-farm technologies," He referred candidly to the two main criticisms against the Green Revolution- that it did not benefit dry land agriculture and that it benefited only large farms and big farmers. "While evidence shows that this was not always the case, we must ensure that second Green Revolution technologies have a special focus on dry land agriculture and does benefit small and marginal farmers" (source: www.thestatesman.net /page.arcview.php?date=2006-01-04&usrsess=1&clid=2&id=129665).

¹⁷ In terms of agricultural development, the south coastal Andhra region ranks first, north Telangana the second position, while north coastal Andhra, Rayalaseema and south Telangana occupy third, fourth and fifth positions respectively. The positions of the regions will vary as changes bound to happen in land productivity, land use, cropping intensity, access to technology etc. For example rapid groundwater overexploitation in certain pockets may result in changes in crop productivity. Agricultural development and growth in the coming years will depend on the efficient

use of water as tank irrigation is declining and well irrigation proving economically unviable (Rao and Dev 2003:30).

- ¹⁸ Sriramsagar Project is a relatively recent project and is covered under the CAD Act.
- ¹⁹ It was during 1974-78 that the central government introduced the command area approach. The CAD programme was started in 1974 envisaged the participation of farmer organisations below outlet. The Irrigation Enquiry Committee, known as *Visveswaraya Committee* had recommended farmers' participation as early as 1938. The committee recommended entrusting of irrigation to a village or group of villages, if the farmers are willing to take up co-operative irrigation. The second irrigation commission (1972) reported a wide gap between the irrigation creation and potential and also suggested farmers' participation in irrigation management.
- ²⁰ A separate CAD department was created under the Ministry of Agriculture to integrate irrigation development with agriculture. The department was headed by a separate secretary to the Government who was later appointed as the Agricultural Production Commissioner. The integration of Irrigation and Agriculture ran into major difficulties (see Sivamohan and Scott 1992).
- ²¹Karnataka enacted the CAD Act in 1965, where as Andhra Pradesh and Kerala states enacted the act only in 1984 and 1985 respectively.
- ²² During the implementation of the first five-year plan (1951-56) the total amount spent on major and medium irrigation; and minor irrigation was 374.7 and 35.2 million rupees respectively. The IP created during that period was 0.079 mha under major and medium and 0.025mha under minor irrigation. By the time the seventh plan was implemented the budget allocations were as high as 13064.0 million rupees to the major and medium system and 1314.0 million rupees for medium irrigation. The potential created during the same plan period was 0.089 mha under major and medium and 0.067mha under minor irrigation schemes. The total irrigation potential both under major and medium and minor irrigation in the state was increased to 4.96 mha at the end of the eighth plan period (1992-97). The above figures do not include expenditure on CADA up to the end of the seventh plan. The above figures are adopted from the eighth Five-Year Plan (1990-95), AP-F&P (PLG) Department, Volume 11, and October 1990.
- ²³ Personal communication with Y. Ranga Reddy, Kalluru DC President in 2001. Reddy shared that Congress (I) was ruling the state at that time. Jalagam Vengalarao served as a Chief Minister from 1973 to 1978. The recommendations of the irrigation utilisation committee could not be implemented with vigour between 1978 and 1983 due to the political instability in the state.

²⁴ At the national level to address the gap issue, the seventh five-year plan (1985-90) envisaged to stop the construction of new major and medium projects. It gave importance to minor irrigation projects, which can be completed within a short time frame. The pattern of budget allocation in this plan period shows that huge amounts were spent on maintenance and repairs of the existing irrigation systems.

²⁵ The irrigation staff from Madhira irrigation sub-division stated that considering the changes in canal designs, the past and present budget allocations were not appropriate. For example in NSP, the planning, design and operation of the canal network/systems were based on the method of continuous flow throughout the crop period. The canal design does not allow for any flexibility in supply of water. The Assistant Engineer from the Madhira sub-division expressed that the physical controls like cross regulators for regulating the discharges of canal water would be inadequate as the farmers continue to tamper irrigation infrastructure. The Engineer further explained that 1) the carrying capacity of the canals is inadequate with the existing cropping pattern in the second zone of the NSP (left canal). The canal system is designed to support the cultivation of Kharif crops. Instead, Rabi cultivation has increased, leading to water shortages. The localisation is no longer relevant. 2) large areas consisting of porous soils have been localised for wet cultivation. No separate outlets or canal exist for irrigated dry designated plots. Hence, the headreach wet cropping farmers tap water when water is released specially for the irrigated dry crops. 3) in many places separate field channels are dug by farmers to suit their individual needs. As a result, the implementation of a rotational scheme or Warabandi is not feasible under the present conditions.

²⁶ Mainstream economics treat regional disparities as a problem in development. Neoclassical economist typically predicts that markets correct such disparities. Regional disparities are inherent in the process of development. Myrdal (1957) discusses in his theory of cumulative causation that market forces create regional inequalities and this tendency is more dominant in poor countries. Economists argue that free movement of goods through trade and capital would lead to convergence of incomes across countries and regions of the world. For the discussion on irrigation disparity in Andhra Pradesh refer to Rao and Subrahmanyam (2002).

²⁷ Following a popular upsurge in the TDP, Mr. Naidu was unanimously elected as the Chief Minister of AP on 1 September 1995 dislodging Mr.N.T.Rama Rao. Following the elections to the State Assembly wherein the TDP led by Mr. Naidu emerged as a winner; he was sworn in on 11 October 1999 as the Chief Minister for the second term. The critics said that he did not have charm and a mass base like the former chief minister N.T.Rama Rao and hence wanted to create his own image and strong-

hold on the party by revamping the administration and hence chose the path of reforms.

²⁸ The irrigation policy articulates the state's vision for the irrigation sector and sets out the reform agenda and is published in 1999. The Vision 2020 document states the vision of the state in 14 key areas that is identified as growth engines. The document is the basic document for the planning process.

²⁹ This process has evolved out of the experience gained through the implementation of *Prajala Vaddaku Paalana* (taking administration to the door steps of the people) launched in November 1995 and *Sramadanam* (contribution of labour) launched in January 1996. It aims at establishing an ideal society, which embodies and cherishes the principles of people's participation, equality, transparency and accountability leading to sustained economic development and excellence in all walks of life. The goal is, an enhanced quality of life for every man, woman and child in the State. The following are the five core areas of *Jannabhoomi*: Community Works, Primary Education, Primary Health and Family Welfare, Environment Conservation and Responsive Governance (source: www.manage.gov.in/RRSites/EVillage/janmabhoomi_programme.htm).

³⁰ The six components are: primary education (Rs 140 million), irrigation (Rs. 120 million), nutrition (Rs 90 million), roads (Rs. 80 million), public

³⁰ The six components are: primary education (Rs 140 million), irrigation (Rs. 120 million), nutrition (Rs 90 million), roads (Rs. 80 million), public enterprise reform mainly the voluntary retirement schemes (Rs. 80 million) and primary health (Rs. 40 million).

³¹ AP has been a laboratory for testing state-level reforms in India under the watchful eyes of the World Bank. Between 1998 and 2002, the state government signed three structural adjustment loan agreements with the World Bank, totalling \$1.14 billion. The World Bank loan for APERP initiated far-reaching reforms in almost every sector of economic and social activity in the state (source: Vol 21, Issue 08, URL: http://www.flonnet.com/fl2108/stories/20040423004902900.htm).

32 The APERP aims to rehabilitate 2.45 mha under various irrigation projects in the state. Minimum rehabilitation is envisaged at an amount of Rs1350/ha. The irrigation component of the APERP provides support totalling Rs.12,986 million to irrigation sector reform program of AP. For the development of the WUAs, \$141 million budget was spent initially according to the Government reports. The main irrigation components under APERP: a)irrigation performance improvement which consists of: (i) minimum rehabilitation of major and medium irrigation schemes (2.45 million ha) with a fund allocation of Rs. 4,549 millions and (ii) recurrent maintenance on major, medium and minor schemes (3.7 million ha) to ensure their sustainable functioning with a total of Rs.6, 518 million, b) improvement/modernization and farmer turnover implementing pilot projects to test more intensive modernization on

selected projects with a funding outlay of Rs 1,202 millions, c). agricultural intensification program by intensification of agricultural extension services to farmers' organizations, training and skills development of Agriculture Department staff, dissemination of information and productivity enhancement for increasing the irrigated agriculture productivity and agriculture technologies, efficiency, and water use demonstrations. The total budget allocated under this program is Rs.113 millions. d) institutional development of farmers' organisation and government departments by making newly formed farmers' organisation, fully functional and improving management capabilities through training for farmers, government staff and NGOs. The budget allocated is Rs.603 millions. The expected outcome of these measures would be: a) full recovery of water charges, b) full financing of irrigation O&M, c) improved performance of irrigation schemes and d) increased crop production.

³³ The then Finance Minister under the Naidu government, Mr. Ashok Gajapathi Raju defended the criticism by explaining the rationality behind raising loans from the World Bank. According to him, if we have a seriously ill patient at home, the ambulance has to be at your doorstep. The World Bank almost performed the role of an ambulance as stated in the local newspapers.

³⁴ The initial farmers' resistance to increase in water cess was not sustained. The lack of continued resistance can be attributed to: farmers understood the rationale behind the increase i.e. they anticipated better services. Another reason could be the lack of organised farmers' organisations that can facilitate farmers to participate in the public policy process. In the past, the mobilisation and resistance of farmers against the betterment levy was evident in the command of Bhakra Canal. The mass mobilisation during 1958-59 was known as Anti-Betterment Levy Agitation led by the Kisan Sabha of United Communist Party of India. The movement succeeded in the withdrawal of the betterment levy by the Punjab government (see Sucha 2004).

³⁵ The total expenditure towards elections was reported as Rs. 110 million i.e. \$2.5 million.

³⁶ To strengthen the irrigation reforms, many administrative reforms were introduced so as to increase the efficiency of the irrigation department. They are: 1. re-organisation and counselling for transfers of irrigation officials, 2. appointment of project administrators duly delegated with the powers of Chief Engineers, to ensure speedy execution of works, 3. creation of the posts of district coordinators in all the districts to liaise between the irrigation department and the WUAs, 4. enhancement of powers of Executive Engineers and Superintending Engineers to accord

technical sanctions to finalize tenders, 5. delegation of powers of Commissionerate of Tenders to the Chief Engineers to finalise tenders for works up to one crore rupees (10millions), 6. permission to project administrators to engage private agencies for carrying out investigation to expedite technical sanctions, 7. disposal of surplus land, machinery and to restructure the mechanical workshops, which have become uneconomical, 8. appointment of an adviser on quality control to enforce prescribed standards of quality in the execution of works by all the public works departments of the government, 9. constitution of Krishna Water Management Board to establish proper system for the management of flood and integrated operation of reservoirs and barrages located on Krishna River in Andhra Pradesh.

Madhira Branch Canal

The Social Organisation of an Irrigation System

The early evidence that ancient Egyptian basin irrigation depended upon the social organisation that created and exploited it.

Holton Richard Pierce 1976:16

4.1 Introduction

In this chapter I discuss the details of the irrigation network and social organisation of villages under Madhira Branch Canal (MBC) on which field research was conducted. I show that irrigation organisation is linked with the village level socio-political organisations and that WUA organisation intertwines with the village political organisations to shape policy implementation process. The purpose of this chapter is to provide a detailed introduction to understand the social context in which the Andhra Pradesh irrigation reform policy has been implemented.

Wittfogel's general propositions about the relationships between irrigation and social organisation are concerned primarily with the relationship between a political centre and the sub-ordinate local systems¹ (Hunt and Hunt 1976). Wittfogel's hydraulic hypothesis received criticism but raised important discussions on irrigation organisation.² It is not possible to understand irrigation management without understanding some structural and ideational features of social organisation, which regulates access to and management of both land and water (Patrick 1985).

Water (irrigation) management is inextricably embedded within the social relationships of community (Mosse 1997; Bruns and Meizen Dick 2000). Kelly further discusses irrigation as a politically significant source of power and leverage in local, regional, and national political arenas; and it is of considerable social consequence because it defines patterns of cooperation and conflict in irrigated agricultural regions (Kelly 1983:800). Hunt and Hunt define that canal irrigation is a significant aspect of local production and social organisation (1976:390). They further discuss that 'there can be no doubt that where there is irrigated agriculture there is social stratification and that the stratification is importantly linked to differential decision-making power over the tasks of irrigation system (1976:396). I conclude from the literature that irrigation organisation is shaped by the social organisation and vice versa. Together they reinforce power relationships that regulate the access to resources like irrigation water (see Pradhan 1989, 1987; de los Reyes 1982; Duncan 1980).

The study focused on the Madhira branch canal (MBC), a secondary canal located in Kalluru irrigation division under Nagarjunasagar Left Bank Canal (NSLC). I present the formation of WUAs on MBC and socio-political organisation of command villages. By discussing these processes I aim to provide a detailed description of the research location and socio-political setting of the research study area.

4.2 Irrigation Organisation

In this section I discuss in brief the irrigation organisation in the state. Then I present the irrigation network of Nagarjuna Sagar irrigation project, specially the Left canal on which the study was conducted. The command of the Left canal system covers three districts namely Nalgonda, Kahammam and Krishna The right canal provides irrigation to Guntur and Prakasam districts. I also discuss the WUAs formed on Madhira Branch Canal.

Nagarjunasagar Left Main Bank Canal (NSLC)

The Nagarjunasagar Left Main Bank Canal (NSLC) takes off from the foreshore of the Nagarjunasagar reservoir through an independent head regulator. It runs for a length of 178km, and extends as the 21st Main Branch Canal for further length of 117km. This contour canal crosses three major rivers i.e. Halia, Musi and Munneru, by means of aqueducts and also passes through deep-cuts. The command area of NSLC covers portions of four adjacent districts, i.e. the eastern part of the Nalgonda district, south and south-eastern part of Khammam district and north and north-eastern part of Krishna district and canal excavation is under way in West Godavari district.

For the purpose of irrigation administration the NSLC is divided into three zones and further divided into 32 irrigation blocks. Each zone is further classified as irrigation blocks. According to this classification, Nalgonda district falls under the first zone covering irrigation block numbers 1 to 15 up to Palair, all under wet crop cultivation. Zone two comprises blocks 16 to 21/7, covering both Khammam and Krishna districts with a mixed cropping pattern. The third zone covers blocks 21/8 to 21/11 with an irrigated dry cropping pattern in Khammam and Krishna districts.

The Left Canal is designed with a carrying capacity of 11,000 cusecs to irrigate a total of 295,000 ha in Nalgonda, Khammam, Krishna and West Godavari districts. The localised command area is 0.151 mha in Nalgonda, 0.093 mha in Khammam, and 0.153 mha in Krishna with the remaining 0.023 mha to be created within the West Godavari district.

In the command under NSLC, while delineating lands for the purpose of irrigation, certain areas were removed, such as those near villages upto about 400 meters as anti-malarial zones and high spots. Some lands were left out for future inclusion. However, in practice, once irrigation water started flowing, local farmers made their own channels to draw water into all these excluded areas. Technically, their lands were not included in the command, they take water and it is called unauthorized irrigation. The net outcome of these practices is that the flows are reduced and designed flows never reach the lower half of the system (see IWMI 2004).

The Madhira Branch Canal

Madhira branch canal (MBC) is a secondary canal under the NSLC (see map 1.2). Administratively, the MBC command area covers the jurisdictions of Kalluru and Madhira irrigation sub-divisions including a small area of Tiruvuru irrigation sub-division office. The MBC command area covers about forty villages of both

Khammam district (Telangana region) and Krishna district (Coastal Andhra region). The MBC command area represents a mixed cropping pattern. The total length of the MBC is 33km and it is extended as the Nidanapuram major for about another 24km. The total command area of MBC is 38,259ha with a localised 16,822ha of wet and 21,437ha of irrigated dry cropping pattern. A total of nineteen WUAs have been demarcated under the MBC command area.

Kalluru Irrigation Division Office

According to the departmental records of 2001, the total command area of the Kalluru irrigation division was 620.000ha. A total of 29 WUAs were formed under the Kalluru irrigation division. The field study covered two irrigation sub-divisions of Kalluru irrigation division namely Kalluru and Madhira. The Kalluru and Madhira subdivisions represent 17,769ha and 20,326ha of command area respectively. Nine WUAs are formed under each subdivision.

The Kalluru irrigation sub-division represents WUAs 169 to 176 located in upper reach of MBC i.e. starting from 0 km to 22 km of the MBC and WUAs 177 to 185 falls under Madhira irrigation subdivision. The command area of WUAs under Kalluru subdivision represents higher wet paddy cultivation and less irrigated dry crops.

In contrast, irrigated dry crops are grown in large areas in WUAs under Madhira sub-division. The variation in cropping patterns resulted in changes in labour contribution, water distribution and income levels of the farmers.

4.3 The Water Users Associations (WUAs)

In this section, I discuss the institutional arrangement and salient features of WUAs formed under the APFMIS Act. The Act was passed in the State Legislative Assembly on 27 March 1997. WUAs are visualised as primary organisational units under the APFMIS Act, 1997. Depending upon the type of irrigation scheme i.e. major, medium and minor a single, two or three tier systems were formed. Under major irrigation systems the WUAs are federated as a three-tier system of Water Users' Association, Distributary

Committee and Project Committee. At the state level an Apex committee function as a highest decision making body, chaired by the Minister for major and medium irrigation projects.

Distributary Committee (DC)

A group of WUAs under a Distributary canal or under a group of small distributaries comprises a DC. All the WUA presidents within the DC will be the members of the DC. Together they elect the Chairman of the DC.

Project Committee (PC)

These are apex bodies concerned with the management and distribution of irrigation water in the command of major and medium projects. All the DC presidents will be the members of the PC committee. The PC committee will elect a chairman and seven to eleven managing committee members.

Water Users' Associations (WUAs)

Each irrigation scheme may comprise one or more WUAs. The total command of operation of a WUA is divided into four to ten territorial constituencies. Farmers from each constituency elect or nominate their representative called a Territorial Committee (TC) member. (see Figure. 4.1). Elections were held for WUA positions across the state on 17th June 1997 and about 10,000 WUA were formed.³

Table 4.1 Abstract of WUAs formed in the State (1997)

Projects -	WU	As Actually Fo	WUAs to	Total	
	Unanimous	ous Elected Total			
Major	649(37)	1077(61.3)	1726(98.3)	30(0.7)	1756(100)
Medium	118(27)	317(72)	435(98)	7(2)	442(100)
Minor	4714(58.2)	3110(38.4)	7824(96.6)	270(3.4)	8094(100)
Total	5489(53.3)	4504(43.7)	9985(97)	307(3)	10292(100)

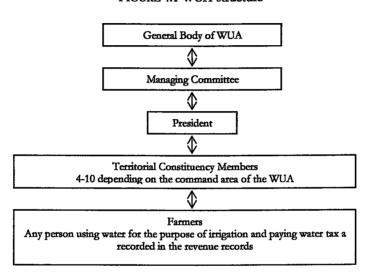
Note: Percentage in parenthesis

Source: Modified from Jairath (2001:23).

Out of the total WUAs-elected fifty three percent of WUAs were elected unanimously. Under major irrigation projects thirty seven percent of WUAs projects were unanimously elected.⁴ The data

suggests that the competition for WUA positions was high in major and medium irrigation systems compared to WUAs formed under minor irrigation systems.

FIGURE 4.1 WUA structure



The delineation of WUAs was based on the watershed principle rather than on revenue boundaries i.e. on hydraulic concerns rather than administrative ones. As a result the WUA boundaries do not coincide with the village revenue boundaries. Each WUA represents an irrigated area of minimally 1620 ha. The total command area under each WUA represents an area that belongs to more than one revenue village. On an average each WUA command area belongs to four revenue villages (see Table 4.2).

A large portion of the irrigated area i.e.73 percent of the total falls under the supervision of 2,100 major and medium irrigation WUAs, i.e. 20 percent of the total number of WUAs formed in the state.

The leadership of the WUAs at the state level shows interesting features. Out of 9,100 WUA presidents covered under a survey, 94 percent i.e. 8,544 presidents reported farming as their main occupation. The remaining 6 percent hold occupations in sectors like contracting, industry, public representation and services (IRDAS 2000).⁵

Table 4.2: WUA Jurisdiction and Command Villages under Madhira irrigation sub-division

		•		· ·		
WUA Mandal		District	Command Area in ba	Revenue Villages	No. of villages	
China.konduru WUA 177	Kalluru and Gampala Gudem	Khammam	2107	Velagaram,Talluru, ChinaKorukondi, P.korukondi, Nemali, Ummadadevarapalli, Konijerla	7	
Utukuru WUA 178	Gampala Gudem And Madhira	Krishna Khammam	2943	Konijerla, Nemali, Utukuru, Dundiralapadu, Jalumudi, Rompimalla, Mallaram, Yendapalli	8	
Siripuram WUA 179	Madhira	Khammam	1547	Rompimalla, Endapalli, Siripuram, Vangaveedu, Nakkalagaruvu, Dundiralapadu, Tunikipadu	7	
Penagolanu-I WUA 180	Gampala Gudem	Krishna	2020	Utukuru, Penugolanu, Dundiralapdu, Tunikipadu, Rajavaram	5	
Maturu- I WUA 181	Madhira	Khammam	1985	Maturu, Atukuru, Munagala, Dudugupadu, Nakkalagarvu, Gudem, T.padu	6	
Penagolanu-II WUA 182	Gampala Gudem	Krishna	2040	Penugolanu, Chennavaram, Kottapalli, Peddakomeera, Gosaveedu	5	
Maturu –II WUA 183	Madhira	Khammam	2815	Siddinenigudem, Nagavarappadu, Maturu, Madhira Ambarupeta, Dendukuru, Illendulapalem, Nidanapuram	8	
Dendukuru WUA 184	Madhira Yerrupalem	Khammam	2536	Gosaveedu, Inagala, Mulugumadu, Dendukuru aturu, Sakunaveedu, Takkelapadu, Meenavolu, Nidanapuram	9	
Meenavolu WUA 185	Yerrupalem Madhira Veerulapadu	Khammam Krishna	2460	Meenavolu, Nidanapuram, Dendukuru, Turlapadu, Chilakaluru, Ammavaram, Doddadevara	7	

One of the limitations of the Act is on membership criteria. To become a member of the WUA one need not to be a farmer or engaged in cultivation, but one should own a piece of land in the command on his/her name. Initial research evidence reveals that many WUA positions were therefore captured by the socioeconomically high caste members (Mollinga et al 2001).

WUAs formed on NSLC

The total number of WUAs constituted along the NSLC was 256 in 1997. Out of the total only 235 WUAs were declared formally elected. The rest were not functioning formally due to legal cases and technical reasons. More litigation cases were found in Krishna district (see Table 4.3). The reason behind litigation varies but shows evidence for the political nature of the WUA management.

TABLE 4.3 Formation of WUA per district under NSLC

District	Distributary Committee		Water Us	Command	
	Formed	Declared	Formed	Deslared	Area (in Ha)
Nalgonda	6	6	91	91	149474
Khammam	7	7	51	50	96559
Krishna	9	8	112	92	113846
W.Godavari	NF	NF	2	2	NA
Total	22	21	256	235	359879

Source: Khammam Irrigation Circle Office reports 2002.

4.4 Village Organisation

The village is the focus for a variety of economic, political and cultural activities in Indian society. Villages in India are still serving as the basic unit of political organisation in rural areas. The villages are connected and characterised by caste and kinship. The common resources of the village are supposed to be shared by all villagers. However, a few dominant groups enjoy better access and control over the natural resources like water, land and forest. This dominance is connected with accumulation of resources leading to economic wealth and power (for studies on Indian village see Vidyarthi 1961; Lewis 1965; Breman 1997; Epstein et al. 1998; Sahay 2001). The villages under the MBC also showed these

general characteristics. The irrigation facilities came into these villages during 1975-80. Consequently, the social organisation of these villages underwent rapid change. In box 4.1, I briefly present Rangam Banjara village in Kalluru irrigation sub-division and its settlement pattern.

Box 4.1 Rangam Banjara Village

Rangam Banjara village is a hamlet of Nutakkala revenue village (Tallada Mandal, Khammam district). The total number of households is about 500 with a voting population of 1350. The village caste composition represents a mosaic of different castes. About 200 households belong to schedule tribe communities, 50 belong to scheduled caste, 50 are Muslim and 20 families belong to the Chowdary caste group, considered as high caste. The houses of Banajara and the scheduled community are located at a distance from the main habitation. The Muslim households are located in one street. The Chowdary own about fifty percent of the total irrigated land within the village. The irrigation water is supplied through Rangam Banjara sub minor to this village. The total localised irrigated land is 147ha with 100 percent wet paddy cultivation. According to the villagers about 75ha under this minor is owned by the Chowdary families. They influence village political decisions more than others. From this village, two territorial committee members (TC members) got elected to the management committee of the WUA169 formed on Punyapuram major. Source: Field notes on WUA 169, June 2001.

Governance and Political Institutions

The gram panchayat is an important Panchayat Raj Institution (PRI) to exercise grassroots democracy at the village level. The Gram Panchayat is a statutory organ of self government.⁶ It is the basic unit of the three-tier system of government in the state. The other two tiers are Mandal and Zilla Panchayat. The Mandal Praja Parishad and Zilla Praja Parishad are the elected bodies. The Mandal President is an elected position. The Mandal Revenue Officer is a government officer responsible for implementation of decisions taken by the Mandal Praja Parishad.⁷

The elections for the panchayat are conducted once in five years and are not elected/competed on a party basis. The PRI bodies are expected to implement perspective development plans for the creation of infrastructure, to manage natural resources, and to increase production and employment generation at the village

level.⁸ The state governments are responsible to strengthen the functioning of PRIs by granting autonomy and powers through the process of decentralisation.⁹

There are similarities between the gram panchyat and WUA. In both cases the elections are supposed to be held on non-party basis. However, in reality the elections of both the Panchyat and WUA were competed on party basis. Elections for the WUAs were conducted in 1997. After much delay and several postponements, elections for the Panchayat bodies were held in two phases in July-August 2001. The voters knew about the party affiliations of the candidates. This was a crucial factor in deciding the results. Caste, political affiliations and money played an important role in winning the positions. In my field area, I observed that some of the WUA leaders campaigned for their own party candidates in the panchayat elections held in 2001. This suggests the role of party politics in both water and village governance issues.

Including WUAs as many as eleven types of village level institutions known as self-help groups (SHGs) were formed during the Naidu government.¹⁰ The total number of members covered under the SHGs is about 17 million in the state. The financial needs of all these groups are estimated about Rs. 28.8 billion (Bala Ramulu 2002).

Formation of multiple resource-based SHGs by the Naidu government was criticised. Naidu wanted to build a TDP cadre at the village level on the lines of the leftist governments by forming SHGs. Second, he has tried to weaken the PRIs on which the Congress party has a stronghold. ¹¹ The formation of SHGs and the process of decentralisation in the state is argued as top-down and politically motivated (see ODI 2001; Sitaram 2002; Powis 2003).

I view that the formation of SHGs under the Naidu led TDP government is part of a larger political project. The formation of these SHGs provided opportunity and space for the emergence of new leadership in the villages. Discussions with Panchayat Presidents in Kalluru and Madhira Mandals revealed that they did not regard leaders of SHGs like women self-help groups, DWCRA or CMEY groups as a threat to their positions. However, a few of them responded that they see the WUA President as a possible competitor if he/she happens to be from the same village. 12

Theoretically the convergence of SHGs and village *Panchayats* should lead to better decision-making and resource management at the village level.¹³ In the study villages, I did not find convergence

of these bodies. Whenever there was an election for any of these positions there were clear attempts between political parties to capture these positions. In a few villages the *Panchayat* President and the local political party president both belonging to the same party nominated their party members to positions of SHGs. In villages dominated by a single political party, there is only nomination rather than contestation for the positions in SHGs. The process suggests that each political party tries to capture as many positions as it can, so that the party can enjoy a larger say in the decision-making process at village level. I conclude that the multiplicity of village-based institutions brought a political dimension to the social organisation and management of natural resources at village level.

Caste, Landownership and Politics

The institution of caste has long existed in Indian villages. ¹⁴ Blair (1972) writes that 'students of comparative development have found the Indian caste system of great interest as a social structure of salience in the modernization process. Indeed it has served as an institution of upward social mobility, political mobilization and participation, and interest aggregation in recent decades' (1972:107). The social organisation of a village shows that the individuals are not only ranked in terms of wealth but also by caste affiliation. ¹⁵ Caste and kinship acquaintance influences the attitude of a person towards the others. Each village is represented by a composition of caste groups belonging to higher and subordinate castes.

The Kshatriya, Brahmin and Vaishya are treated as superior castes in the hierarchy. ¹⁶ These caste members own land but usually do not do the farming on their own. The Rsddy, Chowdary, Kapu and Naidu caste groups practice agriculture and enjoy a privileged status than other lower castes in the society. ¹⁷ The carpenters, the barbers, the washer men and the blacksmith households help the landowners with services necessary for daily life and agricultural operations. They are paid in kind and in cash. There are a significant number of scheduled castes and tribes ¹⁸, which constitute an integral part of the village labour economy.

The irony of the Indian political democracy is that it has strengthened caste divisions than reducing. Caste politics are crucial in deciding the fate of the political parties struggling for power (see Kothari 1970). Part of the explanation for this development is the partisan policies that political parties have introduced to win the support and maintain their vote base. Historically weaker sections and lower caste groups have been suppressed and expressed political subordination to upper castes.¹⁹

In the study villages, the Hindus are the dominant group and Christian and Muslims communities are in the minority. The caste affiliations play a dominant role in the village day-to-day life. Caste status is reinforced by economic wealth and wealth creation is based on the exploitation of resources. The villages under Kalluru and Madhira Mandals in Khammam district show a slightly different caste composition than the Krishna district. The Chowdary caste group dominates villages in Krishna district, whereas Kapu and Raddy families are dominant in the villages in Khammam district.

Caste and Leadership Pattern in a WUA

The dominant groups derive power from their caste, land-ownership and access to the political institutions. The analysis of the leadership pattern that existed within the WUA shows evidences that the upper caste, village elite, big farmers, and active party workers represent the leadership of the WUAs (see Nikku 2003:350; Mollinga et.al 2004: 249).

I present the case of WUA174, selected randomly out of nine WUAs in Kalluru irrigation subdivision to show the caste and landownership pattern. Table 4.4 reveals that all the WUA leaders belong to higher caste groups. The majority of them belong to Chawdary and Reddy caste groups. The total command area of the WUA is 2549ha. The total number of WUA members declared is 1080 from six villages in Khammam and Krishna districts.

The leaders who are elected in WUA committee reported that they came to know about WUA formation-through newspapers and television; and some of them were asked to file nomination papers by their senior party leaders. Majority of the WUA leaders belonged to the ruling TDP government, followed by the Congress and the Communist party. WUA leaders from Madhira irrigation sub-division shows that four of them belong to the TDP, two each belong to the Congress and the Communist parties. The reform

programme in the state claims to be 'apolitical or non-political' but there were evidences to show the political linkages of the elected WUA leaders. Often their caste affiliations helped them to win the political positions.

TABLE 4. 4: Leadership and Caste Representation in WUA174 (2002)

WUA 174	Age	Caste	Edu- cation	Mode of election	Village	District
Presid ent	35	HC	SSC	CON	Vennavalli	Khammam
TC 1	50	HC	PR	CON	Vennavalli	Khammam
TC2	40	HC	SSC	UNS	PKorukandi	Khammam
TC3	30	HC	SSC	UNS	Telagaram	Khammam
TC4	35	HC	UPR	UNS	Vennavalli	Khammam
TC5	52	HC	PR	UNS	Erramadu	Krishna
TC6	60	HC	PR	UNS	Erramadu	Krishna
TC7	VA	VA	$\mathbf{V}\mathbf{A}$	VA	VA	VA
TC8	40	HC	PR	UNS	Mustikuntla	Krishna
TC9	60	HC	PR	UNS	Erramadu	Krishna
TC10	30	HC	SSC	UNS	Gollaperi	Krishna

Note: HC -higher caste, VA - vacant, SSC- secondary school leaving certificate UPR- upper primary, PR- primary, TC-territorial constituency, CON- contested, UNS- unanimous. Source: Discussion with President, WUA174.

Landownership

Land is the source of rural wealth. The extent of landownership provides prestige and status in the rural society. Landowners often wielded much power directly, and were hand in glove with state authority (see Gibson and Blinkhorn 1991). The dominant caste households in the study villages owned big plots of cultivated land. The average land holding size in these villages was found to be less than one hectare. Small and marginal farmers own more than half of the irrigated area. According to the president of WUA174, all the WUA representatives in the executive committee own 3ha of land or more (see Box 4.2). A study conducted by Mollinga et.al (2004) confirms that 'in a distributary 85percent of the Managing Committee members of the WUAs had landholdings larger than 10 acres (4ha). The presidents generally had much larger holdings, and many of them had additional activities as businessman or politician' (2004:249).

Box 4.2 Kesavapuram Village

Kesavapuram village is a tail end village of Punyapuram major. The village is located at a distance of 30km from the Kalluru irrigation subdivision office. The village Panchayat falls administratively under Tallada Mandal of Khammam district. There are 300households. About 100households belong to the Reddy and Chowdary castes. The Chowdary households in Kesavapuram are influential in deciding village development works. About 50households belong to the scheduled caste and out of them about 20families own small pieces of land i.e. less then 0.5 ha and cultivate wet paddy crop if water is available in the canal. These households and other landless supplement their incomes by working as manual labour during the agricultural operations in the village.

The command area of the village falls under WUA171. Mr. Arjuna Rao is the president of this WUA. He hails from Kesavapuram village and won the election for presidential post. He entered the election as a member of the Communist Party of India (Marxist) and defeated the member belonging to the ruling TDP. He belongs to the Chowdary caste and owns more than 5ha of cultivable wet and dry lands. He is a big farmer in the village. Arjuna Rao says, "in addition to my caste, affiliation to the communist party of India helped me to win the position'.

Similarly the immediate past Village Panchayat President also belongs to the Communist Party. 'Since the position has been reserved for a woman member this time, I could not contest for the position' said Purushottama Rao who plays an important role in village politics. He also belongs to the higher caste group in the village. The Kesavapuram village shows how caste, land ownership and politics are linked.

Source: Field Notes, November 2001

Cropping pattern

Before the irrigation in the area, farmers used to grow jowar (sorghum) and maize as rainfed crops. The area receives good rainfall during the southwest monsoon i.e. from June to September and relatively less during the northeast monsoon i.e. from October to December. In a good monsoon year, the area receives about 1000mm of rainfall. ²⁰

After the introduction of irrigation facilities in Kalluru and Madhira mandals of Khammam district in 1970s the cropping pattern is now dominated by paddy cultivation in both *Kharif* and *Rabi* seasons due to availability of canal water. Other crops like

maize, red-gram, green-gram, sesame and commercial crops like cotton and chillies are grown as irrigated dry crops. In Madhira sub-division, vast areas are turned to cultivate cash crops like cotton and chillies under irrigated dry cultivation. Villages show inmigration of labour from other villages during the harvest season. Similarly, during monsoon failures agricultural labour migrates to urban areas in search of employment.

Currently wet paddy crop is grown in the head reaches of the canals, tank and well irrigation. Sugarcane is grown mainly where private irrigation sources are available. The irrigation staff in Madhira subdivision shared that the farmers in tail reaches have converted their field for commercial crops like cotton and chilli because they could earn money if the harvests are good and could grow them with less water. However, these farmers are under stress as the investments have increased due to the pests and increased water scarcity. In box 4.3, I present the cropping pattern in a tailend WUA/village located on a head-reach major canal.

Box 4.3: Cropping pattern in WUA171

WUA171 is a tail-end WUA on Punyapuram major. The major is located in the head-reach of MBC. The W UA covers an irrigated area that belongs to four villages. The total localised command of the WUA was originally 1556ha with 1134ha of wet and 422ha of irrigated dry cropping pattern. However, the existing irrigation development pattern of the WUA shows the reverse. According to the WUA records the wet irrigated area is only 550ha and 985ha of irrigated dry in the year 2000-01. Commercial crops like Chilli and Cotton are cultivated on the irrigated dry lands. The farmers did not leave the land uncultivated but tried to adjust the cropping pattern to the availability of irrigation water. The Assistant Engineer in-charge of the Punyapuram canal said that in the original localisation design, wet cropping pattern was suggested in tail-end areas if the soils are suitable. He also stated that the wet cropping pattern has increased in the head reach of the canal due to the appropriation of water by the head end farmers.

Kesavapuram village

Kesavapuram village is a tail-end village of WUA171 on Punyapuram major canal. The Kesavapuram minor originating at 13.63km of Punyapuram major canal supplies water to Kesavapuram village.

Box 4.3 Continued

Due to scarcity and non-reliable water supplies of canal water, the majority of Kesavapuram farmers changed their cropping pattern to irrigated dry crops. They are growing commercial crops like chilli and cotton since fifteen years. Only a few wealthy farmers are pumping water from the nearby river using electricity and diesel operated engines. They grow paddy for household consumption. About twenty economically well-off households invested in deep tube well irrigation. The rest of the households depend on canal water for their irrigated dry commercial crops.

To face the uncertainty of irrigation water the farmers collectively prepared a rule on how to use canal water (even before introduction of WUA). If there is water available in the canal, the first preference to irrigate is for chilli fields and then for cotton fields. According to the farmers, the preference for chilli against cotton is due to higher investment made for chilli crop than for cotton. Also, the effect of water stress on chilly is higher than on cotton. Chilli can survive without water for fewer days as compared to the cotton. Though this arrangement seems rational to save the standing crops, the small and economically poor farmers suffer. They usually grow cotton because of the less investment than chilli.

Thus the type of crop is decided not only on the basis of the availability of water and location of plot, but also by the economic status and access to credit (in some cases). The Kesavapuram village case shows the interdependence of factors that determine crop choice, household economics and access to water.

Labour and Livelihood

With the changing cropping pattern, the labour opportunities have also changed in the study villages. The introduction of labour intensive crops like chilli and cotton in tail-end WUA command areas, opportunities for agriculture labour have increased. Distribution of land holdings in the villages indicates that a large number of cultivators own relatively small plots of less than one hectare. The practice of contract farming is also observed under Nidanapuram major canal command in Madhira irrigation subdivision. According to the President of Dendukuru WUA184:

Farmers from Coastal Andhra region migrated to this area back in the 1980s. The migrant farmers bought some land and also took land on tenancy from the local farmers. They introduced cultivation of cash crops like chillies and cotton in this area. Subsequently realising the economic returns, the local farmers followed them cultivating these cash crops. As a result the area under cash crops increased dramatically placing higher demands on the canal water. In addition more water is tapped at the head reaches to grow wet paddy crops. As a result we have been facing increased water scarcity and unreliable supplies from the last ten years. There has been little change in the situation after introduction of the WUAs in this area.

My discussions with the assistant engineers at Madhira irrigation sub-division gave me the same picture. According to the localisation design, canal water is supposed to be supplied to 1601ha of wet and 934ha of irrigated dry crops of the WUA184. Currently the pattern is completely changed and there is no wet irrigation and about 1700ha is under irrigated dry crops.

WUA184 is located in the tail reach of the Nidanapuram major canal. The WUA president claims that due to the change to cash crops labour opportunities have increased, as they are labour intensive. But the revenue for the WUA will be less as the cess for the irrigated dry crops is less compared to the wet crops. There is in-migration to the area from neighbouring districts during the harvest time between December to March every year. Outmigration by local people from the tail end villages in search of livelihood is observed during monsoon failures.

The WUA members of WUA184 shared that they were facing heavy risks due to change to commercial farming that is capital and labour intensive. In the absence of access to government credit institutions, most of the farmers borrow from private moneylenders with high interest rates. Due to the increase in the labour charges, cost of pesticides and fertilizers, the total cost of cultivation increased. The discussion with the farmers revealed that that most of them are members of the local agricultural cooperative society but cannot raise loans because they have already taken loans and are yet to repay them.

In addition, farmers mentioned lack of good variety of seeds resulting in low yields and in some cases crop loss. In the event of crop failures, they are forced to sell their livelihood assets to repay the loan amounts. The increasing indebtedness, pressures from the private financiers and social prestige have lead to unrest among the farmers. As a result, some farmers committed suicide as a way out of the problem. Such cases of suicides have increased in the last seven years in the state.²¹ The farmers argue that the successive governments only paid lip service to their problems. Hence they continue to face livelihood risks in the absence of government support policies and programmes. They blame the Naidu government policies²² for not providing assured prices for their products. Later I confirmed with the village secretary that the crop insurance schemes, though was promised by the government was not implemented in the area.

Water Distribution

Traditional institutions like Kalva Pedda and Neeruganti for water distribution are in use only in a few villages under tank irrigation systems. These institutions are not found under major canal irrigation systems in the study area. The irrigation department was the only agency responsible for supply and distribution of canal water (for documentation of actual water distribution practices in south India canal systems see Mollinga 2003; Ramamurthy 1995 and Wade 1988). After the introduction of irrigation reforms in 1997, the newly crafted WUAs are not only expected to deliver the functions of the Neeruganti, also to play an active role in carrying out repairs, rehabilitation of the irrigation structures, supervision of the water distribution and supply, settling conflicts and raising internal resources to sustain the activities of the association 23 (see chapter 6).

In the study villages, pressure on canal and well irrigation has increased with the decline of tank irrigation. The water distribution in this context continued to be a major challenge for the WUAs. In a few tail-end villages, farmers have opted for private bore wells to resolve the water scarcity. As an alternative, tail-end farmers demanded lift irrigation schemes from the government (Box 4.4). ²⁴

BOX 4.4: Utukuru Major Canal

Three WUAs i.e. WUA177, WUA178 and WUA179 are formed under Utukuru major canal in Madhira irrigation sub-division. Utukuru village is the headquarters of WUA178 and is headed by Mr. Cherukuri Radhakrishna Murthy. Utukuru is one of the revenue villages in Krishna district. The village is located in the middle reaches of the Utukuru Major. Villages from Khammam district also fall under Utukuru major canal command.

According to the farmers of Utukuru village, they did not face any water shortages until 1982. There was enough water in the major canal and hence no problems in terms of water distribution. Water became scarce in later years due to upstream theft and illegal wet cultivation. The farmers used to raise a contribution of Rs.150 per acre (Rs.375 per ha) to employ or pay people for bringing water from upstream called canal gasti during the nights. Since many of them are small and marginal farmers, the Kharif crop is the only source of income for many households. They cannot afford to raise a Rabi crop, which is usually a cash crop and demands higher financial investments. The farmers told that even some of the big farmers were not able to cultivate their holdings and moved to cities either by selling their lands or by renting their land in tenancy. As a result, the landless and a few lower caste people in the village could buy small pieces of land and some became tenants.

The WUA president shared that this transformation brought a new dimension in the village politics. After the formation of the WUAs in 1997 the responsibility of bringing or ensuring water to the members' fields has shifted to the WUA leaders. Mr. Murthy, the WUA president shares, 'I used to fight for my WUA share of water from the head reach WUA177, while the lower reach president of WUA179 used to blame me for not releasing water to his WUA members'. When water is available, life revolves around that and, of course, conflicts about water emerge (see chapter 6).

Source: Field notes, September 2001.

4.4 Conclusion

This chapter provides a description of social context in which the irrigation reform policy is implemented. Water relations are also social relations and vice versa. The evidence from MBC reinforces our understanding that irrigation and social organisations coexist and influence organisational patterns that are embedded within a

society. The Madhira Branch Canal is not just part of an irrigation network but also influenced the social organisation in command villages. I further show how the irrigation reform policy is contested in the following chapters.

Notes

- ¹ In irrigation literature there is considerable debate on the role of irrigation in the evolution of centralised political organisation. Wittfogel (1955, 1956) and Steward (1949, 1955) proposed that irrigation is a major cause of the emergence of centralised political authority and supracommunity political organisations and, as such, a major cause of the development of early states and civilizations (cf. Mitchell 1973:532).
- ² Karl Wittfogel's 'hydraulic hypothesis' is criticised by many scholars. For example see Mason (1968:39) and Lanning (1967:181-82). They argue that centralised government in Peru preceded extensive irrigation systems that were built. Adams (1969) argued that in Mesopotamia and Mesoamerica the centralised state developed prior to large-scale irrigation activities. Similarly Leach (1959) argues that although there were large irrigation works, there is no evidence that such irrigation works produced the hydraulic bureaucracy required by Wittfogel's thesis.
- ³ The highest numbers of WUAs formed under major irrigation systems were in Guntur district with 245 WUAs. The highest number of WUAs formed under minor irrigation was in Nellore district with 695 WUAs followed by Warangal with 683 WUAs, Chittor with 644 WUAs and Cuddapah district with 644 WUAs. The number of WUAs shows the importance of minor irrigation in these districts.
- ⁴ A unanimously elected WUA would receive Rs. 50,000 from the government as an incentive. It appears as if there is unity among the water users in choosing their leaders, but in some cases the local political leaders (MLAs) influenced the process and nominated party workers for the WUA positions.
- ⁵ In order to assess the results of the study I have tried to understand the process of the survey conducted by IRDAS. The organisation has used government sources to analyse the data. The information about presidents was collected through a questionnaire sent to all WUAs in the state. Given the coverage and scale the scope for error is high.
- ⁶ In the literature there are different notions of village political institutions. The Gandhian notion of self-rule or self-governance of rural institutions is influential. Gandhi held the notion of a village community as a village republic, wherein the interdependent division of labour contributes to a self-sufficient village community. In contrast to the Gandhian notion, the Ambedkar notion of the village community

emphasised the iniquitous, hierarchal and oppressive nature of villages and communities. Ambedkar argues the village as a 'sink of localism, a den of ignorance, narrow-mindedness and communalism' (see Omvedt 2000; Nataraj and Ananthpur 2004).

⁷ Each Mandal serves a cluster of 10 to 25 villages, with a population ranging from 35,000 to 50,000. For example there are 22 Revenue Panchayats in Tallada Mandal. There are 46 Mandals, 772 Panchayats and 1242 villages in Khammam district. There are 28,123 villages, 22 elected Zilla Parishads or district councils (excluding Hyderabad, which is entirely urban), 1094 Mandals and 21,943 Gram Panchayats in the State.

⁸The Eleventh Schedule of the Constitution lists 29 subjects to be handled by the Panchayat bodies. These are agriculture and agricultural extension, implementation of land reforms and land improvement schemes, minor irrigation, social forestry, fisheries, education at primary and middle levels, and women and children's uplift. The 73rd Amendment of the Constitution that provided more autonomy for PRIs was passed more than a decade ago, but a lack of political will in some Indian states undermined the effectiveness of PRIs and the process of decentralisation. ⁹ The fact is that the AP government passed the AP Panchayat Raj Act in 1994 but only transferred 16 functions out of 29 subjects to the Gram Panchayats. In the aspect of devolution of powers, the performance of PRIs in AP is much poorer than that of Karnataka, Kerala and West Bengal (see Reddy 2003). Less important functions have been transferred to local bodies. The Panchayats in AP have no financial autonomy either in raising financial resources or in deciding on the allocation of funds across different sectors. The allocations to different activities are generally decided by the state or central agencies. The AP Act does not provide the provision for the constitution of a District Level Planning Committee.

¹⁰ One could find as many as 11 types of SHGs. They are: 1) WUAs (10,292 in number with 80 million members) for irrigation management, 2) Watershed Committees (5,410 in number covering 0.12 million members) for water and soil conservation practices; 3) VSSs (6602 in number with 1.3 million members) to protect forest resources; 4) DWCRA Committees (0.36 million in number with a base of five million members), 5) DWCUA committees (5408 in number 62000members): 6) CMEY groups (28,630 in number with 0.8million members); 7) Vidhya (education) Committees (61,871 in number with 1.2million members); 8) Mothers Committees (40,000 in number with 0.25million members); 9) Village Tribal Developmental Committees (8,200 in number with 0.16million members, 10) Health Committees (1595 in number with 9000members); and 11) Janmabhoomi Habitation Committees (40,000 in number with 0.2million members).

¹¹ The powerful traditional Panchayats began to decline in power after the Muslim conquest of India. But they did not fully die out and were still

functioning when the British conquered India many centuries later. The role of the traditional panchayat changed in the 19th century when the extension of the apparatus of the modern state reached to the remotest villages. The new court system set up by British, removed settlement of village disputes from the competence of the Panchayats. The government officials took the revenue and police functions of the villages. As a result an alternative system of local self-government under British rule was established (see Srinivasan 1956). After the independence there has been a renewed interest in the rehabilitation of the villages and empowerment of panchayats (www.panchayats.org/dnrm_reports.htm).

- ¹² I came across a WUA leader complaining against the Panchayat President. Interestingly both of them belong to the same village and TDP party. The complaint is that the Panchayat President dominates the WUA President and interferes in the WUA management.
- ¹³ I refer to one of the first policies of N.T. Rama Rao, the late Chief Minister of AP. He changed the system of Panchayat Samitis into much smaller unit of administration called Mandals. As a result 330 Panchayat Samitis were reorganized into 1104 Mandal Parishads. With the tripling in number there are more positions to contest. Irrespective of his political motives, the policy resulted in further decentralisation of power. Similarly the policy of reservation system for the Panchayat positions has further created vital opportunities for the socio-economically and politically weaker sections and women to acquire these positions once only dominated by powerful elite groups.
- ¹⁴ The word caste derives from the Portuguese casta, meaning breed, race, or kind. Among the Indian terms that are sometimes translated as caste are Varna, Jati, Biradri, and Samaj. All of these terms refer to ranked groups of various sizes and breadth. Varna, or color, actually refers to large divisions of the society. The four main divisions are Brahmin, Kshatriya, Vaishya and Sudra (see Srinivas 1952, 1962; Kothari 1970).
- ¹⁵ Caste is the defining feature of the village. M.N.Srinivas argued that inspite of the hierarchical nature of castes and sub-castes, the village existed as a community beyond the caste system (see Dumont 1980; Srinivas 1962, 1996).
- 16 The system of caste that divides the village society horizontally can extend far beyond the confines of any single village. Consequently a village is never socially isolated. Its ties are coextensive with its caste relationships. Caste loyalties are strong and hence influence local and national politics.
- ¹⁷ The Reddis are spread in all three regions of the state. They represent about 8-10 percent of the total population of the state. The Kammas, who are about 4-5 percent of the population are mostly concentrated in the Krishna and Godavari delta and are considerable in number in Nellore,

Chittoor, Ananthapur and Khammam districts. The Velamas constitute 1-2 percent of the population and are as wealthy as the Reddis and the Kammas. They are concentrated mainly in Karimnagar and Khammam districts in Telangana region and in the northern coastal districts of AP. The Kapu category amounts to 10-12 percent of the population and is found in Coastal Andhra.

¹⁸ AP is one of the main States in India with a large concentration of scheduled castes and tribes. The state has about 8 percent of the total scheduled caste population of the country. There are about 59 types of scheduled castes in the State, representing approximately 16 percent of the state's population. AP incorporates about 33 tribes, which form about 7 percent of the State's population. Together they form a sizable vote base influencing local and the state politics.

¹⁹ Since 1990s the political parties to come to power, relied primarily on Backward Classes support often in alliance with Dalits and Muslims. Janata Dal governments in Bihar and Karnataka are excellent examples of this strategy.

²⁰ The rainfall of Andhra Pradesh is influenced by both the southwest and northeast monsoons. The normal annual rainfall of the state is 925mm. The southwest monsoon (June to September) accounts for about 70percent of the rainfall followed by northeast monsoon (Oct-Dec) accounting for 20 percent. The remaining 10 percent of the rainfall is received during the winter and summer months.

²¹ Farmer suicides have been reported for over seven years in the state. It was reported that over 300 farmers took their lives during May and June 2004. (see Palagummi Sainath in *The Hindu* daily dated 22.06.2004). Other similar reports in *The Hindu* dated June 15 and 22 in 2003 highlight the crisis. Forty-one cases of su icide were reported in Anantapur district alone between September and November 2000 (see *Frontline*, Volume 18, Issue 8, 2001) It is estimated that 644 farmers committed suicide across three of Maharashtra's six regions between January 2001 and December 2004 (see *Frontline*, volume 22, issue 14, 2005). The causes of suicides reported by research studies are: repeated crop failure, inability to meet the rising cost of cultivation, and indebtedness.

²² The TDP government policy on supply of power for agriculture was criticised by the WUA members and leaders. The government has committed to supply 9hours of non-stop power supply but it has failed to do so. If there is a supply it is always at odd hours and not suitable for the farmers. For example the power is provided for agricultural purposes at 11pm in the night and stays till 8am in the morning. It goes on and off in between. Each time the power goes on or off the farmer had to be there physically to start the motor, meaning the farmer had to spend the whole night awake if he (women do not go in the night as a general practice)

wants to irrigate the land. "If the farmer is the backbone of the country then why these antifarmer policies," questions the WUA President of Kesavapuram and farmer members during a discussion.

²³ The Neeraganti are involved in water distribution especially under tanks with paddy cultivation. They implement rotation schedules and plug the leakages. Against the labour the Neeraganti receives an agreed share of produce from the farmer. The institution is under pressure and eroding because of the shifting of traditional authority over irrigation management from these institutions to the Irrigation Department. Under the current irrigation reforms in the state, the management roles of irrigation department are shifted to the elected WUAs.

²⁴ The experience of managing lift schemes, however, is not encouraging in the state. During the last three-and-a-half decades, the AP Government has constructed 1,068 lift irrigation schemes investing about Rs. 1230million. However, despite the huge investment, the performance of such scheme has been dismal. The State Government, decided to hand over Lift Irrigation Scheme to the beneficiary farmers in 1995. It was assumed that the farmers would be happy to take over the system. However, in contrary to the expectations, in some places the farmers did not come forward to take over the schemes. In other places where the schemes were handed over, the system became either completely defunct or worked at less than optimal levels (source: Davuluri et al. 2002).

Maintenance and Rehabilitation

An Arena of Policy Contestation

Silently watching the canal system heading towards a collapse would be nothing short of an economic crime

Ashok Gulati, Ruth Meinzen-Dick and K.V Raju (1999)

5.1 Introduction

The Government of India emphasised the creation of new irrigation infrastructure as a policy from its independence in 1947 till the 1970s. Indian irrigation engineers favoured construction of new irrigation projects with technical inputs, rather than the maintenance of existing projects. A World Bank report states that 'poor quality of project design and planning are big problems, but poor operation and maintenance is a bigger one' (World Bank 1994:86 cf Svendsen and Huppert 2000)

In section 5.2 I provide a brief discussion on the maintenance crisis. Section 5.3 discusses the pattern of budget allocations and irrigation potential achieved and utilised in the state during the pre-reform period. In section 5.4 I present a brief analysis of the practices of operation and maintenance (O&M) during pre and post reform periods. In section 5.4 I analyse in detail the policy prescriptions and actual practices in the field. In the last section 5.6, I conclude that the policy objectives are contested in the process. The WUA leaders and irrigation bureaucracy emerged as important actors and defended their own interests through network building and policy contestation

5.2 Maintenance Crisis

Huppert et al. (2003) argue that the irrigation sector is facing a serious maintenance crisis. Hydraulic infrastructure in many irrigation schemes, especially in South Asia, much of it constructed in 1960's and 1970's, is deteriorating rapidly. The usual reaction to neglect of maintenance has been a pattern of "build-neglect-rebuild" which, in the wake of widespread budgetary constraints, cannot be an option for the future (2003:5). Irrigation agencies have few incentives to embark on maintenance activities as funds for maintenance are scarce and engineers do not perceive maintenance to be a 'glamorous job'. Farmers see maintenance to be an obligation of the owner of the infrastructure, the state and have no incentive to engage in it. Svendson and Huppert describe this practice appropriately as 'incentive dead lock' in maintenance provision for irrigation (see Svendsen and Huppert 2000: 52-53).

In addition to the above mentioned problem, the larger part of the maintenance budget is often diverted to cover salaries of the irrigation staff leaving meagre amounts for maintenance. In the case of AP, wages consume about half of the state's total income... [Irrigation] staff costs consumed the bulk of allocations received from the Treasury for irrigation operation and maintenance (O&M). In the more distant past the ratio of staff costs to actual operating expenses was said to be around 1:4. By the mid 1990s it was closer to 1:1 (Svendsen and Huppert 2000: 12,18). Given this scenario, maintenance in the irrigation sector should have received a higher attention than it receives at present. Donors seem not to be very concerned about the maintenance question, since they do not finance maintenance budgets. Skutsch (1998) states the reasons for this paradox as the lack of incentives for the different stakeholders to engage in maintenance efforts.¹

The popular IMT/PIM discourse in India and elsewhere is that the turnover of irrigation operation and maintenance works to WUAs will achieve quality of water distribution, low costs of irrigation to farmers and governments, and transparent and efficient water use² (see Uphoff 1986; Sengupta 1991; Mitra 1992; Vermillion and Garces-Restrepo 1996, 1998; Levine et al. 1998). As a precondition, the researchers and practitioners argued that the irrigation structures should be fully repaired prior to or after the irrigation management transfer to the user associations (see Johnson et al. 1995; Geijer et al. 1996; Meinzen-Dick et al. 1997;

Vermillion 1997). In the case of AP, the formation of WUAs took place before the rehabilitation of irrigation structures. The WUAs were expected to take up the rehabilitation works with the initial funding provided by the government. The reform programme emphasised rehabilitation of existing irrigation infrastructure and maintenance to address the deferred maintenance.³

Discussing the irrigation reform effort in AP, Svendsen and Huppert (2000) write in the preface of their report that the policy makers and senior civil servants are attempting to overturn 100 years of authoritarian management by transferring control of irrigation system water delivery and maintenance services to organised groups of farmers (italics mine). I discuss in this chapter, whether WUAs could organise and control maintenance of irrigation infrastructure. The assumption is that the regular maintenance of structures by WUAs would lead to better management of irrigation systems and ultimately achieving improvements in water regulation and distribution. The underlying policy rationale is to increase water use efficiency through ensuring reliable water supplies to users.

Huppert et al. (2003) suggest, "maintenance needs to be perceived as a process where multiple actors have to invest money, time, physical and mental effort, attention and other suitable resources in order to generate the desired result: provision of high quality maintenance services. We must recognize that there are multiple contexts that require multiple strategies if maintenance interventions are to be successful" (Huppert et. al. 2003:20). Though the authors recognise these issues, such discussion ultimately suggested apolitical theories to address the issues.⁴

Devolution of O&M activities to WUAs is another important element of AP irrigation reforms. I explicitly recognise the actors and their interests, politics and power relations during the process of implementation. I discuss in this chapter the policy objectives and the actual practices of implementation of rehabilitation and maintenance activities (irrigation works) at the local level.⁵ I use the concept of negotiation and treat irrigation works as an arena, where different actors interacted with each other and used multiple strategies to defend their interests.

The irrigation reform policy content suggests that the programmes were designed to secure widest participation of water users and irrigation bureaucrats in the state. To achieve this, more powers were accorded to irrigation bureaucrats by the Act. For

example, the Assistant Engineers who are designated as competent authorities for WUA can now sanction budgets up to Rs. 50,000 and supervise irrigation works. They did not have these budgetary powers during the pre-reform period (see chapter 8). Government reports stated that impressive targets were achieved in terms of number of irrigation works carried out by the WUAs. Huge budgets were spent through the WUAs in the initial years of reform implementation. Irrigation structures were rehabilitated and maintenance works were carried out in the entire state irrigation network. However, my interest in this chapter is to untangle the irrigation works and maintenance implementation process, rather than assessing the targets and outcome. To put it briefly the focus is not on how much but how the allocated budgets were spent and who made decisions.

5.3 Trends in Irrigation Expenditure

The state government from the funds made available by aid agencies mostly financed the irrigation works under the reform programme. Even prior to the reform programme, huge budgets were spent as the state policy prioritised irrigation sector. Theoretically, productive utilisation of funds ensures quality and users' participation in decision-making leading to sustainability of irrigation infrastructure.

The irrigation sector in the state continued to attract a major share of state budget resources (see Table 5.1). However, over the years there is a declining trend from 31.11 percent in 1994-95 to 18.73 percent in 1998-99. But this does not mean that the quantum of funds allocated to irrigation and flood control actually decreased.⁷

Under Irrigation and Flood control it is the Major and Medium irrigation that receives the lion share of the budget. The current pattern of public expenditure shows there was very little money left after interest payments and staff expenditure for actual irrigation works. Reddy (2003) indicates that more emphasis is placed on new projects rather than maintaining the old systems (2003:1182).

TABLE 5.1: Pattern of state budget expenditure on different sectors

Name of the Sector	1994-95	1995-96	1996-97	1997-98	1998-99
Agriculture& Allied Services	2.19	2.69	3.59	4.82	4.12
Rural Development	7.53	6.83	10.68	5.26	7.82
Energy	25.59	29.35	27.10	23.16	16.04
Social Services	19.33	18.70	20.81	24.11	28.66
Irrigation & Flood Control	31.11	22.74	22.59	21.46	18.73
1.Major & Medium Irrigation	24.99	18.94	18.35	17.79	14.28
2.Minor Irrigation	2.73	2.75	3.37	3.00	3.53
3.Command Area Development	1.12	0.36	0.36	0.19	0.18
4. Flood Control & Drainage	2.27	0.69	0.51	0.48	0.74

Note: The figures are in percentage to the total State budget expenditure

Source: Different reports from Finance and Planning Department and Directorate
of Economics and Statistics, Hyderabad

Irrigation potential created and budget allocations

The total irrigation potential (IP) created under major, medium and minor irrigation increased to 4.96mha by the end of the eighth plan period (1992-97) from the end of first five-year plan (1951-56), reporting an increase of 4.8 times.

The budget spent during the eighth plan period alone was as high as Rs. 22,653 millions, i.e. 38 percent of the total budget spent in the state. If we calculate the IP created and budgets spent, the cost of per hectare of IP created worked out as high as Rs. 566,325 under major and medium irrigation and Rs.46,725 under minor irrigation.

If we see the irrigation performance of all the five-year plans (i.e. first to eight plan period) it is clear that 91 percent of total irrigation budget was spent on major and medium irrigation. However the contribution of this sector in creation of irrigation potential was only 61.4 per cent of the total IP created in the state. Whereas, minor irrigation sector contributed to 38.6 percent of the irrigation potential with only 9 percent of the total budget spent (see Table 5.2). It shows the evidence of the conventional bias towards the major and medium irrigation sector. Despite the enhanced emphasis on major and medium irrigation, the area under irrigation has not shown any improvements.

TABLE 5.2: Profile of AP plan expenditure and Irrigation Potential Created

	Major & Medium			Minor			Total		
Plan Period	Budget	L.P created	Cost/ba	Budget	. I.P created	Cost/ba	Budget	LP created	Cost / ba
Pre-Plan Period (1951)	-	1.33		-	1.37		-	2.7	
First Plan(1951-56)	375	0.08	4688	35	0.03	1167	410	0.1	4100
Second Plan (1956-61)	574	0.18	3189	44	0.02	2200	618	0.2	3090
Third Plan (1961-66)	915	0.37	2473	186	0.05	3720	1101	0.42	2621
Three Annual Plans (1966-69)	609	0.08	7613	108	0.04	2700	717	0.12	5975
Fourth Plan (1969-74)	1,187	0.19	6247	182	0.06	3033	1369	0.25	5476
Fifth Plan (1974 -78)	2691	0.21	12814	388	0.09	4311	3079	0.31	9932
Two Annual Plans (1978-80)	2577	0.15	17180	238	0.06	3967	2815	0.21	13405
Sixth Plan (1980-85)	7296	0.31	23535	411	0.08	5138	7707	0.39	19762
Seventh Plan (1985-90)	13064	0.09	145156	1314	0.07	18771	14378	0.16	89863
Annual Plan (1990-91)	2828	0.01	282800	478	0.01	47800	3305	0.02	165250
Annual Plan (1991-92)	3339	0.01	333900	486	0.01	48600	3825	0.02	191250
Total	35455	3.0	11818	3869	1.88	2058	39324	4.88	8058
Eighth Plan 1992-1997)	22653	0.04	566325	1,869	0.04	46725	24522	0.08	306525
Grand Total	58108 (91%)	3.05 (61.4%)	19052	5738 (9%)	1.92 (38.6)	2989	63846 (100%)	4.97 (100%)	12872

Note: The above figures do not include expenditure on CADA up to the end of the Seventh Plan. The budget allocations are in million rupees and the irrigation potential (IP) created showed in million hectares. Source: Eighth Five-Year Plan (1990-95), AP-F&P (PLG) Department, Volume 11, and October 1990 (adapted from Peter 2002).

Reddy (2003) shows that in 1994-95 i.e. pre PIM period, the expenditure on irrigation works was the major component of total expenditure. The burden of debt servicing started going up after 1994-95, shows the signs of increased debt leading to lower level of spending on O&M. Except in the year 1998-99, the expenditure on O&M is below Rs 300 per hectare. A study funded by DFID reported that the AP government is forced to borrow more money to repay the old debts rather than utilising it for productive purposes (DFID 2001). From the above evidence, it is clear that the pattern of budget expenditure did not match with the IP created. In addition there are distortions in the way funds are utilised. This pattern provides us the context in which irrigation reforms are implemented. In the following section I briefly present the formal arrangements made under the reform policy.

5.4 Operation and Maintenance

Irrigation systems are subject to deterioration and damage in the course of time. Maintenance activities can be classified into four categories on the basis of the periodicity of occurrence of damage or deterioration. They are preventive, regular, incidental and deferred maintenance activities. The more the regular maintenance works are being postponed, the higher the deferred maintenance costs. The WUAs are also expected to maintain reserve funds to repair unexpected breaches and seepage works. Now I discuss briefly about the maintenance of irrigation structures during the pre-reform period in the state

Maintenance in the pre-reform period

The maintenance activities of major and medium irrigation systems are mainly carried out by the Irrigation Department in the state. The Irrigation & CAD department using standardised procedures provide water delivery and maintenance services. The Minor Irrigation and Panchayati Raj departments manage the minor irrigation and tank systems. In addition local institutions were also involved in management of tank systems in some villages. The maintenance activities were essentially carried out using the hierarchical administrative structure of I&CAD department. The

department involved in maintenance followed the contracting/tender system to carry out maintenance and rehabilitation works.

Budget Allocations

The irrigation staff in the field research area during the discussions claimed that funds allotted for maintenance activities during the pre-reform period were very low, resulting in disrepair and defunct irrigation structures. Prior to 1975-76, the norm fixed for maintenance allowance was Rs.10/ha of irrigated area, out of which Rs. 5 were establishment costs and Rs.2.5/ha nonpermanent staff charges. As per the Sixth Finance Commission, from the year 1976-77, the maintenance norm increased to Rs.25/ha for utilised potential in the country. The engineers claimed that the allotted budgets as per these norms were way below the required funds. In the 1990s the allocations for maintenance were increased to Rs. 100/ha. These rates were a uniform flat rate in the entire state. This amounted to only about 33 percent of Rs.300/ha average recommended by 10th Finance Commission (1997) for major and medium irrigation schemes. The argument was that the fund allocation was not even sufficient to cover staff wages, which required about Rs.200/ha.

Irrigation and Command Area Development Department

In the State, I&CADD has staff of about 55,000 in the entire state, (of whom about 12,000 are engineers, and about 40 percent are office staff), responsible for both developing and managing major and medium irrigation canal projects including 12,294 large tanks (Svendsen and Huppert 2000:17). The rising wage and salary bills of I&CADD accounted for an increasing share in the irrigation budget. Staff costs consumed bulk of allocation received from the treasury for irrigation operation and maintenance (Svendsen and Huppert 2003:26). As a result, the budget available for maintenance works was far below what was required. Highly constrained finances thus led to the absence of even basic levels of maintenance on canals, drains and structures. The priority for

maintenance was done at the level of main canal and head works. This resulted in the neglect of secondary and tertiary canals.

During the discussions with irrigation staff references were made regarding the political interference in allocating contracts and budgets for irrigation works. Politically affiliated contractors were successful in securing irrigation work contracts. These practices influenced the quality of irrigation works. The discussions with retired irrigation staff based in Hyderabad shows similar observations. Maintenance budgets became a source of appropriation for different actors. On the condition of anonymity a retired irrigation bureaucrat staff acknowledged the pilferage of funds in the process, leading to delay and low quality of works. There was no role for farmers in irrigation maintenance during this period.

Maintenance under Reforms

The APFMIS Act of 1997 states, "scientific and systematic development and maintenance of irrigation infrastructure is considered best possible through WUAs. These organisations have to be given an effective role in the management and maintenance of the irrigation system for effective and reliable supply and distribution of water". Accordingly the government embarked on a policy to involve the WUAs in taking up the operation and maintenance (O&M); and repair and rehabilitation (R&R) works.

The rationale is that involvement of users in decision-making and actual repair works would lead to 'owning' of the irrigation system. I quote a senior bureaucrat who was involved with the reform programme, 'In this large agricultural state, irrigation management has been *revolutionised* by transferring responsibility for O&M of irrigation schemes to groups of farmers' (Peter 2002, italics mine). It is apparent that the government placed a high emphasis on the rehabilitation and maintenance of the systems through elected WUAs.

The irrigation reform policy in AP aims to achieve a physically, financially and institutionally sustainable irrigation sector. The different activities under the policy designed are to support O&M, improved irrigation services to users, higher yields from irrigated agriculture; strengthening WUAs and measures to achieve full cost recovery (World Bank 1997). Following the enactment of APFMIS Act in March 1997, in the month of June representatives for the

WUAs were democratically elected. On 8th August 1997, the government issued an order, allowing the WUAs to use government provided corpus funds for immediate operation and maintenance works. The WUAs could use this fund before the actual funds were released to avoid delays. This act of the government showed its willingness to implement irrigation works with a high priority. The funds were allotted on a per acre basis to WUAs uniformly across the state. 11

The WUAs could take up works like ordinary repairs such as desilting, weed removal, embankment repairs, revetment, repairs of shutters, masonry, lining, clearing, oiling of screw gearing shutters, painting of hoists and gates and emergent breach closing works. The deferred maintenance works such as construction of sluices, drops, regulators and measuring devices, and the rehabilitation and modernisation of the system would be carried out by the Irrigation Department as per the departmental procedures.

The first maintenance and rehabilitation program was implemented from May to July 1998. ¹² According to the government records more than 22,000 works ¹³ were taken up by WUAs and completed by 31st March 1999. In the year 1999-2000, about 49,000 works worth Rs.4 billion were taken up at the state level. This shows the availability of funding and the magnitude and scale of rehabilitation activities carried out during the initial years of the reform programme in the state.

The Policy direction

The policy assumption is that the health of the irrigation infrastructure would be improved by participation of users through timely maintenance activities. In the case of AP most funds and attention went into this element. The transfer of irrigation rehabilitation and maintenance activities to the WUAs is an important element of the reform and used as a strategy to strengthen the WUAs. The direct involvement of WUAs in implementation of irrigation works and users' participation in the decision-making is expected to result in enhancing the quality of works. It was also expected by the policy that better maintenance activities would lead to improved water distribution and hence increased production. As a result, farmers will pay water cess without default. The resources raised can be used to fund

maintenance activities instead of depending on the government budgets. To achieve this, the APFMIS Act, under Rule no 19 states a detailed procedure to implement irrigation works. The procedures involved a series of steps: 15

- 1. Prior to the commencement of every crop season i.e. *Kharif* and *Rabi*, the WUA managing committee and Competent Authority (the irrigation department) together shall undertake a walk through (transect walk all along the canals) exercise to assess the condition of the system.
- 2. The WUA shall inspect each and every hydraulic structure and record its status.
- 3. Identify list of needs and prepare the list of priority of works to be taken.
- 4. The Competent Authority will prepare estimates for works.
- 5. Assess financial resources available i.e. government budgets, internal WUA resources and other sources if any.
- 6. Meeting of WUA Managing Committee to finalise priority list. Administrative approval shall be recorded in the register of administrative approvals (Form IV with the WUA).
- 7. Technical clearance by the Competent Authority.
- 8. Preparation of memorandum of understanding between the WUA and Irrigation Department.
- Publication of works to be taken up and approval by the WUA general body.
- 10. Sanction of 40 percent of the total estimate as advance to the WUA 11. Works sub-committee formed by the WUA to supervise the quality of works (section 11 of the APFMIS Act).
- 12. Measurement of work and record of field measurement book is maintained by the Competent Authority.
- 13. The quality control wing of the irrigation department will carry quality clearance or checks.
- 14. Convene general body meeting when works are in progress, so that the members participate and contribute their voluntary labour and report any deviations in the performance of the works.
- 15. Social audit by the members of the WUA. It includes publication of completed works at the office of the WUA and *Gram Panchayat* office.
- 16. Release remaining 60 percent of the budget by the department through cheque. Forty percent of the remaining budget will be paid after the completion of 50 percent estimated work. The remaining twenty percent of the budget will be paid after completion of the

total work. At each stage the payment is only being made on the basis of the certificate issued by the Competent Authority.

5.5The Process and Politics of Implementation

In this section, I show that the implementation process of irrigation works was not participatory as visualised by the reform policy. The implementing irrigation bureaucrats, WUA leaders and the political executive controlled it. I observed that the WUA leaders and the department bureaucrats did not focus on facilitating users' participation in implementing works rather they tried to protect their own interests.

To understand the politics of implementation, I closely studied the utilisation of funds. I analyse the actions and arguments of participating actors. I discuss the users' role in decision-making and rent seeking practices. The analysis is based on activities like maintenance plan, utilisation of funds, users' participation and different roles played by participating actors. By doing so, I aim to show the engagement of actors with the policy and draw conclusions for the policy process.

Maintenance Plan

I found that WUAs in the study area did not have or prepared a maintenance plan. Such a plan is essential to carry out irrigation works. A maintenance plan describes the need and scope of the maintenance activities to be carried out by WUA and Irrigation Department. The WUA leaders claimed that 'the Irrigation Department neither insisted nor assisted in preparing such plans'. The irrigation staff argued, 'what is the use of making such plans when we do not know the quantum of funds available'. The reason for such statements was that both the department staff and WUA leaders waited for government orders to be released with the details of budgets in the year 2002-03.

I noticed the change in the work environment in the department after the government made the budget announcements in the month of April that year. The department geared up and WUA presidents made frequent visits to the office. Discussions were held in the office premises and work estimates were prepared. Many provisions of the Act were not followed.

In DC14, only two out of nine WUAs took any initiative to conduct a meeting to obtain the managing committee approval. 16 By the end of May, proposals were finalised and the memorandum of understandings were signed between the WUAs and the Irrigation Department. The WUA presidents waited for the release of a 40 percent advance budget from the Irrigation Department to start the work. The WUAs and the department staff waited for the government announcements than preparing for the works (e.g. preparation of maintenance plan) to be carried out. This was because none of the WUAs had reserve funds. In the process crucial time was lost. The works were expected to be completed before the monsoon started in June. The time lost hampered the process of implementation and the quality of works. The actual works took place only from mid June to the end of July. This allowed hardly two months to complete the works since by mid of August the main canal in the study area is scheduled to be open.

As stated by the APFMIS Act, walk through surveys need to be conducted and works are to be prioritised in the month of January. The competent authority from the Irrigation Department should prepare the estimates by end of February and in the month of March the WUA General Body meeting should be conducted. In this meeting the financial expenditure for the completed year and the maintenance proposals for the following year should be discussed. Additional resources, if required, should be raised in April. These are formal prescriptions. However, the actual practice was different.

In actual practice there is lack of planning and dependence on government budgets to implement activities. Instead of waiting for the budget, the WUAs could have prioritised the works to be taken up and could have raised users' contributions in addition to the government funding. This would have provided necessary time to implement maintenance activities. Why did WUA leaders and irrigation staff wait for the government budgets? What has been the role of users in maintenance activities? To answer these questions, below I analysed the funds utilisation by the WUAs in the study area.

het Madhira-kanaal. Dit hoofdstuk laat zien welke relaties er bestaan tussen de organisatie van de irrigatie en locale vormen van sociale organisatie.

De hoofdstukken 5, 6, 7 en 8 zijn gebaseerd op empirisch veldonderzoek en analyse; tezamen geven deze hoofdstukken een antwoord op de belangrijkste onderzoeksvraag. Hoofdstuk 5 richt zich op de eerste arena van hervorming: de irrigatiewerken. Dit hoofdstuk analyseert het proces van uitvoering van de fysieke werken (operatie en onderhoud; kleinere herstelwerkzaamheden) na de introductie van PIM in de deelstaat, alsmede de rol van de belangrijkste actoren in het meebepalen van de uitkomst van het proces. Hoofdstuk 6 gaat over de tweede arena van beheer: de expansie van het geïrrigeerde oppervlak. Dit hoofdstuk concentreert zich op de overheidsclaim met betrekking tot het dichten van de kloof tussen irrigeerbaar en geïrrigeerd oppervlak. Hoofdstuk 7 behandelt de derde arena van de hervormingen: gezamenlijke inspectie en inning van heffingen (joint azmoish). Het hoofdstuk onderzoekt de rol en participatie van de Departementen van Irrigatie, Financiën en Landbouw, en van de WUA in een nieuw proces dat tot stand werd gebracht onder de hervormingen. In dit proces wordt het areaal dat in een plantseizoen irrigatiewater ontvangt gezamenlijk vastgesteld. Hoofdstuk 8 keert terug naar de kwestie van de sociaal-economische inbedding en de invloed hiervan op de hervormingen, met nadruk op het domein van de bureaucratie en de rol van de irrigatiebureaucraten, met name de veldstaf. Het concluderende hoofdstuk 9 geeft een samenvatting van de belangrijkste bevindingen van dit onderzoek. Na 2002 hebben nog vele veranderingen plaatsgevonden in de irrigatiesector. De Naidu-regering, die de hervormingen introduceerde, heeft de verkiezingen van WUAs, nadat deze hun eerste termijn hadden uitgediend, opgeschort. In 2004 kwam een regering van de Congrespartij aan de macht. Als gevolg hiervan kwamen er diverse veranderingen in de koers van het hervormingsbeleid. In een korte epiloog besteed ik aandacht aan deze veranderingen.

Deze dissertatie laat zien hoe hervormingsbeleid wordt geïnterpreteerd en veranderd door de bij het proces betrokken actoren. In het begin werd het hervormingsbeleid heimelijk tegengewerkt door irrigatiebureaucraten op de midden- en lagere niveaus. Zij begrepen dat het programma zich ten doel stelde hun macht te decentraliseren en beheersactiviteiten over te dragen aan de WUAs. Tijdens het proces sloten deze bureaucraten allianties met vertegenwoordigers van de WUA en locale leiders, en controleerden daarmee de arena's van hervorming van het waterbeheer. Lagere bureaucraten hadden succes in hun lobbyactiviteiten gericht op hogere ambtenaren en de regering, en behielden op die manier hun status in de irrigatiehiërarchie. De irrigatiebureaucratie wist tijdens het proces meer technische en financiële macht te krijgen en behield daarmee haar greep op irrigatiebeheer en processen van besluitvorming. In deze studie laat ik dan ook zien dat, in tegenstelling tot wat vaak wordt aangenomen, PIM in Andhra Pradesh niet leidde tot participatief beheer van irrigatie maar juist bijdroeg aan het behoud en de versterking van de gevestigde belangen van actoren in dit proces.

Samenvatting

Deze dissertatie behandelt het proces van opkomst van en politiek rond het hervormingsbeleid gericht op participatief waterbeheer (Participatory Irrigation Management; hierna PIM) in de Indiase deelstaat Andhra Pradesh. De hervormingen staan bekend als het 'AP (Andhra Pradhesh)-model' van irrigatiehervorming. Het model wordt gesteund door externe donorinstituties als de Wereldbank. In korte tijd wekte het PIM-programma van Andhra Pradesh ook grote internationale belangstelling. Het werd gezien als een succesvol model, vooral vanwege de aanwezige politieke wil en juridisch-administratieve steun, alsmede vanwege de 'big bang'-benadering van uitvoering ervan. Hierdoor heeft het programma zowel het denken over als het beleid met betrekking tot irrigatiebeheer in andere deelstaten van India en ook in andere landen beïnvloed.

Deze studie onderzoekt het beleidsproces rond het PIM-programma, dat sinds 1997 in Andhra Pradesh wordt uitgevoerd. Doel van de studie is om de aard en dynamiek van het beleidsproces beter te begrijpen, met name de rol van diverse actoren - watergebruikers, watergebruikersorganisaties (WUAs), politici en irrigatiebureaucraten - en de wijze waarop deze actoren invloed uitoefenen op beleid, handelingsopties en uitkomsten. Met deze studie hoop ik een bijdrage te leveren aan het debat over hervormingsbeleid in het algemeen en over hervormingen van het irrigatiebeleid in Andhra Pradesh in het bijzonder.

Deze dissertatie is het product van intensief veldonderzoek, uitgevoerd tussen maart 2001 en juni 2002, met aanvullende veldbezoeken in de periode tussen 2002 en 2004. Daarbij profiteerde ik ook van eerder onderzoek naar PIM, uitgevoerd voor het Gujarat Institute of Development Research in 1999 en 2000. De eerste fase was een verkennende survey van WUAs in de deelstaat en een gedetailleerde studie van WUAs die werden opgericht in het gebied dat wordt geïrrigeerd door het Madhira-kanaal onder de irrigatie-subdivisies Kalluru en Madhira. Ik heb studie verricht naar de uitkomsten van de strijd rond het hervormingsbeleid in een aantal cruciale arena's van het irrigatiewaterbeheer: irrigatiewerken, expansie van het geïrrigeerd oppervlak, en schatting van de heffingen uit irrigatie (ter plaatse *joint azmoish* genoemd) in het gebied dat valt onder genoemd kanaal. Daarbij legde ik de nadruk op de dagelijkse bemoeienis van WUA-leiders en vertegenwoordigers van de irrigatiebureaucratie op midden- en hoger niveau met de beleidsuitvoering 'in het veld'. De tweede fase van het veldwerk richtte zieh vooral op de beleidsactoren in de hoofdstad van de deelstaat.

Deze dissertatie bestaat uit negen hoofdstukken en een epiloog. Na het introducerende hoofdstuk presenteer ik in hoofdstuk 2 het theoretisch-conceptuele kader voor de analyse. De hierop volgende empirische hoofdstukken behandelen de belangrijkste vormen van beleidsuitvoering en daaraan gerelateerde arena's in het beleidsproces van waterbeheer. Hoofdstuk 3 behandelt de opkomst van het PIM-beleid in Andhra Pradesh. Hoofdstuk 4 introduceert de details van irrigatie en sociale organisatie in het gebied van

Utilisation of funds

The funds for irrigation works were allocated uniformly to all WUAs across the state on the basis of their command area. However over a period of time the volume of funds for minimum rehabilitation works released to WUAs decreased to one fourth in 2000-01 compared to previous years (see Table 5.3). The remaining of this section explores reasons for this decline.

TABLE 5.3: Funds allocation to WUAs for Minimum Rehabilitation works (Rs/ha)

Year	WUA	DC	PC	
1998-1999	247	247	123.50	
1999-2000	247	123.50	61.75	
2000-2001	61.8	24.70	24.70	
Total	555.80	395.20	209.95	

Note: No funds were made available during 1997-98 for irrigation works.

The irrigation department spent the funds allotted to Project Committees in absence of the committee

Source: Discussion with D.E.E of Kalluru irrigation Sub-division, June 2001.

During the year 1998-99 funds for both rehabilitation and maintenance were released. In April 1998, the government released a total grant of Rs.1,064.7 million to WUAs at the rate of Rs. 247/ha for the total localised command of approximately 4.4 million hectares. 17 During 1999-2000 the focus of works was entirely on minimum rehabilitation of irrigation structures. However, in the following year the allocations for minimum rehabilitation works also decreased. According to the government policy 2000-2001, the WUAs were expected to meet the costs of regular maintenance works from internal resources and from the share of cess collection that they receive from the concerned Revenue Departments.

Although the government allotted uniform funds on the basis of command area to all WUAs, not all the WUAs could utilise the available budget. Only a few WUAs in the study area made full use of the minimum rehabilitation funds in 1998-99. Some WUAs could utilise only part of the fund, as they could not complete the required quantum of works (see Table 5.4).

TABLE 5.4: Pattern of funds utilisation by WUAs in MBC in DC14 and DC15

		, DC.	LJ		
WUA	Command	0&M	Minimu	m Rehabilitatio	n (MR)
W U24	(ba)	(Rs)		(Rs)	, ,
DC14		1998-99	1998-99	1999-00	2000-01
169	2214	172820	733519	436489	111451
170	1497	307451	NC	290473	76039
171	1631	79548	NC	255459	46221
172a	1491	84691	NC	245268	72446
172b	1199	24000	NC	130738	38632
173	1803	NC	NC	163093	66905
174	2549	117114	592120	474079	105142
175	2447	232695	NC	451865	74446
176	2309	87169	140506	433711	101980
Total	17,140	11,05,488		28,81,175	6,93,262
DC15					
177	2214	232695	NC	260750	. 77139
178	3010	285678	NC	411052	146826
179	1651	105768	NC	291836	52141
180	2035	205894	NC	364334	48623
181	1951	186400	NC	269953	47281
182	1906	247772	NC	301460	75030
183	2610	284713	NC	460788	100676
184	2535	232975	NC	472660	114442
185	2457	207382	41048	473211	101100
Total	20,369	19,89,277		33,06,044	7,63,258

Note: NC-Not carried out

Source: Individual WUAs and Irrigation sub-division records

The fund utilisation pattern of WUAs shows that during the initial years about 35 percent of the funds were spent on earth works, clearing jungle weeds and removal of silt from the canals. The remaining 65 percent was spent on repairs of irrigation structures i.e. sluice gates, culverts and other small structures. This expenditure pattern raised the question of why more budgets were spent on irrigation structure rehabilitation than on maintenance works.

Funds for Works

I observed the implementation of works during the months of May to July 2001-2002. The discussions with the WUA representatives reveal that the interest to take up the works decreased with the decline of funds made available to the WUAs in subsequent years. The WUA tried to defend by giving reasons like non-cooperation from members. They even tried to prove that their inability to carryout works was due to many external factors, which are not in their control.

During the discussions I observed that the WUA presidents were unhappy that the funds made available to them were insufficient. They complained that the O&M funds were provided only for the first two years. They criticised that the delays in cess remittance from the Revenue Department did not allow them to carry out the works as planned. The WUA leaders argued that if the WUA share of revenues were made available by the end of April every year, they could have carried out the maintenance works according to the priority. The tail end WUA presidents expressed reluctance to take up the works because the funds were too little to take up any rehabilitation work. They argued that most of the irrigation infrastructure in their jurisdiction was in poor condition. The quantity of work in the tail end was large compared to the head reach WUAs and hence more funds were needed. The general claim from the WUA leaders was that the government did not allot required funds. The government announced Rs.1350/ha but only about Rs. 550/ha altogether was received by the WUAs. 18 The leaders also claimed that the irrigation staff spent huge budgets through contracting in the absence of Project Committees.

The local irrigation staff expressed their difficulties in motivating the WUA leaders to take up the activities. According to them in the absence of funds, they could not persuade the WUA leaders to take up the works. As a result the government intervened and issued orders that the competent authorities should encourage the WUAs to take up the works in the year 2000-2001. These orders imply that the top down pressure on the irrigation staff to implement irrigation works through WUAs. It also shows the target-oriented approach of policy implementation. During the field work I observed that in some cases the WUA presidents carried out the works just to maintain their working relation with the concerned department officials (see Box 5.1). In some cases the competent

authority took initiative and used their supervisory powers to implement the irrigation works. I conclude that many WUA leaders have less interest in implementation of works in case of lower budgets. In the study area there were no initiatives evident from WUA leaders to mobilise users' contribution to implement irrigation works. In addition discussions with users showed that majority of them were not aware of their role in WUA and also did not expressed interest in participation. ¹⁹

Box 5.1 Punyapuram Major

The president of WUA169 on Punyap uram major took the initiative to carry out some work at the request of the concerned competent authority. The president of WUA171 on the same major canal resisted taking up any activities. WUA171 could not utilise the budget of Rs.97,000 available for the year 2000-01. At the initiative of the concerned competent authority, another member of the WUA carried out works to the tune of Rs.46,000. The president claimed that his WUA did not receive any cess returns for the year and hence the funds available were too low compared to the previous year. He stated that there is no point of spending the amount whatever is available for the sake of it. The Government should give WUAs the freedom to decide. The budgets allotted to the WUA should remain with it. The government should provide autonomy for WUAs in decision-making. Though the president did not want to carry out the works, the concerned competent authority mobilised another member of the WUA and some work has been carried out. The WUA president was not interested because of the low amount of funds and the competent irrigation officer wanted to spend whatever budget available.

In this process, the government could not mobilise and ensure participation of users though the policy talks about it. In addition the lack of institutional co-ordination led to the failure of implementation of works as visualised by the policy. In the following section, I discuss the rationale of budget allocations, as WUA leaders argued that the funds allocation is not justified.

Is budget allocation rational?

In this section I show that the policy of uniform budget allocation has some inherent flaws. I present the case of three WUAs formed under Punyapuram major and their performance of works to support my argument. Punyapuram major canal originates at the head reaches of the Madhira branch canal (see Figure 5.1). I found that the needs of the WUAs even on a single secondary canal are different.

The length of the major is 15.3km. The three WUAs (169,170 and 171) formed represent the head, middle and tail reach of the major canal. The jurisdiction of WUA169 was demarcated from km 0 to 7, WUA170 represented from km 7 to 10 and the jurisdiction of WUA170 starts from 10 to 15.3km. All three WUAs reported that the funds were spent on O&M activities like desilting, scrub clearance, removal of jungle on the canal banks and strengthening of canal bunds.

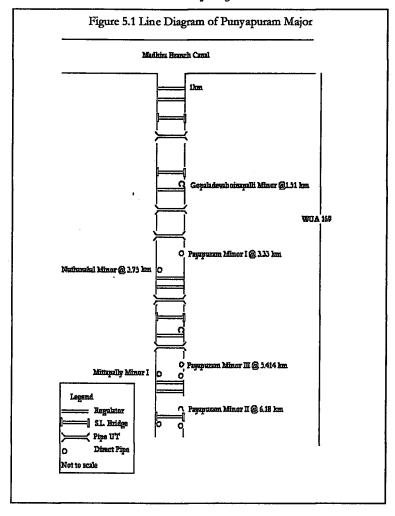
Pattern of Funds Utilisation

I found that only WUA169 located in head-reach could make use of the minimum rehabilitation grants in the year 1998-99. Many other WUAs in Kalluru sub-division could not complete the administrative procedures in time and hence could not implement rehabilitation works in 1998-99. In the following years the other WUAs were able to procure and spend budgets on rehabilitation activities (see Table 5.5).

TABLE 5.5: Irrigation structures and budget allocation (in Rs.)

WUA	Command Area	Total length Minor⋐ minor	Pines	Regulators	O&M funds Utilised	Minimum Rehabilitation Funds Utilised		
	(ba)	canals(km)	(No.)	(Na.) -	1998-99	1998-99	1999-00	2000-01
169	2214	17.15	5	4	172,820	733,519	436,489	111,451
170	1497	16.80	4	1	307,451	nil	290,473	76,039
171	1631	13.41	6	0	79,548	nil	255,459	46,221

Source: Section office, WUA records, Kalluru Irrigation Subdivision.



In the three WUAs the number of irrigation structures that need to be maintained varies from 5 to 9 each. Therefore, the infrastructural maintenance needs and funds required are not the same. The command area under each WUA is different, so they received different levels of funding. The WUA169 and WUA170 have more or less the same length of canal (minors and sub-

minors) under their jurisdictions. Since WUA169 has a bigger command area than WUA170, it received more funding. From the analysis it is clear that, fund allocation on the basis of command size is not rational when there are major differences in the length of canals and infrastructure to maintain.²⁰

The command size does not necessarily reflect maintenance needs. The tail end infrastructure was neglected previously and was in need of more funds to invest to bring them back to their original state. In this case, the tail end WUA171 received less funding compared to the WUA169 though the need for rehabilitation funds were high.

The present policy of allocating funds on the basis of command size, rather on the basis of real requirements needs to be closely studied. One can argue that the works that are carried out in the head reach WUA169 would be useful in pushing more water to the downstream. In that way the downstream WUA also benefits. I would not agree with this argument because it is not always true that the works in the head reach always beneficial to the downstream WUAs. For example in the case of Punyapuram major, the tail end WUA171 continues to experience water scarcities. One needs to look at the type of work that is carried out. The point I am trying to analyse is the rationality and outcome of allocation of budgets on the basis of command size. Of course, for the government it is easy to allocate funds administratively on the basis of command area, but some priority allocation and pooling of resources at secondary level would indeed make more sense. I further explain this argument.

I observed the pattern of fund utilisation among studied WUAs. WUA169 spent about Rs.0.91 million on rehabilitation and maintenance work in the year 1998-99. According to the president, the total budget was spent for manual work. According to the departmental estimate, the work created eleven thousand working days. In the following year, the manual works were replaced by constructing structures. Hence, ninety percent of the budget was spent on materials and about ten percent only on wage labour. Government has allowed using machines to carry out the earthwork, which further reduced the human labour component. The WUA representatives also opted for using machines rather than labour. They claimed that, if they involve labour they would not be able to complete the work within the short time available to them.

This evidence suggests that the policy of uniform allocation of funds to WUAs has limitations. The WUA leaders gave more emphasis on irrigation works compared to other activities of the WUA. Second, it led to a kind of comparison among WUAs i.e. the higher the WUA command, more the budgets and hence, the chance to manage huge funds. Some of the leaders shared that if the government funding continues to be on the basis of command size then there will be intense competition for the positions in the WUAs having larger commands. I also observed that more the budgets available with a WUA, more frequent the interactions between the competent authority and the WUA President. In addition, the process of works implementation raises questions on the consultation process, livelihood creation and opportunities to WUA strengthening.

My analysis of the three WUAs on Punyapuram major and their pattern of utilisation of funds suggest that uniform funding on the basis of command area does not match with the different maintenance requirement of the WUAs. The infrastructure assessment of the three associations shows that there are differences in the scale of irrigation infrastructure to be managed and maintained in each of these associations. For better management of the major canal network, co-ordination among the WUAs is a prerequisite. In the following section, I further explain how the WUA leaders used and resisted the government policy related to implementation of works.

The alliance

Compared to earlier years, the implementation of irrigation works became more complicated in 2001-02. The WUA leaders and irrigation staff did not show much interest in carrying out the works. There may be many reasons but here, I discuss three important reasons. The first, the change in availability of funds for irrigation works. Second, the WUAs were expected to meet their O&M expenditure from the share of the cess collection. The revenue department delayed in depositing the share of cess collection in WUA accounts. Third, the government was not ready to pay the 40 per cent of the estimated budget as an advance to the WUAs. In addition, the government asked the WUAs to deposit the 15 per cent contribution collected from the users.

There were discussions between the WUA leaders and the concerned irrigation competent authorities on the possible ways to carry out the irrigation works. The leaders openly shared that they were unable and unwilling to raise the contribution from the water users.²² The leaders were very reluctant to stress users' contribution as it was their last year in the WUA office and elections were to be held in the near future. Therefore, it is clear that they did not want to displease the members by asking them to contribute.²³ I argue that by not motivating users to contribute, the WUA presidents want to be in a safe position. Firstly, they remain popular and secondly, are not questioned by members. In the process, the policy objectives are not met but the individual interests are safeguarded.

I tried to understand users' contribution in WUAs during the past years i.e. 1998-2000. The discussions with users show that they were neither asked to pay nor mobilised to participate. In this context, the WUAs found two ways to solve the issue of lack of users' contribution. The WUA leaders from Nidanapuram major shared that the competent authorities do understand their problems. There is a symbiotic relationship established between the irrigation staff and WUA leaders. For example, users' contribution is mandatory and should be recorded in the records to release the government budget to the WUAs. In most WUAs, the president (himself) deposited the money in the name of users' contribution and carried out the works. The irrigation staff knew the fact but cooperated by recording it as the users' contribution. Now the question is how the money that is deposited in the name of users' contribution is retrieved and paid back. Again, the irrigation staff helped in escalating the estimated costs. In some cases the money was later adjusted by increasing the total volume of the work done by the person on behalf of the WUA. An engineer argued that the adjustment was done to convince the WUA leaders to carry out the works.

I observed another practice to record the mandatory users' contribution. In the records, a certain part of work is shown as shramadan (voluntary contribution of work) by the users, as this is approved under the Act. However, in later years the volume of work decreased, as the budgets available declined. In this situation, helping WUA leaders by increasing the volume of work became difficult for the irrigation staff. As a result, interest in taking up works diminished and WUA leaders resisted taking up the works.

As a result, the government changed its policy. It made arrangements to release twenty five percent costs of the work estimate as a mobilisation advance by deducting the fifteen percent users' contribution. A few WUA leaders responded positively to this new arrangement.

The WUA presidents on MBC were very critical regarding the frequent changes in the Government orders. They claim that the government allocations for MR and O&M works differed from year to year. In 1998-99 the government sanctioned Rs 23 per cubic meter. In the following year the government fixed Rs.16.24 per cubic meter of work. The department deducted the 15 percent of local contribution and paid Rs 13.50 per cubic meter to the WUAs. Since they could not raise the users' contribution they executed the irrigation works within Rs13.50 in that year. They further said that they have to manage expenses that cannot be accounted within the same budgets. For example, the expenses made for the food and drinks during the officer's visit. It further reduced the budget for the actual work. Though the APFMIS Act empowers WUAs to raise alternative resources, the evidence suggests that the WUAs have become largely government dependent and funding driven. They did not find alternative ways to raise resources required for irrigation works.

The criticism that 'rent seeking practices among the irrigation staff exist' gathered some evidence from the personal alliances built between the irrigation staff and WUA leaders. In fact this is unavoidable when the Act provides the power to approve the works carried by the WUAs to the competent authority. In the process, the policy objective of promoting users' participation in irrigation works and enhancing quality of service was defeated. In the absence of accountability at WUA level, a president-competent authority nexus can easily occur. On the basis of field evidence, I see that there are no indications of creating self-governance mechanisms in WUAs in the study area.

Bureaucratic control

The competent authorities managed to delay the process of bill payments to the users' associations though they favoured WUA leaders while carrying out works. WUA leaders shared this as a problem during individual discussions on the process of works.

The reason for such delays in the past is not only administrative sluggishness but the expectation of a rent in exchange. The following example shows how the state government intervened to curtail this practice. The government sent a memo dated 9th July 1998 to all Chief Engineers and Superintending Engineers stating:

It has come to the notice of the government that funds for works executed by WUAs under O&M and MR have not been paid to them. Only, the first instalment has been released, that too in some cases with great difficulty. This is a very serious matter and the Government will take very stern action against the officials who do not act with promptitude in the release of funds for the works already done...this is most urgent. The Chief Minister will be reviewing this on 16th July and information has to be obtained from all districts without fail (Memo No. 28019/ APERP/ 98-1 dated 9.7.1998).

Another, Government memo no 39346/APERP/98-2 dated 22 December 1998, issued by Mr. Dinesh Kumar, Ex-Officio Secretary, issued on the same date stipulates that the Executive Engineers (EE) of the division concerned shall ensure that all final bills of WUAs and DCs shall be settled on top priority with in the next two weeks.

The above government memos shows the determination of the state government to implement the irrigation reform policy and make irrigation bureaucracy function according to the rules. At the same time the government played a supervisory role for the bureaucracy. This led to interdependency between the field level bureaucrats and WUA leaders and in the process resulted into a win-win situation. In the following section, I further analyse the enhanced powers of irrigation bureaucrats in the arena of irrigation works under reform policy.

Enhanced powers

The objective of the reform is to reduce the role of the Irrigation Department and transfer the functions to WUAs. In practice, the APFMIS Act enhanced and legitimised the powers of irrigation bureaucrats to supervise, monitor, and provide technical and financial clearances for the activities carried out by the WUAs.²⁴ The irrigation bureaucrats were empowered:

- 1) To sanction higher volume of work estimates and budgets than they have in the pre-reform period (see Table 5.6). The lower level engineers did not enjoy any financial powers in the pre-reform period. An Assistant Engineer can now approve works worth 50,000 rupees.
- 2) To supervise that no alteration or change is made in the irrigation system, with reference to the approved hydraulic particulars.
- 3) To accord technical clearance to maintenance works as per powers delegated according to the Act.
- 4) To record the measurements for the work done and recommend the bills for payments. These provisions were aimed to reduce the time to procure administrative sanctions and increase work efficiency of the department.

The government issued special orders and enhanced the powers of the Executive Engineer and Superintending Engineer to accord technical sanction to plan works up to Rs.4 million and Rs.10 million respectively in cases of emergency. The Act also delegates the powers of the Commissioner of Tenders to the concerned Chief Engineers to finalise tenders for plan works up to Rs 10 millions. The I&CADD is also permitted to appoint suitable engineers as project administrators with delegated powers (upto the level of Chief Engineer) to ensure speedy execution of works.

TABLE 5.6 Competent authority and financial powers

_	-
Rank of the Competent Authority	Financial powers for approval (in Rs)
Assistant Executive Engineer (A.E.E)	Up to 50,000
Deputy Executive Engineer (D.E.E)	50,000 to 1,00,000
Executive Engineer (E.E)	Up to 1 million ²⁵
Superintending Engineer (S.E)	1-4 million

The irrigation bureaucrats have effectively utilised the provisions of the Act (see Chapter 8). The devolution of powers stated in the policy did not lead to substantial changes in bureaucratic procedures. I observed delays in the payments to WUAs as a mechanism to seek rent. The government had to intervene to make sure that the payments to WUAs will be done in time.

The irrigation department has continued to function in a hierarchical way. As a result there are delays within the department to clear or sanction proposals and funds. The competent authorities argued that the delays in payments to WUAs are not only due to the hierarchy of their department but also due to the Pay and Accounts office. I came across incidents when a competent authority and the concerned WUA president visited the Pay and Accounts office to speed up the process of bill payments to the WUA against the works implemented. This process confirms that reforms in one government department may not lead to desired results, as functioning of government departments are interlinked.

Users' Participation

The field evidence 2001-02 reveals that neither the WUA leaders nor the competent authority provide adequate attention to involve users in implementation of irrigation works. The higher-level state bureaucrats guided the whole exercise from the state capital.²⁷ The Irrigation Department played a more active role than the local WUAs in implementing the state reform policy. In the process the users were excluded. Discussions with WUA members showed that the majority of them were not aware of importance of their role in the implementation of irrigation works. On some occasions, users who attended meetings reported that neither they were asked to contribute their labour nor budgets declared for the works carried out. We only knew that there would be some repairs in our canals,' said farmers of Dendukuru WUA184. The WUA members from Gosaveedu and Laxmipuram villages in WUA171 shared that the meetings were held to fulfil a legal requirement, rather than being an effort to seek their involvement to participate in the works. From the evidence, I conclude that at the end of four years of the reforms, the WUA Presidents replaced the earlier contractors but the old practices remain unchanged. The government emphasis was clearly on achieving the set targets. The focus was on spending the budgets rather than on creating an environment for users to participate.

Manipulation of irrigation structures

The reform policy objective is to facilitate users' participation in decision-making process resulting ownership of irrigation structures. In the above sections, the field evidence showed that users were not consulted and were left out in the process. As a result, users did not show the ownership of infrastructure as visualised by the policy. During the field study I came across incidents of manipulation of irrigation structures. In this section, I discuss incidents that took place on Punyapuram and Utukuru majors. The cases suggest that the WUAs failed to regulate the users' practices. Thus, the manoeuvring of irrigation structures continued.

Payapur Village

During a group discussion with farmers in Payapur village, the issue of a newly constructed channel in the first reach of Punyapuram major came up. The farmer members criticised the digging of the new channel by the WUA169. According to them the WUA president will be most benefited because of the new channel, as this would serve water to the mango plantation and rice plots that belong to the WUA president and his kin. In my next visit to the WUA president, I discussed and tried to understand the reasons for the construction of the new channel. During the discussion Mr. Kotaiah, the president of WUA169 referring to the construction of new channel shared,

Some farmers have misunderstood me regarding the construction of the channel, as he was one among the users. The decision for construction of a new channel (similar size of a sub minor) was approved by majority of the users in the general body of WUA conducted in 2001. He explained that the farmers who are criticising him used to manipulate the first cross regulator on Punyapuram major. They used to push more water into the off-take located just above the regulator. As a result there were conflicts between the farmers below the regulator and the farmers below the off take. The downstream farmers used to block the off-take with stones and other material. To solve this problem the particular off-take was shifted further upstream of the regulator and a new channel was dug. The farmers below the old off-take were not happy with this and criticise me (Field notes, February 2002).

After listening to the farmers and WUA president, I discussed with the concerned competent authority to know more details about the process. His opinion was also the same as the WUA president. I asked him, "whether digging a new channel was the right solution to address the off-take tampering or not?" "May be not, but decided by the WUA," replied the officer. In this case the provisions of the Act was used to dig a new channel (though there was resistance), at the same time failed to implement other provisions of the Act that promote users' participation.

Construction of irrigation drop structure

The second account is about the construction of a drop structure on the Punyapuram major. The work was completed in 2001. In Govindapalli village, the farmers objected the construction of the drop structure on the pretext that it would reduce the flow to their fields. Irrespective of their objection, the construction of the drop took place by a few WUA members on behalf of the WUA. The farmers, who had objected, tampered the newly constructed structure. The person who constructed the drop approached the Irrigation Department to file a case against them. However, the department did not file a case and suggested that the WUA should take up this issue. The WUA neither filed a police case nor fined the farmers who were involved in tampering. When I enquired about it with the WUA president, he was of the opinion that the tampering of the drop structure has political reasons rather than technical reasons of water supply. The person who constructed the drop belongs to another political party than the person who tampered the structure and has some old problems. Thus the drop structure became a means to express the dissatisfaction. This case shows how irrigation structures become signposts of personal conflicts. The ultimate result is that the scarce WUA resources are wasted. The structure had to be repaired again and again by using WUA funds.

Rangambanjar Subminior

The third example on Punyapuram major is about an encroachment. In the tail reach of the Rangambanjar sub-minor, a

farmer from Rangambanjar village owns a plot of 7ha. The plot is divided into two parts as the sub-minor passes through the plot according to the original design. In practice the farmer encroached on the sub-minor and leveled it. The farmer has developed a mango orchard on this plot. During the discussions, I came to know that the other tail end farmers made representations to the Irrigation Department but nothing has happened. The farmers could not do anything as it happened long before the formation of WUAs. Their complaints never got the serious attention of either the Irrigation Department or the Revenue Department, claims Krishnayya a resident of Nutankallu village, who owns a small plot under the sub-minor.

After formation of WUAs in the year 1997, the WUA169 carried out O&M works in its command area. As a result, water started flowing into this sub-minor in the year 1999-2000. The hope of receiving water increased once again among tail-end farmers. About twenty farmers from Nutankallu village own small plots under this sub-minor. But due to the encroachment of the part of the minor, water in the sub-minor would not reach their plots. Instead of taking up the issue of encroachment with the WUA, the farmers made an alternative plan.

As an alternative plan, the Nutankallu village farmers lobbied for a separate sluice from the Punyapuram major to the existing Nutankallu minor. The farmers secured a recommendation from the local MLA in 2001. At that time the main road construction was going on. The farmers raised contributions and bought cement pipes. They could influence the road contractor and laid the pipes under the road with his help. The pipes were connected to the Nutankallu minor. The construction of a new sluice on the Major canal to divert water through the newly laid pipes into the old minor is yet to be done. The farmers tried pressurised the department to sanction the new sluice structure. I made an enquiry with the farmers regarding the reason for discussing the matter directly with Irrigation Department than discussing the issue in the WUA meetings. Their answer to my query is that once the Irrigation Department is positive they can easily pass a resolution in the WUA. The department told them to wait till the end of the 2001 rabi season to avoid protests from the downstream farmers. The point is that the WUA and its members did not question the farmer who encroached the minor, but mobilized other ways and sources to build additional irrigation structures.

Utukuru Major

The farmers lost their Kharif crop in 2001 due to scarcity of water in MBC. As a result, there was an increased demand for water during the Rabi season. On 7th December 2001, irrigation staff from Madhira irrigation sub-division lowered the position of the main shutter of Utukuru major to supply water to other major canals downstream. Farmers objected this action of the department. The following day, farmers from the middle and tail reach of Utukuru major tried to tamper with the shutter. I noticed that the president of WUA170 was also present while farmers were negotiating with the department staff to lift the shutter. The discussions took place for a long time. Finally a decision was made to lift the shutter after two days i.e. on 10th December. The president of the WUA who was present there did not intervene in the negotiations. When I asked him about his laissez-faire role, he replied that in this case he could neither stop farmers nor influence the department officials. In spite of the agreement between the department and farmers, few other farmers tampered with a drop structure at 16km of MBC (upstream of Utukuru major) on 9th December. It took about ten days to repair the structure. The estimated cost was about one hundred thousand rupees.

During the Rabi season I observed repeated incidents of tampering irrigation structures to procure water. The expected coordination among the WUAs to share the available water in MBC was not visible. It was evident in some cases that the farmers do not have confidence in their WUA as an organisation. In some cases the WUA leaders are part of such tampering attempts. The Distributary Committees also did not take interest in addressing this issue. The irrigation staff claimed that unrecorded incidents of tampering increased after the formation of the WUAs. The reason according to them was that there was no fear of departmental action and punishments. There is no record available to study the tampering cases because many of them were never reported officially.²⁸

It was evident from the above cases that the formal arrangements were amended and adjusted in actual implementation. There was no effort to prepare a maintenance plan and funds were utilized mostly for rehabilitation works. The WUA failed to raise internal resources and WUA leaders and irrigation staff did not facilitate the users' participation in works

process. In the following section I discuss discourse at the level of WUA leaders regarding the lack of human resources to manage the irrigation works and other WUA activities efficiently. I present a summary of formal arrangements according to the Act and actual practices in field in Table 5.7.

Human Resources

In addition to decreased levels of funds, the WUA leaders in the study area put forward another argument about lack of human resources that has resulted inefficient functioning of WUAs. According to the APFMIS Act (under rule no 28), WUA is expected to maintain about ten types of records and the records shall be opened for information to members.²⁹ I did not found even a single WUA in the study area that maintained all the records prescribed by the Act. When I asked about maintenance of records, the WUA presidents stated:

Our position is honorary and not paid. The government cannot expect us to maintain all these registers by ourselves. To maintain these records the government should provide a person on full time basis from the department or empower the WUA to appoint a person on payment basis. In absence of these arrangements, it would be very difficult to maintain all the records.

In absence of right documentation of WUA activities of previous years with WUA, discussions with the WUA users and leaders became the main source of information to understand the functioning of the WUAs during the initial reform period.

I tried to find out the reasons for not maintaining the prescribed records. Absence of work delegation within the WUA was one of the reasons. Many WUA presidents seem not to want to delegate activities to other TC members in the WUA. The reason could be that the Presidents wanted to control WUA activities. Hence, in the absence of active participation of TC members and various other committees, maintaining these records by a WUA would be not practical. It shows that many activities of the WUA were centred on the WUA president. The discussions with TC members confirm that they were not encouraged to participate in WUA activities.

Activity	Pre IMT	The IMT Policy Prescription	The Practice
Identification of works & prioritisation of works	By the irrigation department, political influence and choice of the department staff	WUA conduct walk through survey to identify maintenance needs. Prioritisation of the works by the Managing Committee and provide administrative approval. Technical clearance by the Competent Authority (C.A).	The choice of the location is decided by the WUA leaders (mainly represented by WUA president) and the concerned competent authority. In some cases local politicians influenced the choice.
Preparation of estimates	C.A will prepare the estimates, which are	Preparation of estimates by the C.A, estimates are submitted to the WUA	The estimation of works is only conducted after the government announcement of funds made available to

approved by higher level officers Notification Local news papers and display of Department Notice

works boards

By the ID through works contractors or nomination

Panchayat office and important centres of the village like the market yard WUA visualised as a corporate body. The

WUA notifies the works in the WUA office,

president of the WUA signs a MoU with the irrigation department. The WUA representatives cannot take up the works on their personal name.

publicity observed regarding the works to be taken up and about completed works.

the WUAs, resulting in loss of time.

The time taken to complete works has come down. In

C.A did not show any resistance to this practice.

No such practices are evident. The works finalised will be

noted in the minutes book and in some cases informed

to the TC members and other users informally. Lack of

practice, WUA leaders in the name of a third person are taking up works. The users are not encouraged to take up the works on the grounds that they do not have enough resources to invest and skills in carrying out works. The

Table 5.7 Continued

Execution of

Costs of works	Tender system, insurance costs, escalation costs and variation costs	WUA carry out the works on the basis of estimated rates by the Government. No other hidden costs are expected.	Cost of works are escalated about 15-20 percent to meet the voluntary contribution and other costs.
Record of works	By the department staff, usually by the lower cadre	C.A of the WUA, records the measurement details in Measurement Book. The works sub committee ratifies the quality and approves payments to be made.	C.A will record the pre and final measurements. Delays reported in recording the work. Rent seeking practices are evident due to continuation of old practices.
Quality of works	The higher officials in the department inspect, in addition quality control officers further check the	WUA supervises quality. Conduct Social Audit to ensure quality and transparency in WUA activities.	The department officers supervise and have control over ensuring the quality of works. Users have not participated actively in the process. Concept of Social Audit does not receive much

quality and volume of
works recorded

Transparency
The records are with
and user
department and not easily
participation
accessible to outsiders for
duality and volume of
works recorded

Records should be made available and for
verification to any member by paying a small
fee to the WUA.

verification

ailable and for In many cases the records are with the CA. There is no evidence that records are actually verified by the users.

priority.

I conclude that the human resources available within the WUA were not utilised to achieve common objectives of the association. The reason is that the WUA president sees TC members as a threat to his/her position. I further provide an example on how the WUA leaders depended on external agencies to complete the financial accounts.

At the end of the financial year, in March 2002, there was pressure from the government on WUAs to submit the audited accounts. As a response the WUAs from the study area hired the services of a chartered accountancy company to complete the financial accounts and procedures. The company employees travelled from Vijayawada city to Kalluru (i.e. about four hours by bus) and stayed for about two weeks. They prepared the books and audited accounts of the WUAs to meet the official requirements. Individual WUAs paid for the services at the rate of thousand rupees per year to procure an audited statement. The irrigation subdivision office offered facilities like tables, computers and accommodation for the company. I knew at least a few TC members and local people working in agriculture co-operative banks who could deliver the same services, if they were requested or paid by the WUA. The incident shows that the WUA leadership does not want to share information about financial transactions with other WUA members. The WUA leaders did not follow the rules prescribed in the Act, but found other ways to meet the legal requirements, with the help of irrigation staff.

In addition, there was no emphasis from the department to ensure the participation of the committee members in WUA activities. These evidences indicate that the WUAs could not implement irrigation works in a participatory manner. In the reform environment, personal networks between WUA leaders and the irrigation staff were established. With the enhanced powers and through networking, the irrigation staff could retain their control in implementation of irrigation works.³⁰

5.6 Conclusion

The field evidence shows that the policy objective of better maintenance of irrigation infrastructure through users' participation was not achieved. The policy was obstructed, mended and contested in the process. The WUA, while implementing irrigation works neither focus much on generating full participation of users nor try to generate ownership feeling of the system among the users as emphasised by the Act. There was an excessive emphasis on achieving quantitative results by the state politicians and higher bureaucrats. As a result the reform programme became target oriented, rather than need-based and user-driven. This fact is resonated with the field level irrigation staff.

The WUA leaders did not create favourable conditions to mobilise users' involvement in decision-making and physical labour contribution during canal repairs. In the process, the WUAs failed to perform as autonomous bodies as visualised by the policy. As a result, the role of the WUA, especially that of WUA president was reduced to implement works in a contract fashion than his expected role as WUA leader.

The WUA leaders failed to raise internal resources to meet even a part of the maintenance requirements. They rather depended excessively on government funds. Interest in taking up irrigation works decreased with the decline in government funding. In the process, irrigation staff could retain their control using enhanced powers and through building personal networks with WUA leaders.

The evidence of continuation of past practices of bureaucracy, political aspirations of the WUA leaders and lack of users' participation offer insights into how reform policy is contested by participating actors³¹. As a result, the AP reform still remains stuck in the old forms and procedures, despite the new institutional arrangements advocated through the Act.

The policy relevance of this chapter is that, reforming irrigation system management is not only a question of providing financial resources and incentives for WUAs, but it requires addressing the issues of control over resources and participation in decision-making processes as well.

Notes

¹ Political parties in power prefer new projects to extend their vote base and to benefit from the huge construction contracts that are involved. See Wade 1982, 1985 and Ramamurthy 1995 for a detailed work on this issue.

² For reviews of PIM impact studies discussing critical factors for success of PIM reforms, see Vermillion 1997, 2000; Svendsen et al. 1997.

³ Maintenance is the set of services which slows the deterioration of a

facility, whether caused by use or aging, sustaining its capacity to provide a specified level of valued goods or service (Svendsen and Huppert 2003: 29). Deferred maintenance can be described as the maintenance activities that are pending or delayed until a later period i.e. deferred to the future. There is general agreement amongst irrigation experts that deferred maintenance is one of the most important determinants of performance deficits in irrigation. The higher the deferred maintenance, the larger the rehabilitation needs.

- ⁴ Huppert et al. (2000) suggest, using this approach one can 'enter the realm of theories on exchange relationships and incentive structures-potentially including topics of institutional economics like contract theory, property rights theory, principal- agent- theory and theories on collective action' (2003:53). The authors argue that irrigation works should be treated both as a technical activity and a service provision, aimed at keeping irrigation infrastructure in good condition and at a desired performance capacity.
- I recognise the difference between rehabilitation and maintenance activities. As a practice large budgets are spent on construction and rehabilitation activities while comparatively smaller budgets and less attention is paid to operation and maintenance activities. Maintenance activities tend to be postponed. Maintenance activities do not attract external budgets, as Donors seem not to be very concerned about maintenance question, since they do not finance maintenance budgets (see Svendsen and Huppert 2000). But there is a linkage between these two separate but often interlinked activities. The AP reform programme focused both on minimum rehabilitation and maintenance activities with varying focus. Hence I decided to present the issues related to both rehabilitation and maintenance activities in a single chapter and refer to them as irrigation works.
- ⁶ The APERP-irrigation component is basically designed as a WUA support programme. Hence the farmers' organisations themselves undertook the minimum rehabilitation works with respect to irrigation schemes. To rehabilitate and modernize the existing irrigation systems, the state government obtained financial assistance (Rs.148145 million) from the World Bank under the APERP (Irrigation Component) to achieve the following objective of placing the irrigation sector on a sustainable basis through: i) Involvement of farmers in irrigated area, iv) Improvement of irrigated agriculture productivity, v) Strengthened cost recovery for operation and maintenance and vi) Expansion of effectively irrigated areas in existing systems (Raju and Sharma 2003:7).
- ⁷ In the year 1994-95, a total of Rs. 7,632.9 million was allocated to irrigation and flood control. That is 31.11 per cent of the total state plan expenditure of Rs. 24,534.7 million. Similarly in 1998-99 a total of Rs. 9,314.90 million were spent for irrigation and flood control i.e. 18.73

percent of state plan expenditure of Rs. 49,719.74 millions.

- The debt servicing accounted for about 50 percent of the total expenditure on major and medium irrigation. Break down of plan and non-plan expenditure shows that the entire interest burden is put in the non-plan (Reddy 2003). In addition staff costs accounted for 50 percent of the expenditure under the head of irrigation works (i.e. construction, repairs etc). As a result, only about 30 percent of the total budget was actually available for irrigation works (Reddy 2003a, 2003b).
- ⁹ Preventive maintenance involves timely efforts to prevent damage to structures. Regular maintenance (regular and ongoing activities) needed to maintain the system. The activities are repetitive in nature and carried out before each season. Regular maintenance works include lining, modifying outlets or creating new ones and construction of new structures in order to rehabilitate and improve the system. The third type is breakdown or incidental maintenance caused by canal breaches, cyclones and floods, leading to major repairs. The costs for this category are high. The longer the work is delayed, the higher the costs. The WUAs are expected to maintain a 'reserve fund' to meet these unexpected high costs. The fourth, deferred maintenance activities are those that got accumulated over years.
- The rules under APFMIS Act, 1997 were still under consideration of the government at that time. Permission to use corpus funds made possible through the government order dated 12.8.1997 no 994, issued by I&CADD (CAD IV) by C.S.Rao, Principal Secretary to the Government.
- ¹¹ Mr. Ch. Veeraiah, retired S.E shared that it was on the suggestion of Mr. K. Sriramakrishna, advisor to the Government that a Committee of Senior Engineers was constituted to evolve a formula on the per acre grant to be fixed. The suggestion was made to provide more flexibility to WUAs so that they could decide the priorities and take up the works. The procedures for undertaking maintenance grants also needed to be simplified dispensing with the need for following technical sanctions resulting in delay (Personal communication).
- ¹² With the assistance from the World Bank Rs1.181 billion were provided in 1998 for minimum rehabilitation works.
- ¹³ Of the 17,869 works taken up by WUAs across the state, 2496 works were executed by DCs and 2522 works by the I&CADD through tenders and contracts.
- ¹⁴ Maintenance refers to low-level expenditure on operation and maintenance activities. Funds are provided initially for the maintenance works for WUAs by the state. The WUAs are empowered to raise internal and external resources to pay for the maintenance charges. For example according to the Act, the WUAs are entitled to receive a share from the revenue (cess) collected from their jurisdiction.
- ¹⁵ I prepared these steps on the basis of various Government Orders and APFMIS Act of 1997, GOAP.
- ¹⁶ To my surprise the meeting in one WUA ended with seeking signatures

in the book where the decisions/minutes of the meeting were written before the meeting was actually held. The book was sent to the managing committee members who were absent in the meeting for their signatures. ¹⁷ Government order Ms No 64 dated 02.May 1998

¹⁸ J. Raymond Peter, I.A.S, speaking at the occasion of Fifth International Seminar on PIM reported, "Rs. 600 Crores (6 billion rupees) World Bank loan to improve 3.45 million ha under APERP as a minimum of Rs 1,350/ha was progressing smoothly". He also announced that out of 13 lakh acres (0.53mha) to be bridged in the tail end areas 10 lakh acres (0.4 mha) was covered during the previous two years at a cost of Rs.400 crores (i.e.4 billion rupees). The remaining 121,457 ha would be covered in the next three years, when the project would come to an end" (source: my own participation in the workshop and the Press note dated 15 December 1999 in *Decean Chronicle* daily newspaper).

¹⁹ The most common view stated by the farmers was that there was no need for us to pay the contribution when the Government is providing funds for irrigation works. They also stated, 'we do not know about the funds and how they are being spent. Eventhough we do not contribute. Our WUA President is able to get the works done. We never paid any contribution and hence we never questioned the details of the works done'. To provide another evidence, the GIDR-IWMI study documents that out of 359WUA member households interviewed in AP, only 21 households i.e. 5.8 percent reported that they had participated in R&R work (see Parthasarathy et al. 2001).

²⁰ I do not know the rationale behind the government's decision to reduce the size of the WUA to a maximum of 2500 acres (1012ha) under the major and medium irrigation projects, by amending the APFMIS Act in 2003. As a result the number of WUAs on a single canal increased. The total number of WUAs in the state also increased. See Chapter 10 for detailed discussion.

²¹ As per the department, 2.5 cubic meters earthwork can be done per person and Rsa.21.50 will be paid per cubic meter work.

²² I refer to a similar observation from Daram Sammakka, an active WUA president of Ellabotharam from Telangana Region. She shared during an interview conducted in 1999 that the collection of 15percent as farmer contribution was very difficult to achieve because no farmers are willing to spend for irrigation works on the top of the water cess that they are being paid to the government.

²³ The majority of the WUA leaders expressed that raising contributions from water users makes them unpopular. They stated, 'as elected members we could not afford to do that. It is the department duty to collect the fees. If we insist on the issue of contribution from the members, their participation in the WUA meetings would even be lower'. It can be concluded that majority of WUA leaders do not want to be involved in seeking users' contributions. In Chapter 7, I further discuss

the politics of cess collection and the role of WUA leaders.

- ²⁴ Irrigation bureaucracies in the Philippines, Indonesia and Mexico could successfully maintain the construction orientation and the flow of funds for those activities even under reforms (see Mollinga and Bolding 2004).
- ²⁵ Earlier the upper limit for the approval for the EE was Rs.500,000. This was amended by the Government memo no 9490/Cod/98-1 dated 20.8.1998, issued in concurrence of Fin. Plg. (PW) Dept. vide their U.O No. 2130/F6 (1)/98 dated.31.3.98.
- ²⁶ To understand bureaucratic corrupt practices see Myrdal (1968; 1990). He pointed out that corrupt officials may instead of speeding up, actually cause administrative delays in order to attract more bribes. Myrdal saw the roots of corruption in developing regions such as South Asia in the remnants of the traditions of pre-modern societies, where presents, tribute and other social obligations were a customary and normal part of social networks (also see Shleifer and Vishny 1993).
- ²⁷ Commenting on the process, the competent authority on Nidanapuram major shares that there was an attempt at thorough monitoring from the government but at a distance. The Chief Minister conducted videoconferences each week with higher-level bureaucrats to monitor the progress of the works undertaken. In addition it was evident from the secondary sources that the government released several orders in time to expedite the implementation of works. From the discussions with the implementing irrigation bureaucrats at local level it was clear that they were working under pressure.
- ²⁸ Farmers block the keyholes of the shutters and regulators with iron and other material so as to obstruct the operation. In some cases, the iron rod that connects to the shaft below is bent so that it will be difficult to close the shutter. In many cases bending the shutter plates was found making them difficult to operate in the slot. Breaking the concrete around the iron base makes the shutter operation impossible.
- ²⁹ This rule was amended (through a G.O Ms. No 21 issued on 30th Jan 1999) and an additional three registers were added. Currently a WUA should maintain the following registers: 1.Inventory Register (Form I), 2. Register for vacant lands and buildings (Form II), 3. Register for Income on miscellaneous property (Form III), 4. Register of Machinery (Form IV), 5.Membership Register: Both with voting Rights and without voting rights, details of command Localised/Non-localised and area cultivated (Form V), 6. Water flow Register: Canal gauge details (Form VI), 7. Sanctions Register: Administrative and Technical Sanctions and Payment details (Form VII), 8. Cash Register: Cash Book details (Form VIII), 9. Special fee and Tax collection Register (Form IX), 10. Minutes Register: General Body and Managing Committee meetings (Form X) and 11. Separate register for Committees (Form XA).
- 30 The contractor system reappeared to carry out irrigation works in the

year 2002-2003, as the five-year term of the WUAs was completed in June 2002. The irrigation department directly implemented the irrigation works by calling tenders and through contracting system. The irrigation department in some places made a request to the *Gram Panchayat* to pass a resolution to take up the work in the functional absence of the users' associations to avoid allegations of corruption.

31 During my revisits to MBC in 2003 and 2004, I observed that in the subdivision, the irrigation works are being carried out on the basis of tender and contract system in absence of functional WUAs after July 2002. The system of contracting existed before the WUA were formed in 1997 in the state. In absence of the functional WUAs, the MoU is between the irrigation department and the contractor. The concerned irrigation officer will put a signature on the MoU on behalf of the department as well as for the WUA. The rationale is that the contracts were given with the consent of the WUAs. I found that no irrigation works were taken up at the WUA level in Kalluru sub-division earmarked for the 2002-03 financial year. However, Project Committee works were carried out on the main canal and the branch canal by means of the tender system. As a result the irrigation officers were busy supervising the works during 2004 summer. The WUA leaders strongly opposed this move but could not stop it. There was no sign of resistance from irrigation bureaucracy for not activating the WUAs by the state. The whole atmosphere in the irrigation offices seemed as if nothing has happened in the last five years.

The Myth of Irrigation Expansion

..in the last five years, three years we suffered with drought. Because of our concentration we spent nearly 9,500 crores in irrigation. Thereby we developed nearly [1million] acres of additional ayacut and [1.8 million] acres of gap ayacut...

Chief Minister, N.Chandrababu Naidu (2003)¹

6.1 Introduction

A critical justification for reforms was improved water supply in irrigation systems generally not operating at full supply. In this chapter I analyse the claims made in terms of irrigation expansion by the state government.

Earlier studies conducted in irrigation described the problems of data collection by different agencies, lack of standard formats, lack of systematic collection practices and inconsistency, inaccuracy and under-use of data (see Vaidyanathan 1999, Rawal 2001, Guilmoto 2002). Apart from some of these limitations, in the case of AP, I argue that irrigation has been used for political gains at the state level. Also there are evidences for manipulation of data at different levels to protect individual interests: for instance, bureaucrats tried to protect their career related interests and political executives used the data to justify their policies.

In the first section, I discuss the practices followed in data reporting at irrigation subdivision level. In the next section, I analyse the data at different levels of irrigation organisation. On the basis of evidence I show how the government claims do not match the published data. I further present an analysis of water distribution practices in the study area. The observations are further validated by interviews with individual farmers who own irrigated plots in head, middle and tail reaches of the major canals. In the last section, I conclude that the politicians made exaggerated

claims to construct a myth of irrigation expansion to legitimise the reform policy. This behaviour can be explained by the fact that the reforms are funded by external aid agencies. The political leaders seek legitimacy for their regime and like to showcase the effectiveness of their policies.

6.2 The Claims

The state government claimed that during the period 1998-2000, more than 290,000 ha of 'gap command' was bridged as a result of irrigation reforms in the state² (GoAP 2000). The Chief Minister Mr. Naidu and Minister for Major and Medium irrigation made statements regarding the irrigation reform achievements in the press and electronic media at various occasions. Though there are variations in the figures, the intention was to describe government achievements and reform results. According to a statement by the Irrigation Minister for Major and Medium irrigation in 1998:

The maximum gap in irrigation potential bridged was in [the] SRSP project, where the irrigation potential created was 659,000 acres [266,802ha]. Average area irrigated during past three years was 115,000 acres [46,559ha] and ayacut transplanted in the current year was 366,000 acres [148,178ha]. Next came the Nizamsagar project with gap bridged being 74,000 acres, irrigation potential created being 23,000 acres. A total of 17,000 acres of ayacut was bridged under the Vamsadhara project and about 50,000 acres [20,243 ha] under NSPLC and 53,000 acres [21,458 ha] under NSPRC. (conversion to hectares mine, *The Hindu*, December 16, 1998).

In another statement in 1999, the Minister for major and medium irrigation declared that 'the state has a command gap of 15 lakh acres [607,288 ha]. Out of it, a total of 207,288ha of command (about one third of the existing gap) has been brought under cultivation, as a result of better maintenance work during the initial years of reform period (The Hindu, March 15, 1999). If these statements are correct, substantial changes should be evident in terms of irrigation expansion, better water distribution practices and water use resulting in increased production and labour opportunities in the command area.

The reports by the Irrigation Department show that 2,025ha of

gap command were bridged under the MBC during 1998-1999. When I looked at both the oral and published claims, I expected clear evidence of the expansion in MBC command area. I assumed a spread of newly irrigated plots, reduction of gap command and improved water distribution practices. I expected this in view of the focus on the infrastructure rehabilitation embarked upon under the reform policy. In contrast, I could neither find the newly irrigated plots based on published statistics, nor the Irrigation Department staff help me in locating the plots under the MBC command area.

I was eager at the start of my fieldwork to visit the 'newly irrigated' plots under MBC command and discuss with the concerned farmers. I thought it would give me a good start to understand the tangible results of the reform. Therefore, I first tried to locate the plots that were reported as newly irrigated as a result of reforms. I approached the assistant engineers who are designated as competent authorities of Madhira irrigation subdivision in June 2001 to help me in locating these newly irrigated plots. I did not receive any help initially. I thought it was due to resistance or apprehension regarding my research. Later I found that there were differences of understanding among the engineers, when they discuss about the expansion or bridging the gap command. The engineers were not sure about the expansion and could not demarcate the plots that can be claimed as newly irrigated.

These experiences were disturbing to me but led me to ask further questions. Why are the engineers not able to demarcate the plots? Is it because the expansion does not exist at all or because they failed to record it? What are the practices of recording? Who are all involved in reporting or recording? To start with I tried to analyse the data on expansion produced by Irrigation and Revenue Departments. It was difficult to get access to these data, which were guarded as a precious source of information.

6.3 Gap Ayacut: Extent and Meaning

The gap between the irrigation potential created³ and utilised is increasing despite the massive investments in the sector (GoAP 1996). While explaining the gap command area in the state by 1996, Raju and Sharma (2003) describe, 'despite massive investments in

the irrigation sector, the irrigated area has shown a declining trend in several major commands, due to insufficient allocations for the maintenance of irrigation schemes, poor cost recovery of water charges, limited user involvement, low quality of agriculture etc., resulting in a gap ayacut of 1.18 million acres' i.e. about half million ha in the state (Raju and Sharma 2003:5; also see Peter 2001). The performance of existing irrigation systems in the state particularly in major and medium irrigation schemes raised serious concerns for politicians and planners.

Researchers and agencies have interpreted the extent of gap command area differently (see GoAP 1995; Jairath 2001; Raju 2001; Peter 2001; Reddy 2003). The differences in reporting or defining the gap are due to use of various definitions while referring to gap command area.

The AP government in its action plan for completion of irrigation projects declares that the total irrigation potential created (IPC) in the state till 1995 is 6.4 mha. The report states that only 4.3 mha i.e. 67% of IPC has been utilised, leaving a gap of 2.1 mha i.e. 33 percent (GoAP 1995).

Reddy (2003) reports that the gap between capacity created and actual utilization increased from 23.5 percent in 1950-51, to 46.2 percent in 1991-92 and 56.4 percent in 1995-96 for major and medium irrigation projects.

Jairath (2001:15) reports that only 2.84 mha out of an irrigation potential of 4.8 mha under major and medium projects is being irrigated, reflecting a gap of 1.96 mh i.e. 59.2 percent.

K.V. Raju in his paper reports that the ultimate irrigation potential from all sources in the state is estimated to be 9.5 m ha. It includes 7.30 m ha from surface water and 2.20 m ha from groundwater (Raju 2001: 4).

Raymond Peter reports in his case study (2001) that over the years, the state has been able to create an irrigation potential of 4.84mha through 15 major irrigation projects, 75 medium irrigation projects, and approximately 12,264 tanks (2001:5). The gap between the irrigated potential area created and the actual utilization, popularly known as the 'gap area' has been estimated at about one half million hectares (Peter 2001:9).

The Bureau of Economics and Statistics reported that the total area irrigated in the state is 5.75 mha, whereas the Ministry of Irrigation and CAD reports it as 4.84mha (Peter 2001:1).

Defining Gap

According to the discussions with irrigation staff in Kalluru division, the term 'gap command area' is interpreted differently while using it. An assistant engineer defined the gap as 'the difference between the localised command and actual area irrigated'. An executive engineer referred the gap as the difference between the irrigation potential created and utilised.

Another senior irrigation bureaucrat in the chief engineer office told me that the claims made regarding the gap command area bridged in the state could be understood in two ways. One can define or describe the gap with reference to the Andhra Pradesh Economic Restructuring Project (APERP) schemes. According to this explanation, the bridged gap is defined as the area that was not receiving irrigation water for the localised area but started receiving water after implementation of APERP works. Few others while referring to gap command might refer to 'deferred command development' after the introduction of irrigation reform in 1997.

According to a junior engineer at Tekulapalli irrigation circle office, the common definition that is used to describe the gap command area is the gap between the irrigation potential created and irrigation potential utilised. The gap command will be higher in case the irrigation potential created is larger than the utilisation. In addition other factors like rainfall and water use practices determine the gap. This suggests that the gap command area is not constant but changes from time to time.⁵

While talking about gap, engineers also refer to the 'planning gap'. The difference in the available water in the project and what is actually required to serve the entire command determines the planning gap. For example in the case of Nagarjunasagar Left command area, the estimated planning gap is 38 percent i.e. the water allocated for the project being 3,735 MCM, while the requirement for the planned crops stands at 5,550 MCM.⁶ Hence one needs to be clear while referring to or describing about gap.

In addition to use of various definitions, there are differences in reporting practices of the gap command between the revenue and the irrigation departments. The irrigation and revenue departments collect data related to extent of area received irrigation and type of crops grown. The data is collected outlet wise by irrigation department, whereas the revenue data is based on the village as a unit The Irrigation Department reports a plot as irrigated even if it

receives one wetting or irrigation, whereas the Revenue Department considers a plot irrigated only when it receives the required number of waterings as mentioned in the government documents. The Luskar and work inspector report whether and how many times a plot received irrigation to the assistant engineer in Irrigation Department. Under the revenue system the *Talayari* or village assistants collect the information from the farmers and reports to the Village Secretary regarding the irrigated plots belonging to the village.

I will show below that the discrepancy in data reporting practices leads not only to inconsistency but also gave room for manipulation of the data by participating individuals and departments.

6.4 Data Collection

I discuss first the actual practices of data collection and reporting at irrigation subdivision level. In the Irrigation Department the Luskar helps the Work Inspector in recording the plots that received irrigation in each season. On the basis of feedback received from the Luskars and from the physical verification of plots, the Work Inspector prepares a weekly report regarding the type of crop and plots that received irrigation. The report is submitted to the assistant engineer, who prepares weekly report on the extent of area that received irrigation and crops sown and submits to the Deputy Executive Engineer (DEE) together with the future requirement of the water supply. The DEE submits the reports to the EE, and the data are pooled at the division level and sent to the circle level. The data from all the irrigation circles are collected at the system level at the Chief Engineer's office. From there the data is supplied in abstracted form to higher bureaucrats and other ministerial offices in the government.

Data Collection at Local Level

Observation and discussions with Luskars in the study area show that they do not have ayacut maps with them. Hence they expressed some degree of difficulty to identify the plots that are non-localised or illegal. The Work Inspector is expected to fill a 12-column format that shows the details of name of the pipe, survey

number of the plot, type of crop and number of wettings received.

The WUA jurisdiction maps were prepared in consultation with the Revenue Department when the PIM program was introduced. These maps⁷ were given to the WUA. The WUAs were also expected to maintain their own records with details of type of crop sown in each plot and number of wettings received. During my fieldwork period, I did not observe many work inspectors filling the forms in accordance with the norms. Similarly, the WUA representatives did not show any interest in recording the plots that did or did not receive irrigation.

I followed the Luskars on Punyapuram major to understand how they identify and report localised and non-localised plots. On each major canal two or three Luskars are appointed. I asked them how they identify the plots in absence of maps with survey numbers. The answer to my question was, 'we do it on the basis of experience'. I observed that they knew their jurisdiction by the length of the major canal and the minor canals. Many of them have been working on the same major canal for more than five years. As a result each Luskar knew by heart the details about the farmers and their holdings under each pipe outlet or minor canal in their respective jurisdictions. The farmers also knew not only the concerned Luskar (in charge of their pipe outlet under which their plots receive irrigation) but also other Luskars on the major canal. In the course of their job, the Luskars build a social network with the farmers in the command area. It is due to their nature of work. Their position in the irrigation hierarchy gives them an important role in the irrigation management. Mr. Srinu, the Luskar on Nidanapuram major stated that:

It is easy to identify the plots that did not receive irrigation since the farmers who did not receive water will complain. On the basis we calculate (number of acres) the extent of command left without irrigation water. We are very much familiar with the information regarding the number of farmers and the extent of their land ownership under each pipe outlet. On the basis of this knowledge, we report to our higher officials (field work notes 2002).

Though the Luskar is an important link in the chain, they often possess a lower level of education. Some Luskars are employed from 1970s and have problems with reading and writing. In this process, the chance of misrepresentation or manipulation of data is

higher. I further explain the factors that influenced the data recording practices. The point is that lack of education, none use of formats and oral-reporting practices reduces the accuracy of data and the scope for manipulation is greater.

The study of collection and reporting practices of irrigation data raised further questions on the accuracy of the state level claims regarding the gap command area that was bridged under the reform period. To understand further, I present an analysis of secondary data that was available at different levels of the irrigation department.

6.4 Analysis of Secondary Irrigation Data

Any given set of data reflects the choices of individuals and institutions with the power to make decisions regarding the tools, methods and variables to be included during data collection and analysis. Irrigation data in AP is of no exception to this general rule. In this section, I analyse irrigation data available at different levels. I made an analysis of data sets available at state, irrigation project, circle, division and sub-division levels. The objective is to understand the process of data collection and examine the making of irrigation data as a social process.

State level analysis

The government claims reported in the printed media⁸ declare that the gap command area bridged under major irrigation was about 202,429ha in 1998-99 and was 80,971ha in 1999-2000 (*The Hindu*, 1998, 1999).

A power point presentation by CVSK Sharma, Secretary (irrigation) GoAP and J. Raymond Peter, Executive Director, INPIM at a World Bank organised Water Week (2003) reported 10.076 lakh ha [1.008 mha] of gap command bridged in the state.⁹ In contrast, the data published by a government agency for this same period does not match with the claims by bureaucrats and politicians (see Table 6.1).

Table 6.1 suggest that there is a slight increase in the total area irrigated by canals¹⁰ from 1.537 mha in 1997-98 to 1.634 mha in 1998-99. Further there is no increase in the year 1999-2000. Based

on these statistics, the gap command area of 97,000 ha bridged during 1998-99 and remained same in the following year. If this is fact, how to account for the much larger figures for gap bridged as claimed by politicians and bureaucrats in the state?

If we consider all sources at the state level instead of major irrigation alone, the aggregate data show that the total irrigated area is not constant. It slightly increased in 1998-99 compared to 1997-98 but again decreased in the following year. The contribution of canals to total irrigation development was 39percent in 1997-98, and decreased to 36percent in 1998-99. There was a slight increase from 36 to 37.3percent in 1999-00. The pattern suggests that even after the introduction of the reforms, canal irrigation has not contributed much to the total irrigation development in the state. If that is so, I question the basis of government claims regarding the expansion. I made an analysis of the data at the Nagarjunasagar system level to find out whether there have been any improvements in terms of gap command area bridged at the system level.

TABLE 6.1: Irrigation command area development by source (million ha)

Year	Canals	Tanks	Dug wells	Tube wells	Others	Total
96-97	1.629(37.1)	0.844(19.2)	0.99(22.5)	0.74(16.8)	0.194(4.4)	4.395(100)
97-98	1.537(39.0)	0.562(14.2)	0.90(22.8)	0.77(19.5)	0.168(4.3)	3.944(100)
98-99	1.634(36.0)	0.810(17.8)	0.98(21.6)	0.92(20.3)	0.198(4.4)	4.539(100)
99-00	1.634(37.3)	0.652(14.9)	0.90(20.5)	1.00(22.8)	0.198(4.5)	4.384(100)
00-01	1.649(36.4)	0.727(16.1)	1.00(22.1)	0.95(21.0)	0.198(4.4)	4.528(100)
01-02	1.563(36.9)	0.567(13.4)	1.00(23.6)	0.93(21.9)	0.180(4.2)	4.238(100)

Note: Percentage in parenthesis

Source: Compiled from Economic Survey, 2000-2001, Planning Department, GoAP and Sagu Neeti Sangaham, Monthly Magazine, No 5, December 2003-April 2004, WALAMTARI, GoAP.

System level data analysis

Under the NSLC command, the government declared that a total of 20,242ha in 1998-99 and 16,194 ha in 1999-2000 i.e. a total of 36,436ha of gap command was bridged.¹¹ Table 6.2 presents the data of NSLC. The data do not present evidence of irrigation

expansion to confirm the claims made by the state. The data shows that 124,800ha of additional area were irrigated in 1998-99 as compared to 1997-98. For the same years if we consider only the Kharif season (Wet and Irrigated Dry) the increase is 9,520ha but not 20,242ha as claimed. The data suggests that the pattern of irrigation development has been uneven. Let us further consider only the wet crop in the Kharif season: the increase is 14,390ha. Similarly the claims made for 1999-2000 also do not match with the system level published data. In 1999-2000 the total area irrigated decreased compared to 1998-99.

The contradictions between the political claims and NSLC system level published data suggest the evidence for use of data for political gains at the state level and also helped in the release of funds to Irrigation Department. I further analyse the irrigation data to identify whether there has been any irrigation expansion or gap command bridged at lower level irrigation units.

	Trabas 6.2. Command development inder 14000 (000ma)										
Year	Kharif				Rabi			Kharif + Rabi			
	Wet	I.D	Total	Wet	I.D	Total	Wet	LD.	Total		
96-97	161.4	151.3	312.7	70.7	20.1	90.8	232.1	171.4	403.5		
97-98	159.0	155.0	314.0	2.0	51.0	53.0	161.0	206.0	367.0		
98-99	173.4	150.1	323.5	125.1	43.2	168.3	298.5	193.3	491.8		
99-00	191.0	169.6	360.6	7.7	91.1	98.8	198.7	260.7	459.4		

TABLE 6.2: Command development under NSLC ('000ha)

Source: Profile on Nagarjuna Sagar Project, Office of Chief Engineer, Hill Colony.

Tekulapalli Circle data

An irrigation circle is a second-level irrigation administrative unit. The NSLC command is divided into three irrigation circles. I studied Tekulapalli irrigation circle as the research site falls under this circle. The data from this circle suggest, that there has been an increase in irrigation potential created from 1996-97 (192,374ha) to 202,832ha 1999-2000. However, there have been differences in total irrigation potential utilised resulting in a gap command area.

The gap decreased to 19,048 ha in 1998-99 from 34,183 ha in 1997-98. The gap further decreased to 16,887 ha in 1999-2000 (see table 6.3). This pattern at the Circle level clearly showed that there have been improvements in terms of bridging the gap command

but contradictory with the system level results. To understand further I analysed district level data and rainfall patterns.

TABLE 6.3: Circle Level Data (1996-2000) in ha

Year		I.P created	i		I.P utilisee	d	Gap
	Wet	LD	Total	Wet	LD	Total	Total
96-97	68413	123962	192374	59169	102708	161877	30497
97-98	68413	126710	195123	56180	104760	160940	34183
98-99	68413	132560	200973	64723	117202	181925	19048
99-00	68413	134419	202832	69113	116832	185945	16887

Source: Tekulapalli circle office, Khammam.

Rainfall Pattern

The rainfall pattern in this area and the state shows that there was a rainfall deficit in the years 1997-1998 and 1999-2000 except in Khammam (see Table 6.4). In this case the reduction in the extent of reduction of the gap command achieved in 1999-2000 needs further scrutiny.

TABLE 6.4: Rainfall Pattern in NSP left canal command (in mm)

District/State	Normal rainfall	1996-97	1997-98	1998-99	1999-2000
Nalgonda	742	792(+)	627(-)	875(+)	504(-)
Khammam	1045	1213(+)	898(-)	1243(+)	1086(+)
Krishna	1029	1217(+)	869(-)	1232(+)	823(-)
A.P state	925	1110(+)	815(-)	1128(+)	771(-)

Source: Compiled from various statistical abstracts, Directorate of Economics and Statistics, Andhra Pradesh.

District level analysis

Table 6.5 below shows that a gap command exists in all three districts. The district level data indicates that 1) there has been a gap between irrigation potential created and utilised in wet irrigation in all the districts except in Khammam during 1998-99

and 1999-2000. Irrigation dry cultivation is recorded in Nalgonda.

The district level data showed that the extent of gap command area changed from year to year. The changes in cropping pattern also influenced the extent of gap. For example, Nalgonda district being in the head reaches of the canal shows increase in irrigation water used for irrigated dry crops.

The results suggest that while discussing gap command, one should be clear in using the point i.e. year of reference. The gap can be described with reference to the previous year's results of an irrigation project or refer to total irrigation potential created and utilised. Since there would always be a gap between the irrigation potential created and utilised, the government claims should refer to the documented progress between two subsequent years. I further present an analysis at the irrigation subdivision/WUA level.

TABLE 6.5: Pattern of Command development in Tekulapally Circle (inha)

D:	Year		I.P create	d		LP utilised	d	Gap
District		Wet	I.D	Total	Wet	L.D	Total	
	96-97	8196	Nil	8196	5432	690	6123	2073
onda	97-98	8196	Nil	8196	6104	1134	7238	958
Nalgonda	98-99	8196	Nil	8196	6183	1779	7961	235
~	99-00	8196	Nil	8196	6106	1801	7907	289
-	96-97	51119	49639	100758	47318	37393	84711	1604
Khammam	97-98	51119	49639	100758	45369	35938	81307	1945
Cham	98-99	51119	49913	101032	52728	36459	89186	1184
*4	99-00	51119	49988	101107	55464	37297	92762	8345
	96-97	9098	74322	83420	6419	64624	71043	1237
Krishna	97-98	9098	77071	86169	4707	67688	72395	1377
	98-99	9098	82647	91744	5813	78843	84655	7079
	99-00	9098	84430	93528	7542	77734	85277	8251

Note: The Gap is calculated from the total IP created - IP Utilised

Source: NSP Circle office Khammam & Irrigation Division Office, Kalluru.

Irrigation subdivision/WUA level data analysis

Kalluru irrigation division comprises four sub-divisions: Tallada, Tiruvuru, Kalluru, and Madhira. As I discussed earlier, the main

share of the MBC command falls under Kalluru and Madhira and the remaining in Tiruvuru sub-divisions. ¹² According to the irrigation records of 2001-02, the total localised command of MBC is shown as 38,259ha in irrigation records. Out of this 16,822ha of wet and 21,437ha of irrigated dry are designated as the localised cropping pattern. In addition, the extension of MBC represents a localised command of 20,378ha in Nidanapuram major. The Kalluru subdivision represents high levels of wet irrigation and located in the head reaches of the MBC. Hence, I assumed that the additional area or bridging of the gap command reported in the irrigation reports would logically be found in Madhira irrigation subdivision as its command is located in the tail reaches of MBC.

Madhira Irrigation sub-division

The Madhira irrigation sub-division was delineated into nine WUAs. The total localized command has been declared to be 20,378ha. The data available from the department shows a gap of 4,238ha, 608ha and 1,541ha in 1997-98, 1998-99 and 1999-2000 respectively (see Table 6.6 and 6.7a). This means that no irrigation expansion took place but the gap differed year to year. The fluctuation was possibly linked to rainfall variation and crop choice. On paper the gap seems to be reduced from 4,238ha to 1,541ha at the sub-division level. Below I further made an analysis to compare the trend at WUA level.

Out of the nine WUAs in Madhira irrigation sub-division, only the WUAs located in the head reaches of Utukuru and Madhira major canals registered some additional or illegal command development. The area that received irrigation outside the localised command is known as additional or illegal command. WUAs177 and WUA178 are located in the head and middle reach of the Utukuru major and WUA180 is located in the head reach of the Madhira major. While considering the illegal command development, the head reach WUAs showed reduced gap compared to irrigated potential created and utilised. For example under Utukuru major the illegal command was reported as high as 366ha in 1997-98(dry year) and 767ha in 1998-99 (a good year) compared to 6884 ha of localised command (Tables 6.7a & 6.7 b).

I have tried to locate these plots, which were reported as irrigation received outside the localised area. As I mentioned before

the department staff could not show me these plots either. I conclude that it is easy for the staff to report area as irrigated outside the localised command. It is logical to show this kind of pattern in the head-reach WUAs, as we tend to believe these farmers appropriate more water. The WUAs177, WUA178 and WUA180 are head-reach WUAs of Utukuru and Madhira majors, but these majors are not located at the head reaches of MBC but in the middle reach. The question is whether one should include illegal area irrigated while defining gap command. I found that some irrigation staff does include this while reporting for example the tail reach staff. This provides us evidence that different people define gap in their own way to protect their actions and interests. The pattern also raises question on the performance of the WUAs. Why did WUAs fail to check the illegal irrigation in their command areas?13 I further discuss possible reasons for the manipulation of data or politics of using data at state and local levels.

From the secondary data analysis at different levels (state, system, irrigation circle, division, subdivision/WUA) it can be concluded, first, that there is no single pattern of gap bridged but that this, altered with different levels of irrigation units. The system level data shows that there has been an increase in the gap command in 1999-2000 compared to 1998-99. In contrast, the Tekulapaali irrigation circle data shows that there has been improvement. The WUA level data confirms that the gap command was greater in the year 1999-2000.

Earlier evidence is available that the increase in irrigated area in a few cases is due to the improved reporting practices rather than the actual improvement of the area irrigated. Jairath (2000) in her research documented that the extent of additional area is first, overstated, since areas where water barely touches also get counted as irrigated areas in addition to rainfed areas in canal commands where in fact water does not reach at all. Misreporting of area irrigated has been widely prevalent. It is possible that this recording of area irrigated has increased of late. The increase in area irrigated as reported in official statistics is thus partly a reflection of increased reporting and not actual increase (2000: 11-12).

TABLE 6.6: Command area development 1998-99 and 1999-2000 in Madhira irrigation sub-division (ha per WUA)

No. WUA	Localised Command Area 1998-1999			Locali	Localised and Illegal command 1998-1999			Localised and Illegal command 1999-2000			Gap command
	Wet	ID	Total(1)	Wet	ID	Total (2)	(1-2)	Wet	ID	Total(3)	(1-3)
177	581	1633	2214	972	1556	2528	+314	992	1600	2592	+378
178	982	2037	3019	304	2818	3122	+103	273	2794	3067	+48
179	765	886	1651	87	1540	1627	-24	162	1382	1544	-107
180	722	1313	2035	449	1612	2061	+26	537	1686	2223	+188
181	1255	696	1951	40	1769	1809	-142	27	1595	1622	-329
182	650	1256	1906	473	1280	1753	-153	569	1257	1826	-80
183	1681	929	2610	438	1904	2342	-268	517	2034	2551	-59
184	1601	934	2535	13	2305	2318	-217	0	1774	1774	-761
185	1981	476	2457	112	2098	2210	-247	0	1638	1638	-819
Total	10218	10160	20378	2888	16882	19770	-608	3077	15760	18837	-1541

Source: Compiled from sub-division records and WUA records, Madhira irrigation sub-division office, Khammam District

Note: Sign (+) refers to additional command development and sign (-) refers to the gap command with respect to the localised command

TABLE 6.7a: Command development in Madhira sub-division 1997-98 by major canal (ha)

Name of	Localised Command area -			Command development						T11			<i>-</i> .
Major				Within localisation			Out side localisation		Total development			Gap . Total	
	Wet	ID	Total(1)	Wet	ID	Total	Wet	ID	Total	Wet	ID	Total(2)	(1-2)
Utukuru	2328	4556	6884	625	5674	6299	314	52	366	939	5797	6736	-148
Madhira	1977	2009	3986	302	3124	3426	0	16	16	302	3140	3442	-544
N. Putam	5913	3595	9508	209	5753	5962	0	0	0	209	5753	5962	-3546
Total	10218	10160	20378	1136	14551	15687	314	68	382	1450	14690	16140	-4238

Table 6.7b: Command development in Madhira sub-division 1998-99 by major canal (ha)

Name of Major	Localised Command area			Command development						T-12-12-14			Gap
				With in localisation		Out side localisation		— Total development			Total		
	Wet	ID	Total(1)	Wet	ID	Total	Wet	ID	Total	Wet	ID	Total(2)	(1-2)
Utukuru	2328	4556	6884	1025	5485	6510	338	429	767	1363	5914	7277	+ 393
Madhira	1977	2009	3986	489	3236	3725	0	145	145	489	3381	3870	- 116
N.Puram	5913	3595	9508	1036	7429	8465	0	158	158	1036	7587	8623	- 885
Total	10218	10160	20378	2550	16150	18700	338	732	1070	2888	16882	19770	-608

Source: Compiled from WUA records and Madhira irrigation sub division office records

Sign (+) refers to additional command development and sign (-) refers to the gap command with respect to the localized command

The reported increase in area irrigated therefore, has to be interpreted with caution. Reddy and Reddy (2003) report that, 'our discussions with some WUA members revealed that the formation of WUAs helped in taking water to tail-end areas. Beyond this they achieved little. They [WUAs] could not even reduce the underreporting of area irrigated' (2003:1185). They further stated that their discussions with the irrigation department officials and other experts in the field revealed that the decline in canal irrigation could be due to underreporting of area, as there were no breakdowns in any of the ongoing projects. The problem of underreporting was expected to be nullified with the advent of WUAs. The latest data (1999-2000) do not indicate any correction in this regard. However, it is felt that the correction would, at the most, give a picture of stagnation in the area under canal irrigation rather than resulting in an increase' (2003:1188-89).

6.5 Water Distribution

In this section, I discuss day-to-day water distribution practices in the study area. The rationale is that efficient water distribution practices do influence irrigation expansion. I analyse whether there have been improvements in water distribution and use. If so, it would be plausible the reform process may actually have caused the reduction of gap area.

An interesting part of the fieldwork was to observe day-to-day practices of water distribution and strategies adopted by the Irrigation Department staff, WUA and farmers. The analysis made in the first part of the chapter referred to the government claims made during 1998-2000. The analysis in this section is based on fieldwork conducted in 2001-2002. Interestingly, the state claims of irrigation expansion are not explicit in the later years i.e. after 2000 of the reform programme. I am aware that here I am referring to two different time periods. I believe that the understanding of water distribution practices under the later years of reform period could provide us with further evidence on irrigation expansion claims made by the state. If there would have been improved practices they would logically based on learning from the earlier years.

Water Distribution Practice

Water distribution and supply was primarily under control of the irrigation department before introduction of reforms. The PIM policy transfers the responsibility of water distribution to WUAs. With the government-sanctioned budgets, the WUAs carried out minimum rehabilitation and maintenance works. The practical outcome of these repairs was improved water flows initially but not sustained in later years.

The Kharif crop failed in this area due to the monsoon failure in 2001. The pressure on the scarce water increased during the month of November, as the Rabi crops also needed a wetting. The water distribution became a test for the WUAs and irrigation department. Local farmers demanded water and their resistance was visible through their demonstrations, demanding water for their plots. The mounting pressure on the higher irrigation staff especially on the Executive and Deputy Executive Engineers to supply water to the tail reaches was visible through telephone calls and office letters asking for detailed information. The situation demanded a strict monitoring.

To address the situation, I thought there would be an operational plan to follow. To my surprise there was no such plan on paper. When asked, the Deputy executive engineer told me that it is difficult to prepare a plan as they were not sure of supplies. The best way to face the situation is an effective controlling. I saw him doing what he told (see Box 6.1). The visits of WUA leaders and local political leaders to the irrigation offices increased. Everyone talked about water scarcity and wanted their share of water to their fields.

The tail end farmers of Kesavapuram on Punyapuram major and of Kambampadu and Chilukuru on Nidanapuram major claimed that their situation has not changed since introduction of WUAs. The farmers stated that they used to spend a lot of time and money on canal gasti (canal watch by private people) to bring water from the head reaches to their tail-end plots. The WUAs could not implement an operation plan. As a result, the gap command has remained in the tail reaches of tertiary canals on MBC. In absence of water sharing rules, the tail-end farmers continued to be deprived of their legitimate share of water (see Box 6.1). I conclude that the practices of water distribution in the local area remained the same.

Box 6.1: Water distribution at night

It was a cold winter night of November. I made a request to join the Deputy executive engineer on a night patrol. He agreed readily. We left the Kalluru camp office by seven in the night. On the way an old Luskar joined us. We reached the zero km point of the MBC within fifteen minutes by Jeep. The Engineer instructed the Luskar to completely close the first sluice. It appeared to me that the engineer was determined to push water to tail-end. The jeep driver and I had to help the Luskar to close the gate since the Luskar did not have the right tools to close the sluice.

The head reach farmers usually do not give attention to the water levels in their canals during nights. They know that they have access to water without much hassle. After closing the sluice we headed towards the Madhira subdivision. At the site of Mustikuntla Major located at 14.54km a group of farmers were sitting in a make-shift tent. The engineer got down and inspected the sluice readings. He suggested that the shutters should be lowered as more water was being discharged than required. The farmers objected to operate the gates. Most of them were drunk and in a hostile mood. The engineer asked for the WUA president. The farmers replied that their WUA president was not helpful and hence they needed to come to the canal for water. The engineer tried to convince the farmers by saying that he would tell their WUA President.

Then he gave instructions to the Luskar to lower the sluice gates and got into the vehicle. It was eleven o'clock in night and we further proceeded downstream. We reached Gosaveedu minor located at the 36km of the MBC, but the Luskar on duty was not found. He might have thought his higher officer would never make a visit in that cold night. Again I helped the old Luskar who was accompanying us to close the gates. The old Luskar murmured about the difficulty he might face the next morning from his absentee colleague.

Box 6.1 Continued

We crossed the railway line after Madhira around 3am. I saw a number of water engines kept on the bank of the empty canal at 47km. Farmers were sleeping next to their engines, probably in the hope of some water. The long pipe from the engine ended with a foot valve laid in the small ditch made by digging the canal bed. It seemed to me the standing chilli and cotton plots needed at least a watering immediately in order to survive.

Since there was not enough water to operate the sluices, farmers were allowed to pump water from the canal directly to their plots. Farmers spent money for fuel, to rent engines, and for the long plastic pipes to transport water to the plots.

By the time we reached Kambampadu village at the tail reaches of Nidanapuram major, the sun already started rising in the east. The presence of engineer on the canal at that time created a hope among the farmers. When we entered into Kambampadu village, the driver drove the jeep into a farmer's courtyard. The family offered us hot water to brush our teeth. An aroma of warm tea filled the air along with a hope for water in the canal! The engineer told the group of farmers gathered that they would receive water in the canal in about three hours. The water would be enough to run their water engines for few hours. I agreed with him if there would be no blocks in the canal by the farmers upstream of Kambampadu. The further tail end villages (V.Annavaram and Chilukuru) of the major lost their hopes to receive water even for a single wetting.

Source: Field notes dated November 21, 2001

I conclude that WUAs have not taken up water distribution functions. In the absence of functional WUA the access to water is influenced by push and pull factors. As a result there were no improvements in water distribution and user practices. I discuss water distribution practices in a major canal of MBC to further illustrate the arguments.

Punyapuram Major

The Punyapuram major canal originates in the head reach of MBC and is the first major canal within half a kilometre from the zero point of the MBC. The gap command of 997ha out of 5022ha of localised command reported i.e. about 20percent of the total command of the major in 2001-2002. The APFMIS Act empowers WUAs to prepare and implement a Warabandi schedule for each irrigation season consistent with the operational plan and water budgeting, based upon the entitlement, area, and soil and cropping pattern.¹⁴ Instead of framing rules for water distribution among themselves, I observed WUA leaders on this major and other approached irrigation department staff for their water distribution requirements. As I discussed earlier, the absence of internal rule making influenced the water distribution negatively. In the process the irrigation staff continued to control water distribution activity. In absence of institutional rules access to water is negotiated and contested. The Punyapuram major canal is not an isolated case. I observed similar issues in other major canals located on MBC.

6.6 Reasons for Data Manipulation

From the above analysis it was clear that there were problems with irrigation data collection, recording and usage. In this section, I discuss the possible reasons for data manipulation. They are departmental practices, official rules, external pressures and changes in localisation pattern.

Departmental Practices

As I discussed earlier, the Luskar, who is at the lowest level in the department, is responsible for reporting and recording water discharges on a daily basis. The Luskar receives instructions from the concerned assistant engineer or higher level officers regarding the discharge levels to be maintained. The Luskars note down the discharge levels in the reading book by counting the scale drawn on the sidewall (the staff board) at the mouth of the sluice. ¹⁵ In times of scarcity the Luskars are asked to record readings every two hours. I explain the discharge data here as it relates to cropping data.

During the course of field work I came across occasions when Luskars on MBC reported low discharges in the book. I understood that the low reporting happens with the consent of the higher officer and in a few cases without. What prompts the Irrigation staff to do so? The pipe outlet is designed to deliver a particular discharge of water. That is what it says on paper. However, the pipe size and design discharge are proportional to the extent of the command to be irrigated under the pipe outlet. By reporting low levels of discharge, the unaccounted water in the canal is exchanged for economic or other incentives provided by those farmers who seek (more) water for their plots. One can ask why recording of lower discharges would be necessary for extracting payments for extra water. It is mandatory for the irrigation staff to show that the amount of water discharged in a canal and the extent of crop that is grown. In this case if you draw more water and report less water, the un- accounted water can be exchanged.

If the Luskar wants to favour particular group of farmers, he does that by either closing or opening up the gates of a particular sluice(s) so that the favoured farmers receives more water or an additional wetting to what they are entitled to. Often such favours

are done not by a single Luskar but with an understanding among the implementing staff. As a cross checking mechanism the higher irrigation officers inspect canal discharges. In the event of an inspection the higher official makes a signature and date and time are also noted down. I observed that manipulating data is one such system among others used in favouring an individual farmer or group of farmers.

Official Rules

The second reason to manipulate the data stems from the presence of official rules. The assistant engineers in the study area stated that that they are responsible for explaining on paper to their higher officials the volume of water received and area irrigated. This practice according to the staff is to assess the staff performance. The calculation is done on the basis of the irrigation duty¹⁶ and it varies with the type of soil. For example in Telangana region, the duty is calculated that, with one cusec¹⁷ of water 26 ha of wet paddy crop or 56 ha of irrigated dry crop can be irrigated.¹⁸ An assistant engineer on Nidanapuram major shares that:

A lot of water goes unaccounted for due to the illegal tapping practices and canal losses. But finally it is the assistant engineer at the local level who has to answer. The engineer concluded that to avoid official explanations, the water discharge and extent of irrigated area figures are to be adjusted. If we want to report accurately, we will ultimately end up in preparing explanations. So we do not want to take that risk alone. It is a known fact in the department that there is a need for some kind of adjustments.

To avoid implications of official rules, the implementing staff found ways to cope. If more water was discharged and less area actually irrigated, the staff try to compensate by reporting illegal command development. Reporting lower discharges helps in two ways. First, unaccounted water can be exchanged for monetary gains. Second, there would be no need for exaggeration of command. However these practices also depend on the location of work of the staff. A head reach staff member is likely to report less discharges and tail end staff tries to exaggerate the area that received irrigation.¹⁹

External Pressures

The third reason for manipulation of data is external pressures from political representatives and higher officials in the government. This pressure for results is not only evident in the irrigation department but in other government line departments. ²⁰ I came across an incident when an assistant engineer in Madhira subdivision went on leave (stating medical reasons) during the peak water distribution period in 2002. He belonged to Muslim community (a minor community in this area) and wanted to avoid the local politicians who would bring requests regarding water distribution ²¹. His colleagues commented that the engineer went on leave to avoid both official and the expected political pressures. I do not have direct evidence of political pressure but it is a known fact that if engineers listen to political or other unofficial requests for additional water, they cannot but adjust the data on water supply.

The Chandrababu Naidu government introduced many formats and performance appraisals. During discussions, the implementing staff repeatedly stated that they have to spend a lot of their time in their offices, to fill and submit the forms supplied by the government. The government's emphasis on performance indicators, incentives linked with performances in the absence of consistent monitoring and evaluation mechanisms resulted in manipulation of data by the irrigation staff. In addition to these problems the records of the Revenue and Irrigation Departments are difficult to compare. The records do not mention other sources of irrigation for example by bore wells drilled in the localised area. The irrigation staff involved does not record the quality of irrigation water supplied as it was not mandatory (see Jairath 1999).

Changes in Localisation Pattern

The fourth reason for the manipulation of data is change in the pattern of localisation. The canal commands were designed normally for wet irrigation at the tail reaches (if the soil type suits) and irrigated dry crops at the head reaches of the canals. However the current practice is reversed. The localisation pattern remains the same but it is not followed. The farmers at the head reach continue to prefer wet irrigation and as a consequence irrigated dry crops are cultivated in the tail end areas. The political compulsions

of favouring a certain group of farmers could not solve the issue of unequal water distribution but allowed the practice. With the increase in wet irrigation (especially in head reaches) water consumption has increased. For example, Lingala major on MBC designed for 104 ha of wet which has increased to 514 ha (five times increment) and the area under irrigated dry crops decreased to 50 ha from designed 511 to 50 ha i.e. ten times decrease.

6.7 Conclusions

In this chapter I have analysed the government's claims with regard to irrigation expansion achieved during the reform period. The state level claims in terms of irrigation expansion by bridging the gap command area do not show evidence at local level. I argue that the government claims at state level are exaggerated. This chapter suggest that Mr. Naidu's government that introduced irrigation reforms seem to use the irrigation data politically to seek consent for its policies. The political executive made strategic use of government administrative power and procedures to portray success.²²

The field evidence suggests that there is inconsistency in reporting the data. The data was also manipulated to safeguard the interests of staff involved. There is insufficient evidence of improved water distribution practices in the study area.

The changes in the gap should be attributed to many factors like the changes in rainfall, water levels in the reservoirs, water distribution practices, changes in cropping pattern and farmer preferences. We cannot associate the gap bridged to reforms alone as claimed by the sate politicians and bureaucrats.

The field evidence suggests the need for critically looking at the published data. The mismatch between the published data and claims made by the political executive suggests the scope for social construction of data.

I conclude that the ruling government and the bureaucracy tried to construct a popular perception that reform policies have yielded good results. Based on the field evidence, I argue that there is a need for further investigation of these popular constructs as the irrigation expansion and/or bridging the gap narratives tend to serve a certain political agenda.

Notes

- ¹ Chief Minister Chandrababu Naidu speaking about his government efforts claims that 0.41 million ha of additional command and 0.73 million ha of gap command was created, thanks to the implementation of reform policies. A compact disk casting his speech in English on his government achievements was released and circulated through India Today magazine as an impact feature. The CD is titled Andbra Pradesh Government Presentation: Fulfilling Aspirations. The write up in the CD in the irrigation section claims that the government of AP is implementing a comprehensive and aggressive irrigation policy. Under the section fact file, it is stated that 0.50 million ha new irrigation potential has been created. Also the majority of the new irrigation potential created is in the backward areas of the state.
- ² The claim was that in 1998-99 year 207,288 ha and in 1999-2000 an additional 83,147 ha of gap command was bridged under major irrigation projects in the state (source: www.apir.rigation.com).
- ³ There are different views existing on estimation of irrigation potential. It has been a difficult methodological problem. There is at present no agreement among engineers and other academics on the most appropriate method of estimation or appropriate values of parameters (for example, water duties) that are used in the calculation of irrigation potential. As a result, the estimates of irrigation potential made by different official agencies and scholars continue to differ widely. For example to assess the irrigation potential some use a river basin runoff approach and few use the rainfall pattern. Also one use computer based programmes like arc-Info to define the geographical computation units, which are homogeneous regarding average rainfall, potential evapo-transpiration, cropping pattern (calendar, intensity) and varying irrigation efficiency to calculate irrigation potential of a system. The estimation methods vary and different estimations are sometimes available for the same country depending on the factors considered i.e. resources, techniques, economic criteria and the environment. See Dhawan (1993) and Vaidyananthan (1999) for a discussion of problems of estimating irrigation potential in India.
- ⁴ However, in the same paper the author states in a table that irrigation potential created under major and medium is 3.05mha and 1.92mha under minor irrigation i.e. a total of 4.97mha in the state (Peter 2001: 6).
- ⁵ There are four major gaps to be bridged in the irrigation sector. They are (a) irrigation efficiency gap (b) area gap (c) soil fertility gap and (d) productivity gap. Out of these four gaps highest attention is being paid to bridging the area gap (Hanumantha Ra o 2002). Area gap can be defined as the gap between the irrigation potential created by a project and the actual irrigation done. The gap is reported by whom 20-40% in case of major projects in the state.

- ⁶ The 'Commission of Irrigation Utilization' of the GoAP in its report 1982 said that the planning gap occurs due to adoption of over-optimistic and unrealistic duties, inadequate water allowance, under estimation of seepage and other losses, over estimation of dependable yields, etc' (source:www.iwmi.cgiar.org/propoor/files/ADB_Project/Project%20Re ports/Summary_Report_Part_2.pdf). In addition the lack of realism in duties may explain why there is always underutilisation/a gap.
- ⁷ The maps are not to scale and does not show plot wise information. But these maps are useful to identify the boundaries of each TC member within the WUA. These maps show the boundary of the WUA with details of minors and sub minors within the jurisdiction of the WUA.
- ⁸ The print media reports can be taken as a claim made by the government/politicians as it serves as the main source of information for common citizens about government activities. Print and electronic media play an important role in forming and reflecting public opinion. In the case of AP, the Chief Minister Naidu is known for extensive use of information communication technology as his style of governance. The Hindu Newspapers states that 'Jayalalithaa (Chief Minister of neighbouring state Tamil Nadu) could benefit by studying the media management skills of her counterpart neighbour Mr. Naidu in whose image-building, apart from his undoubted dynamism and initiative, media management has certainly played a positive role' (*The Hindu*, March 12, 2002 titled 'Amma holds many ace s will she use them wisely?').
- 9 See http://worldbankgroup.org/watsan/waterwee k2003/Presentations/Session%2018%20-%20Water%20Users%20Associations/IrrigationReformsinAndhraPradesh.pdf
- ¹⁰ At the country level, the growth of area irrigated by canals has slowed down from the 1980s. It was because available surface water resources are exploited and the cost of creating new structures to create additional irrigation potential has dramatically gone up (see Svendsen 1991).
- ¹¹ Source: www.apirrigation.com. The government statement does not specify the crop season under which the expansion or bridging of the gap command has been achieved.
- ¹² Madhira Branch Canal (MBC) is extended as Nidanapuram major canal from 31km to 54km. According to the Assistant Engineer from Madhira subdivision, the extension of branch canal took place with the help of external loan money.
- 13 Illegal command is the command, which is outside the localised command. I observed that irrigation engineers sometimes refer to illegal command as additional command served by the irrigation water. I think it is to account for the water consumed by these plots outside the localisation. In some cases the area under illegal cultivation is more than commonly expected. For example according to a newspaper statement, illegal paddy is grown in nearly 3.45 lakh ha in the command area of

Upper Krishna Project(UKP) in Karnataka state. This figure has been admitted by the UKP Irrigation Consultative Committee (ICC) source: Deccan Herald dated August 19, 2005.

¹⁴ Preparation of water budgeting is generally the job of an Assistant Engineer. This involves preparation of a water demand statement by pipe outlet; taking into account the crop water requirement per minor and major canals; irrigation efficiency and transmission losses in the conveyance system. Assessing the daily flow requirements of each outlet had to be carried out. With the introduction of the reform and APFMIS Act, the water budgeting function now mainly falls under the WUA responsibility. The reality is that neither the irrigation department nor the WUA wanted to prepare and implement the budget plan. They claim that in absence of assured water supply there is no relevance of such plan.

¹⁵ Though there are various methods available to determine the discharge, in the study area there were flow measuring structures (weirs, gates and flumes) used for the measurement of discharges. On tertiary canals offtake (OT) structures are used commonly. Drop structures and cross regulators are found on the secondary canals.

¹⁶ Irrigation allowance is a term that expresses the allocation of water (expressed as a discharge rate) per unit of cultivated land. Duty is the amount of land to be irrigated with a unit discharge.

¹⁷ The basic unit to measure the flow of water is 'cusec' which means a quantity of one cubic foot of water flowing in one second or commonly 6.24 gallons or 28.3 litres of water per second.

¹⁸In Coastal Andhra one cusec of water is meant to irrigate 70 acres of wet (28.3 ha) or 140 acres (56.7ha) of irrigated dry crop. Whereas for the Telangana region 64 acres of wet irrigation duty suggested. This duty cannot be achieved in the NSP Left Canal. This is a contour system. The lining was not done in the entire canal and there are breaches and other seepage losses. Hence achieving the designed duty is difficult, shares Ch. Veeraiah who served as a S.E on NSP left canal. He argues that the calculation of amount of water discharged in a canal and area irrigated do not work as the type of soil plays an important role. He further explains that supplying irrigation to the tail reaches cannot be achieved with normal allocations provided on the basis of irrigation duty. In the past there were supplementation divisions with a mandate of irrigating the tail reach areas with additional or supplemental canal water supplies. In absence of such supervision providing irrigation to tail reaches has become difficult (Source: Discussion held with Ch. Veeraiah, retired S.E, on 10th Feb 2002). Mr. Veeraiah's argument can be understood as a technical excuse for poor management. The inability to spread scarcity proportionally is not explained by it as the design of the system includes scarcity. Even if the duties were realistic there was a distribution of scarcity problem.

¹⁹ Usually the exaggeration of irrigated area by a staff takes place by reporting area with crops grown like red gram, green gram, fodder or groundnut for which water cess is not collected. This is to avoid difficulties from the WUA or Revenue staff, in the event that actual Joint Azmoish takes place.

²⁰ Referring to the pressure they are under the engineers told me an incident of the death of a higher level Engineer. The Engineer died due to a heart attack incidentally after he participated in a teleconference. They connect this incident to the comments/ orders of the Chief Minister made on the performance of the Engineer during a teleconference. According to my informants this put the engineer under tremendous pressure that eventually led to a heart attack.

²¹ The reason for mentioning the staff as a Muslim is because the religion and caste also might play a role. The other two Assistant Engineers in the same subdivision belong to Chowdary community. The caste affiliations

do play role in the local water management.

The use of data for political gains by the ruling Naidu led TDP government reminds us the concept of manufacturing consent for TDP regime (also see Mooij 2005). Herman and Chomsky (1994) used the concept of manufacturing consent which highlighted the role of the media and public institutions in the United States in manufacturing consent on national issues. Their work described how support is mobilised for special interests that dominate the state and private activity (cf. Mehta, 2001). She shows how the Gujarat state has manufactured the dominant perception of water in the name of Narmada Project as the single solution). The motivation for Mr. Naidu and his bureaucrat advisers to showcase the government doing great things (to the outside world notably to the World Bank, DFID and to the urban middle class of AP) could be to legitimatise the reform policies that were introduced and also seek public support for the government actions.

Joint Azmoish

An Arena of Irrigation Revenue Generation

If the WUAs function as the Government anticipates, the revenue recovery will go up from 64 percent to 95 percent and the area under irrigation by more than 3 percent a year.

J. Raymond Peter, Additional Secretary (Irrigation) GoAP

7.1 Introduction

The system of land revenue or tax collection has played an important role as an institution in the economic performance of the governments. While the Nagarjunasagar system is a post independence project, the land revenue system in the area served derives from the practices used across the state with older antecedents.

Historically, Kautilya's Arthshastra mentions about revenue functions as well as irrigation water use in India. Initially, land and later irrigation was the major source of revenue for all governments of India, including the British. The Indian land policy manifested through two different administrative regimes namely the Mughal System and the British Indian administrative system.

In this chapter, I discuss in detail the history of Joint Azmoish, the policy objectives of Joint Azmoish under the reform programme and process of implementation in the state of AP. I show how Joint Azmoish has been neglected and contested by different actors during implementation. I argue that the participating government line departments could maintain their interests by not cooperating with each other in the process.

The Joint Azmoish is a joint supervision of survey of irrigated command area in a hydraulic unit. It is a joint survey conducted by the representatives of the WUA, departmental staff members of irrigation, revenue and agriculture to agree and report irrigated area and type of crop. The activities of each participating department are jointly coordinated and are complimentary.

The chapter is organised as follows. In section 7.1, I present an analysis of Mughal and British land tenure systems. In section 7.2, I discuss the evolution of Joint Azmoish in India. Section 7.3, is about the changes in land and water polices in the modern Andhra Pradesh. The discussion on the past practices is important as they influence the current practices. In section 7.4, I discuss the new policy of Joint Azmoish stated under the irrigation management reform programme. Section 7.5 is about the process and politics of Joint Azmoish implementation at the local level. The interpretations of field data are presented.

The chapter shows evidence that the nature of Joint Azmoish practice is rooted in the past practices. Various participating agencies viewed it differently and their interests shaped the final policy outcome. The chapter concludes in section 7.6 with a summary of findings.

7.2 Evolution of Joint Azmoish

In this section, I briefly present the Mughal and British land tenure systems with special focus on British irrigation policies to present the evolution of Joint Azmoish system. Canal historians like Stone (1985) argued that the current irrigation institutional functioning derives from its origin in the colonial period. Understanding this process is important to conceptualise the present practices.

During the period of Mughal rule in 16th and 17th centuries, land revenue was collected by non-hereditary, transferable state officials.² Hasan (2000:31) observes that the Mughal Empire was basically dependent on cooperation and support of the zamindars of three categories-the chieftain (some of them were rajas), the intermediary, and the primary non-cultivating zamindar. These intermediaries were between the Mughal ruler and the cultivating peasants.³ Their principal duty was to submit the full revenue returns, to maintain law and order through their troops, to keep ferries and irrigation works in good order, and to ensure that

assessments were reasonably made and complaints properly attended. In return they got a percentage of the revenue collected and other perquisites. They played a very important political, administrative and economic role (*ibid*: 29, cited from Choudhary 2000). The land revenue system implemented by *Todar Mal* during the Mughal Emperor Akbar's regime can be traced as the possible beginning of systematic efforts to manage the land. Deshpande describes that the *Todar Mal method* had incorporated measurement, classification and fixation of rent as its main components (Deshpande 2003:155).

By the end of 18th century, British rule was firmly established in India. By 1841, the land cess constituted 60 percent of total British government revenue. This proportion decreased over time as the British developed additional tax resources. Land revenue and its collection was the most important issue in policy debates during this period (Banerjee and Iyer 2005). Banerjee and Iyer argue that, the system for land revenue collection established by the British one hundred and fifty years ago or more continues to have an effect, long after it was abolished (*Ibid*:1191).

Land tenure systems

The British Empire in India lasted for nearly two hundred years. The British gained political control over the modern states of Bengal and Bihar (formerly Bengal Presidency) after they won the battles of Plassey in 1757 and Buxar in 1764. The British were formally granted revenue collection rights in these areas in 1765 by the titular Mughal Emperor. By 1860, the British were the major political power in India. Bagchi (1982) writes that:

The British kept most of the basic features of the Mughal land revenue system but raised the proportion of the produce collected as revenue enormously. The Mughals had assessed land revenue on the area actually cultivated, whereas the British assessed land revenue on the basis of the amount of land a person was entitled to cultivate. The Mughals had calculated the revenue in cash, but often collected in kind. The British calculated the revenue in cash and collected in cash. In terms of tax exaction, the British proved much harsher than the earlier Mughal rulers (1982:79-83).

The British introduced the Zamindari and Muttadari systems of land tenure in 1765 in Bengal Presidency, thereby setting up the basis for an ongoing conflict between peasants and landlords. However, the colonial state directly collected the land revenue from the cultivator called ryotwari system in its Bombay and Madras Presidencies, thereby avoiding this particular source of internecine [mutually destructive] conflict. In North-West provinces and Punjab the village based land revenue system named Mahalwari was adopted in which village bodies jointly owned the land and were responsible for the payment of land revenue to the British government. Bagchi argues that all these systems had the common characteristic of making land an alienable commodity without creating full private property in it, and providing a large surplus in the hands of the British rulers with very little expenditure in recompense. These systems endured, with little modification, throughout the British period (Bagchi 1982: 81).

In the present Andhra Pradesh, different land tenure systems were observed as it was ruled both by the Nizams and the British. The agency areas of Andhra region (forming part of British India) had distinct land tenure systems called *Muttadar* or *Mahalwari* systems. The schedule or tribal villages under Telangana under former Hyderabad State were part of *Jagirs, Iaras, or Makthas*. The tenant farmers under the feudal land tenure system suffered as the landholders had the right to evict a tenant if someone offered a higher rent. Tribal tenants were the worst effected in this system.⁵

Zamindari and ryotwari systems of land tenure

Historians of early British administration in India have traditionally focused their attention upon the *ryotwari* and *zamindari* systems of revenue assessment and collection (see Rabitoy 1975:529). In the 1790s some orderliness was introduced into the revenue system and administration by the reforms of Cornwallis. The zamindar land class found their patron in Lord Cornwallis, who installed them in power in Bengal in 1793. Cornwallis, a Whig aristocrat himself, was convinced that the stabilizing influence of a great landed aristocracy was an indispensable condition or order and prosperity (Metcalf 1962: 295). According to Patel (1969), the British thought that the *zamindari* system would create a loyal force that would help them in consolidating the empire. However, they

found that the revenue flow was not upto their expectations. Zamindars under reported the actual cultivated land and hence siphoned off a share of agricultural revenue. This led to the introduction of the ryotwari system in Madras Presidency that was based on the full survey and assessment of cultivable land. This system gave better revenue and hence was replicated in Bombay Presidency in 1851 (Patel 1969:20 cited from Prakash 2005).

The introduction of the ryotwari system was a result of Sir Thomas Munro's belief that the ryotwari system would increase the agricultural productivity as cultivators would be less subject to exploitation by landlords. Sir Munro travelled to London and managed to convince the Court of Directors of the East India Company of the merits of the ryotwari system (see Mukherjee 1962). The Board of Revenue came to favour the ryotwari system as they did not like the *gamindari* system because of the proliferation of intermediaries. As a result, the ryotwari system was introduced in the Madras Presidency, Similarly, Lord Elphinstone the then Governor of Bombay Presidency was introduced the same system. Metcalf states that there was Munro's legacy of paternal solicitude for the peasant, which became the avowed creed of many District Officers (Metcalf 1962:295). The main principle underlying a ryotwari system is that there would be a direct link between the state and farmer or cultivator. In these areas, an extensive cadastral survey of the land was done and a detailed record-of-rights was prepared, which served as the legal title to the land for the cultivator.

After the 1857 Mutiny, the ryotwari tenure policy was subject to changes. The events of the Mutiny called this peasant theory into question for the first time. The British felt that having large number of landlords (rajas, zamindars and talukdars) on their side would be politically advantageous. As a result the ryotwari policy was reversed. Several landlords whose land had been taken away under the village based settlements had the land given back to them. In 1859 they were declared to have a permanent, hereditary and transferable property right (Baneriee and Iyer 2005:1196). In some areas, the British favoured the landlord system (like in Bengal Presidency) as the system was in existence before the British. It was also administratively feasible as it did not demand many state resources. It would be costly to change the system and hence the Landlord system survived. Some others argued that the ideology and economic doctrines that time, favoured changes in British policies (see Guha 1963).

Many scholars have pointed out that the British policies of land revenue are influenced by choices of British individual administrators, political events, trial and error, date of conquest and presence of a landlord class even before the British regime (see Mukherjee 1962; Ray and Ray 1975; Banerjee and Iyer 2005).

Rabitoy argues that the reality of land revenue administration, in the Bombay Presidency was not systematic but administrative expediency. The preoccupation with increased land revenue necessitated, at all levels of the administration, an expedient approach to administrative policy (Rabitoy 1975:530,545). I conclude that from the historical evidence that the British land revenue policy that lasted 150 years was a resilient product of economic changes, political ideologies and pressures of population growth, which led to a complete change of land tenure system in India.

System of water cess collection

Canal irrigation in India is said to have been practised along with lift irrigation during the Mauryan Empire that was established after the Magadhan Empire (i.e.600B.C). Dams were constructed and embankments also were in use. People or communities had to pay tax for irrigating their plots. Rangarajan documents that:

Different types of taxes were collected from the cultivators depending on the nature of irrigation. The taxes fixed in the Mauryan times for taking water works built by the king were: one fifth of the produce if manually transported; one fourth in case carried by bullocks; and one third when lifted by mechanisms into channels. The tax rate was one fourth of produce for taking water from natural reservoirs like rivers, lakes, tanks and springs. Exemptions from payment of water rates were granted for building or improving irrigation facilities. Exemption was given for 5 years for new tanks and embankments, 4 years for renovating ruined or abandoned water works, and 3 years for clearing water works overgrown with weeds (Rangarajan 1987: 231-232).

The British's interest in development of irrigation in India had many dimensions. In the 1840s, Arthur Cotton argued successfully that crop production could be advanced by state irrigation investments that would pay for themselves with higher taxes on

more productive land. After the failure of private funded irrigation projects, the colonial Government in 1866, decided to construct large irrigation projects with the finance raised from public loans. Some scholars observed that the interest in development of irrigation projects in India was mainly to address the great famines during the 1870s and tackle political resistance. Others have argued that protection against famine as an objective, was little more than window dressing for the real surplus extraction (see Whitcombe 1972, cited from Mollinga 2003). Stone (1984) argued that canal irrigation was an important instrument of colonial rule. Bouman et al argued that natural resource management policies during the colonial period were driven by the objective of securing control over both natural resources and local communities. Proprietary rights over natural resources enabled the colonial state to extract revenue from land, forests, and water as well as to regulate community use of natural resources' (Baumann et al 2003: 3 italics mine).

The East India Company in the beginning, undertook the work of the revival of the irrigation systems of Delhi and Tanjor with a consideration that the interests of charity (protection against drought/famine insurance) and the interests of commerce (profit) could happily be seen to coincide' (Whitcombe 1982). As a result 'protective irrigation' projects were designed to supply small quantities of water to a large number of acres. The protective policy was linked with many dimensions like famine prevention, revenue stability, the settling of unruly tribes, expansion of cultivation, extended cultivation practices, and political stability (Mollinga 2003).

The British wanted to sell irrigation water to farmers to earn back the revenues and recover the investments made (Wallach 1985). The only way to do so was to supply water for crops like paddy and sugarcane, for which farmers were always willing to pay. The British, therefore, allowed substantial irrigation at the head ends of the irrigation systems they had built for famine relief. The British might have thought that when drought returned, the canals would revert to their fundamental purpose. In practice, this did not happen. The other question that worried the British when they embarked on the delta works (designed by Arthur Cotton) was whether the farmers would agree to buy irrigation water, as they practiced rain-fed paddy cultivation.

The British government also feared that cane growers without a secure supply of water would abandon the land if they were denied water during a drought (see Wallach 1985). These practices show evidence of the dual nature of the British irrigation policies.⁷ There were incidents of protests by cultivators resisting the taxation of governments during pre, colonial and post colonial periods. Evidence is available in contemporary literature and inscriptions showing that 'taxation very often pressed oppressively on people's (Altekar1972:283 cited from Choudharay 2000). The British enacted different legislation to implement irrigation works and collection of revenue. The Irrigation Act of 1865 empowered imposition of penalty. According to Section 1 (b) of the Irrigation Cess Act:

Whenever water from any such river, stream, channel, tank or work, by direct flow or percolation or by indirect flow, percolation or drainage from or through adjoining land, irrigates land under cultivation, or flows into a reservoir and thereafter ... and in the opinion of the Revenue Officer empowered to charge water-cess, subject to the control of the Collector and the Board of Revenue,... it shall be lawful for the State Government...[to] prescribe the rules under which, and the rates at which, such water-cess shall be levied, and alter or amend the same from time to time (Saravanan 2001:301).

The British enacted different Acts over time to administer irrigation and revenue collection. The British charged an irrigation service fee of Rs 5 per acre for farmers in the Krishna Delta who signed by March to take the water for the coming season. Perhaps the most obvious way tried to enforce regulations was through penalties. Farmers who failed to sign up by then, but still took water were charged twice that much (see Wallach 1984). There are different rules to levy fines or penalties in Maharashtra, Karnataka and Andhra Pradesh, but these are largely ineffective. Wallach (2004) argued that:

Today, although light irrigation makes economic sense and there are plenty of customers for canal water, the old preference for wet crops still prevails, for cultural as well as economic reasons. The government[s] seems powerless to check the excessive headend diversions that those crops require. The situation is all the more frustrating because it could have been avoided by designing projects that farmers wanted and administrators could manage. The British could not stop to ask the farmers if a proposed scheme was sound; nor, a tragedy of colonialism, would farmers have dared to respond

honestly if they had. The irrigation problem in South India today is therefore a story rooted in the psychology of colonialism, and in its history may lie the seed of its solution, an appreciation of the need to consult the people who are the intended beneficiaries of these projects (Wallach 2004:2).

First generation irrigation reforms

The British formulated irrigation reforms that were introduced in the Krishna Basin to address the problem of canal irrigation. The Indian engineer Mokshagundam Visveswaraya¹⁰ suggested two ways to address irrigation distribution issues. One way was construction of small service areas with heavy irrigation. The British did not accept this idea. Second, he suggested a 'block system' of irrigation in 1901. The land was divided into four parts and each part is grown homogenously. Only one fourth part of the field is assured with irrigation. This system became the corner stone for the sugar cane revolution in the state of Maharashtra. The block system of irrigation with many modifications is practiced even today in some South Indian states.

The World Bank, in 1976 approved three major loans for irrigation development in Andhra Pradesh to improve the performance of its irrigation systems. 11 The focus of the reform was to ensure full water delivery to designed discharges at the outlet level and also to introduce rotational water deliveries. The programme aimed to supply a fixed volume of water supply to each farmer in the command leaving the choice of the crop to the owner of the plot. The Government of Andhra Pradesh created the CADA to implement integrated water management functions. There was much emphasis on the technology (hardware) part of the irrigation systems. The emphasis on revenue returns from irrigation projects continued in the successive policy documents. However, the need for the institutional (software) strengthening was prioritised. Later in the 1980s the Warabandhi (proportional distribution over outlets by maintaining full supply levels in distributay canals by systematic on and off rotation of these canals) system of water distribution was followed in all Indian canal irrigation systems 12 (see Malhotra 1982 for a technical perspective and for a theoretical explanation Jayaraman (1980) and Jurriens and Mollinga 1996).

Irrigation works and cess

In spite of the policy focus on system improvements, the irrigation systems continued to be in poor condition due to inadequate and inefficient maintenance and operation works. The systems accounted for much less irrigated command than originally designed. In spite of lower cess collections, the governments continued to fund operation and maintenance activities. The funds allotted were meagre to meet the full requirements. ¹³ The performance of cess collection was not optimistic. The figures suggest that the revenue generated is much less than the principal capital invested in building the irrigation systems. The revenue generated through cess collections is not even enough to meet the maintenance costs of the systems, leaving aside recovering the capital costs invested.

Vaidyanathan (1999) argues for the country as a whole that, it is the poor service of irrigation that led to the poor payment of water charges. For example, water availability was never a problem of the headreach farmers. But these farmers too do not pay the water cess often, due to the weak collection mechanisms. The Revenue Department is empowered to collect irrigation revenues and irrigation water supply by the irrigation Department. To achieve better results, Joint Azmoish of irrigated commands by both Revenue and Irrigation Departments was introduced. The emphasis on collection of irrigation cess is much more visible in the irrigation reform program that was introduced in Andhra Pradesh since 1997.

7.3 Changes in Land and Water Policies in Andhra Pradesh

Under the constitution of independent India, states were granted the power to enact land and water reforms. This is why the Indian legislation on agrarian reforms comprises far more than 100 laws. However, we can categorise them in to three major areas: abolition of intermediaries in 1951, tenancy reforms and ceilings for landed property. In this section, I discuss the recent organisational and policy changes that took place in the Andhra Pradesh in the land and water sectors. Coupled with historical practices, these changes influence the current Joint Azmoish practices.

Changes under N.T.Rama Rao Government

In 1982, the Telugudesam party (TDP) was founded by N.T.Rama Rao and came in to power in 1983. After coming to power, N.T. Rama Rao became the Chief Minister of the state and introduced many populist policies. In 1984, the N.T.Ramarao led TDP government introduced a popular policy that exempted farmers irrigating dry crops from paying the water cess. His government also waived the land cess.

Government order No 33 dated 10th January 1984, together with earlier government order 6(1) of 1967, declares that the farmers who are cultivating their lands 'without any source of irrigation' (meaning rainfed cultivation) whether wet or dry, are exempted from paying the land cess. The order further stipulates that land cultivated for the purpose of wet crops using irrigation need to pay only the water cess, not the land cess. This means the land cess is completely abolished in the state.

The Revenue Department is empowered to collect the water cess. In the past at the village level, the Karanam or Talati was assigned with the duty of cess collection. The Village Administrative Officer (VAO) position, introduced by the TDP government, replaced the traditional Karanam. It was the Karanam who maintained the village land records before the appointment of the Village Administrative Officer. The Village Assistant named Talayari was responsible for collecting the irrigated area details. The dates for cess payments are declared by a process called tam tam (drum beating in village streets) in the village.

As a move to decentralise the government administration, the TDP government introduced changes in 1987, to the three-tiered system (village panchayat at the first, the block at the second and the district at the third level) of local self-government that was introduced in 1957. The basic three-tier format remained unchanged but the block panchayats have been abolished and the Mandal Parishad introduced.¹⁵ In the mid 1990s the system underwent some more changes under the Chandrababu Naidu government.

Changes during Chandrababu Naidu government

Mr. Naidu became the Chief Minister of Andhra Pradesh in 1995 and introduced many reforms. The three tiered system of Panchayat Raj governance in the state received some bureaucratic modifications and led to changes in the organisational structure of the Revenue Department.

The concept of *Gram Sachivalay* (village secretariat) was introduced. The newly introduced Panchayat Secretary (PS) post as the head of the village secretariat replaced the Village Administrative Officer (VAO) The PS is a permanent executive at the Panchayat Secretariat level that came into existence in the entire state on 1st of January, 2002. The idea of a 'village panchayat secretariat' is similar to that of a 'State secretariat' located in the State's capital. ¹⁶ The PS is assigned with ten types of functions ¹⁷ and sixty-three types of responsibilities, but the scale of operations was limited to one Gram Panchayat (see Vijay Kumar and Sudhakar 2003).

The Panchayat Secretaries, like in the case of VAOs were not under the supervision of the Mandal Revenue Officer (MRO) but are answerable to the Mandal Development Officer (MDO). This policy of the state is criticised by the revenue officers as a move to reduce the powers of the Mandal Revenue Officers, who enjoyed judicial powers at Mandal level. The Andhra Pradesh Revenue Service Association (APRSA) resisted the government's policy and claimed that government deliberately reduced their powers. The Naidu government did not yield to their resistance and the policy was implemented.

The new system has been criticised by members of other members of the civil society as it has been imposed and dilutes the autonomy of the Panchayats. The multiple functions assigned to the secretaries make them direct subordinates to the Revenue and Mandal Parishad officials, who are prone to interfere in the affairs of the village administration.

Results of Policy changes

The land revenue policy was abolished in 1984, but the collection of irrigation cess continued. It was during 1996 that the water charges were tripled under the Chandrababu Naidu government.

My discussions with revenue bureaucrats in the fieldwork area suggest that the changes in land and water policies resulted in lower cess collection in the state. They argued that the waiving of land cess policy has de-linked the notion of maintaining land ownership through payment of land cess to the government. The farmers were willing to pay the land cess, compared to the water cess, to ensure their ownership of the land. They believe that their ownership rights to the land are secured when they paid the cess. The belief is that paying tax secures land rights. The value of this belief or practice can be understood, when the owner of the land pays the cess by him/her self, even though the land is given for tenancy. In this context, the policy changes have resulted in a change of attitude of the farmers.

The Kalluru mandal revenue officials explained to me that the changes in the land tax policy reinforced the informal nature of land registration/transaction practices especially in Telangana region.¹⁹ Land transactions between buyer and seller are taking place informally in the presence of community leaders, avoiding the government land registrar office. 20 The agreements were written on government stamp papers of a certain denomination. Often 1000 rupees bond paper was used for the purpose.21 Since the land transactions are not registered with the government office the buyer and seller do not pay the tax money or stamp duty to the government. The transactions also will not appear in the land registrar office records. As an alternative arrangement to secure the ownership rights, the buyer makes sure that his/her name will be included in the Adangal or Pahani 22 register at the village level. As a result the state is losing some of its revenue from the land registrations. The actual practices show how users' practices were regulated and embedded by the land and water policies. The changes in the local level administration further restricted access to the revenue data.

7.4 The Joint Azmoish in Reform Policy

In the past the state government depended on the local revenue administration for collection of different types of revenues.²³ As explained above under the Naidu government changes were introduced in the revenue administration, to ensure better cess collection in the state. The Joint Azmoish policy aimed to address

the issue of poor collection of irrigation cess and low recovery rates through better service delivery. The government has legitimised the participation of WUAs in the process of JA through the APFMIS Act. In this section, I present briefly three important government initiatives: revised water charges, institutional linkages and revenue sharing, which are designed and implemented for effective implementation of Joint Azmoish process in the state.

Revised Water Charges

The irrigation experts in the state claim that until the 1950s, the irrigation sector used to be financially profitable. Revenues from water charges levied on beneficiary farmers were larger than government expenditure on operation and maintenance. Over time this situation has eroded and changed. The water charges, fixed in the 1950s, continued for many years. These charges were barely sufficient to pay the salaries of employees (initially taken on contract but made permanent later) let alone the capital costs. The under funding of O&M activities in turn, is attributed to inadequate cost recovery and there are various views on fixing the water price in the country. ²⁴

The water rates have remained unchanged for long periods in Andhra Pradesh. ²⁵ As part of the reforms the water charges were tripled in 1996 in the state (see Table 7.1).

TABLE 7.1 Changes in the water charges in A.P (1989-1996)

	Rates of water cess in past and present (in Rs per ha)								
Nature of Crop	Major and Me	edium Irrigation	Minor Irrigation						
гчаните ву Стор	Pre-revised	Revised w.e.f	Pre-revised	Revised w.e.f					
	1.7.1989	1.7.1996	1.7.1989	1.7.1996					
First or Single Wet crop	150	500	100	250					
Second & Third Wet crop	150	375	100	250					
First crop Irrigated Dry	100	250	50	150					
Second &Third ID crop	100	250	50	150					
Du fasssal crop	300	825	200	825					
Aquaculture	0	1250	0	1250					

Note: 1. Du fassal crop: is a long duration crop also annual crop harvested two times in a crop calendar, 2. we.f = with effect from

Source: Irrigation sector: A factual Note 1996, Government of Andhra Pradesh

The Government of AP constituted the Water Charges Review Committee (WCRC) on December 8, 1997, providing a permanent body (by Government Order No.225) for annual review of the O&M costs and to ensure that water rates are adjusted on a regular basis to cover full costs²⁶. Subsequently, the threefold increase in water charges was ratified in April 1997. The increase in water charges initially was seen as 'anti-farmer' and met with resistance from farmer groups, and opposition political parties in the state.

Institutional linkages

Under the reform policy, the Joint Azmoish has multiple objectives. The policy legitimises the participation of WUAs in the JA process. In 1999, the government issued order no 610, empowering the WUAs to participate in the Joint Azmoish process. Participation of the Irrigation, Revenue and Agriculture departments and the WUAs in Joint Azmoish was made mandatory. It was expected by the policy makers that the participation of WUAs in the process of JA would ensure correct reporting practices of the irrigated area leading to a higher rate of cess collection. The participation of WUAs is also seen as an opportunity to forge linkages between the participating agencies in irrigated agriculture. The right to participate will empower the associations to participate in making of irrigation management decisions.

The policy envisages that the concerned staff members of the Revenue, Irrigation and Agriculture Departments and the WUA representatives together makes a walk-through survey in the designated command of the WUA at the end of each *Kharif* and Rabi crop season. After the survey, the extent of command that received irrigation, types of crops grown in the WUA command area are determined. Based on the survey results, the Revenue Department collect water cess from the farmers in the command villages. The WUA is expected to facilitate the collection process. The share of cess collection will be debited to the WUA bank account by the Mandal Revenue officials.

To facilitate the process, the government fixed a particular month to conduct the Joint Azmoish. Through Letter No. 60426/Lr.2/99-1 dated 27 August 1999, the Government notified that the Joint Azmoish exercise had to be conducted for the *Kharif*

crop in the month of September and for the Rabi crop in the month of February without any delays. The policy also states that WUAs be involved in collection of water cess. The association shall keep its share of revenue out of the total collected cess. The rest will be deposited in the government treasury. Incentives for WUAs to perform better were also considered. To further strengthen WUA participation and ensure the process of Joint Azmoish, the government issued order number 155, which is described as follows:

The assessment of the irrigation department will be taken into consideration and the water users association will do joint assessment. The user association will prepare the estimation of irrigated acreage in its jurisdiction with the help of irrigation department and submits to the Revenue department for the collection of the cess. If the Revenue department needs some clarifications it can ask for the explanation regarding the reported acreage to the WUA.

Revenue Sharing

The government of AP issued an order in February 2001, regarding the allocation of revenue sharing. Revenue sharing between the state government and WUAs was expected to lead to economic sustainability of the latter and less burden on state resources. The revenue in major irrigation systems is shared in a proportion of 50:25:10:10:05 i.e. to the State (irrigation department), WUA, Distributary Committee (DC), Project Committee (PC) and Gram Panchayat respectively (see Table 7.2).

TABLE 7.2: Cess collection across irrigation systems (1997)

Level	Major	Medium	Minor
Water Cess share per Ha in Rs	500 (100)	500 (100)	250 (100)
State/Irrigation Department	250 (50)	250 (50)	Nil
WUA	125 (25)	150 (30)	225 (90)
Distributory Committee(DC)	50 (10)	No D.C	No D.C
Project Committee (PC)	50 (10)	75(15)	No P.C
Gram Panchayat (GP)	25 (5)	25(5)	25 (10)

Note: figures in parenthesis are percentages

The shares of funds are transferred to the associations by the Revenue department. The users associations are expected to use the share of funds received to meet their O&M costs. They can also raise extra resources and in the process become self independent. The policy of revenue sharing between the government and the WUA is an important step to sustain the WUA activities. The Joint Azmoish has given due importance under the overall reform policy. However, it was resisted during implementation by different actors. I discuss the process in detail in the following section.

7.5 The Politics of Implementation

The implementation of Joint Azmoish faced constraints at the field level. I discuss how participating bureaucracies, WUA leaders and individual water users experienced the policy. Among the participating departments especially the Revenue Department did not show interest in the policy. The reason could be that the JA is a threat to their traditional power of collecting cess from users directly. The Agricultural Department acted in a laissez-faire manner. The Irrigation Department showed interest but tried to control the process. The majority of WUAs did not play an important role and were less interested to motivate users to pay the cess.

The Revenue Department is empowered to collect the cess and also perform land-related registrations. The revenue bureaucracy enjoys a special status within the bureaucratic hierarchy and has wide discretion powers over the dispensation of benefits or allocation of public sanctions. When the Naidu government wanted to transfer the power to collect the cess to WUAs, the revenue bureaucracy tried to resist the policy. Their dislike towards the policy is due to the fear of loss of power and economic incentives.

Conflicting Interests

In the studied villages I observed differences between reported irrigation and revenue statistics. The Irrigation Department accounts for the water released in a particular canal. It counts a plot

as irrigated, even if it receives few wettings. In contrast, the Revenue Department, which maintains the records on village basis, only counts a plot if it receives full irrigation (see chapter 6). The different practices adapted by the departments lead to differences in JA results. To explain further, I discuss the case of WUA 183 under Nidanapuram major canal (see Table 7.3).

TABLE 7. 3: WUA183, Madhira Mandal, Khammam District

T 7:11	Irrig	ation statisi	tics (în ha)	Revenue statistics (in ba			
Village	Wet	ID	Total	Wet	ID	Total	
Siddinenigudem	81	280	361	73	33	106	
Nagavarappadu	46	180	226	34	43	77	
Maturu	144	502	645	82	90	172	
Ambarupeta	12	157	169	NA	12	12	
Dendukuru	81	410	491	NA	49	49	
Illendulapadu	85	96	181	NA	33	33	
Nidanapuram	24	290	314	10	23	32	
Madhira	12	140	152	NA	NA	NA	
Total	485	2055	2540	199	281	480	

Note: Assistant Engineer, Madhira irrigation sub division, O&M section no: 3 and Mandal Revenue Officer, Madhira signed this statement (Proforma), on 25 April 2001.

The secondary evidence shows that there is a huge difference in Irrigation Department and Revenue Department reported statistics. The actual localised command of WUA 183 is 2810 ha, out of which 2540 ha falls into Madhira Mandal and the rest under another Mandal. According to the Irrigation Department they achieved 100 percent irrigation of the WUA 183 command in Madhira Mandal. The revenue figures shows only one fifth of what the Irrigation Department reported. The Revenue Department maintains the land records. The statistics reported by the Revenue Department are finally considered by the Bureau of Statistics, which publishes the reports for and on behalf of the state government.

The fact remains that there exists a huge gap. Why are these differences not addressed? Are they impossible to address? I argue that the participating departments do not want to solve the differences, so that they can continue to defend their interests. The

specific interests of the departments influence their practices (see chapter 6).

To achieve the JA objectives, the WUA needs to play an active role and be and vigilant. It is not sufficient if the WUA only participates in the JA but also must encourage users to pay the cess without defaults. However, many WUA leaders do not want to insist on cess payment. According to them if they insist users to pay they will be less popular and lose chances of winning in the next elections. In the study area I found neither interest nor participation of Agriculture Department in the Joint Azmoish process.

Role of WUA in cess collection

The role of the WUA is crucial in both activities of JA and cess collection. I found that only a few WUAs have registered a higher percentage of Joint Azmoish and in others a huge gap exists between the localised command and JA figures.

For example, WUA 173 registered 99 percent of Joint Azmoish in 2001-02. Whereas, there was no WUA president for 173, as the election for the position of President was withheld due to court the litigation. In the absence of a President, the WUA activities were supervised by the Distributary Committee President. WUA 171 was located at the tail end of Punyapuram major. It showed a huge difference between the localised and the Joint Azmoish figures. Only 26 percent of the localised command was reported as irrigated. In WUA 172B, the Joint Azmoish was reported as more than the localised command (see Table 7.4).

When compared the levels of JA reported were higher in Kalluru irrigation sub division (which is in head reaches) compared to WUAs in Madhira irrigation sub division. Within the Madhira irrigation sub-division, WUAs 177, 178 and 179 which were located in the head, middle and tail of the Utukuru major canal-only showed 44, 31 and 11 percent of irrigated area under Joint Azmoish respectively. Whereas WUAs 180 and 181 on Madhira major canal showed 96 and 92 percent respectively. The tail end WUAs on Nidanapuram major WUAs reported lower rates of JA. What does this pattern suggest?

TABLE 7.4: Cess Collection in Kalluru and Madhira Irrigation Sub-division (2001-2002)

TV77.4	CCA]oint		Cess demand	Collection						
WUA	ba	Azmoish	Percentage	A/c Joint Azmois	Percentage						
Kalluru Irrigation Subdivision (DC 14)											
169	2214	1963	89	0.94	0.44	47					
170	1497	858	57	0.41	0.28	68					
171	1631	422	26	0.19	0.12	64					
172A	1491	1330	89	0.60	0.25	42					
172B	1199	1307	109	0.59	0.23	39					
173	1803	1784	99	0.86	0.35	41					
174	2549	2434	95	1.17	0.54	46					
175	2447	1670	68	0.77	0.37	48					
176	2309	1922	83	0.84	0.27	32					
		Madhir	a Irrigation	Subdivision (DC	15)						
177	2106	917	44	0.40	0.15	38					
178	2942	910	31	0.30	0.14	48					
179	1546	168	11	0.04	0.01	19					
180	2019	1940	96	0.40	0.20	50					
181	1985	1830	92	0.06	0.02	41					
182	2040	1906	93	0.62	0.12	19					
183	2810	480	17	0.17	0.10	46					
184	2535	320	13	0.08	0.03	43					
185	2459	170	7	0.04	0.01	29					

Source: Discussion with WUA leaders and Kalluru and Madhira irrigation sub-division records up to 20.32002.

I also tried to understand the correlation between the JA and cess collected during the year 2001-2002. The assumption is that if JA is properly conducted it would lead better to cess collection. While analysing, I did not find any correlation. For example, WUAs 180,181 and 182 reported more than 90 percent of JA but only 50, 41 and 19 percent in terms of cess collection.

Discussions with the three WUA presidents suggest that they were not in favour of cess collection and also did not actively participate in the JA. In this case, all three WUAs are supervised by the same competent authority. The discussions with him suggest that he paid extra attention to monitoring and at the same time argued with the concerned Revenue colleagues to report the correct figures. That is the reason for the higher percentage of JA figures. However, the assistant engineer said that he could not

ensure the cess collection as it was not within his powers. Cess collection can only be improved if the WUAs take an interest in JA and cess collection. He claims that WUA leaders are not interested in either JA or in cess collection.

I assume that the better results of JA recorded in few WUAs were due to the active participation of WUA leaders and/or irrigation competent authorities. At the same time the WUAs which recorded better JA showed poor performance in terms of cess collection (see Table 7.5 and 7.6). That means better JA does not necessarily lead to better collection of water cess. If the better results of JA are attributed to the participation of WUAs, why did they fail in ensuring cess collection?

The irrigation bureaucrats who took an interest in JA could not show the same in cess collection as it is not their mandate. They are not responsible to explain the reasons for the low rate of cess collections. The WUA leaders also felt enforcing cess payment as a threat to their leadership. Some of the WUAs leaders stated that they could not be involved in the cess collection because they cannot ensure the water supply. The Revenue department acted on its own. As a result the provisions of the Act could not be utilised by the WUAs. This leads us to ask whether users participated and are willing to pay the cess irrespective of WUA leaders', irrigation and revenue bureaucrats interests. Theoretically, if they were satisfied with the irrigation services, they should be willing and pay the cess.

Are farmers willing to pay?

The farmers' willingness to pay the cess is directly proportional to the services provided by the WUA.²⁷ The farmers' responses (across the head, middle and tail reaches) show that they are willing to pay the revised water cess if they receive good service. To present an example:

The farmers from Korlagudem village in WUA 172A located at the head reach, and Kesavapuram farmers in WUA 171 located on the tail reaches of Punyapuram major expressed alike that they will pay the cess to WUA in advance, if the WUA provides water supply at the right time and in the right quantities. In the farmers' words, we are producing 30-35 bags of paddy per acre in *Kharif* season with

uncertain water availability. One bag (75-80kg) of paddy costs Rs 400 even under the lowest market price. If there would be assured water supply, we can produce up to 40-45 bags. We are ready to pay one bag of paddy or its cost to the association.

The farmers are even willing to pay double the current water cess i.e. Rs 500 per ha of wet crop if water supply is assured. They believe that, with the assurance of water in time in the right quantities, total production per acre can be increased with the same amount of labour input. They repeatedly stressed that they are ready to pay one bag of paddy per acre (2.5 bags for ha) to the association or to the government in advance of the season.

The WUA Presidents also confirm that, if water supply is assured in time and quantity, they would ensure the collection of water cess from the farmers. They blame the water supply as erratic, and unreliable. They did not reflect on their role and lack of cooperation between WUA leaders in water supply, but argue that supplying water is controlled by the Irrigation Department.

Land use pattern and Records

In the study area, I observed that the land records were not updated according to the changes in land use pattern. In some cases, the area under irrigation is over reported and in other under reported. I discuss the case of Lingala and Yerraboinapally villages in Kalluru irrigation sub-division.

The villages of Lingala and Yerraboinapally were represented in Yerraboinapally revenue village. They were declared as two separate Gram Panchayats in 1995 according to the villagers. As a result, the land records need to be updated village wise as they now represent separate Panchayats. The fact is that the records are yet to be updated. The total land available for cultivation in these two villages is identified as 1200 ha. The irrigated land falls under jurisdictions of WUAs 174 and 175. Out of 1200 ha, it was reported that a total of 283 ha in 1998-1999, 324 ha in 1999-2000 and 371 ha in 2000-2001 were irrigated through canal water. It was reported that about 197 ha were irrigated by tank irrigation in all these years. About 405 ha of irrigated dry crops receive irrigation. I thought there would be a gap or plots that did not received irrigation or cultivated. The villagers told me that they do not have

any such plots that are not used. The records show that there was a gap.

On the basis of discussions with villagers and the Panchayat Secretary, I conclude that there have been changes in land use, but not recorded. Some of the cultivable land was converted in to house plots; brick kilns and used for non-agricultural purposes, which are not accounted for in the revenue records. As a result, there has always been a gap between the situation on the ground and the official records. The questions that arise from this are: Why did the Panchayat Secretary fail to update the records? Why has not there been enough focus on updating the records? Why did WUAs not address this issue?

Gopaladevaboinapally village

I discuss the case of Gopaladevaboinapally village in Kalluru Mandal to show why and how the differences in reporting serve the interests of participating actors. According to revenue records, Gopaladevaboinapally village holds 216 ha out of which 211 ha is recorded as irrigated dry. Discussions with farmers suggest that about half of the command area that belongs to the village is under wet paddy cultivation. The Irrigation Department records of 2001-2002, show that 130 ha were irrigated under Lingala and Gopaladevaboinapalli minors. My field survey for 2002 Kharif season under Lingala and Gopaladevaboinapalli minors shows about eighty percent wet irrigation as the area fall the under head reach of the Madhira branch canal. The point here is that the Revenue Department continues to record most part of the land as irrigated dry. The Irrigation department records at least half of the area as irrigated. The villagers' statements and my own field data suggest that about eighty percent of the area receives irrigation.

From the above villages cases I derive the evidence that even after introduction of the JA there were no attempts to match the data sets and collection practices. More importantly, there was no coordination among the Irrigation, Revenue, Agriculture and WUA representatives. In both the cases, the role of WUA is not visible. When I discussed this issue with the WUA leaders, they have agreed that they could enforce neither the provisions of APFMIS Act (with the government staff) nor the participating bureaucrats to take an interest in it. The leaders also claimed that the size of the

WUAs did not allow them to co-ordinate the Joint Azmoish process.

Size Argument

During the discussions most of the WUA leaders agreed that they failed to conduct the Joint Azmoish process. The main reasons that they gave are: the scale of the WUA and the lack of co-operation from the revenue officials. Since the command of the WUA falls in to more than one village, the WUA has to work with many revenue officials to complete the JA process. It is further complicated if the WUA command falls under more than one revenue Mandal and District (see Table 7.5).

The WUA leaders on MBC claimed that the bureaucracy is not willing to accept them as partners in the JA process. The WUA leaders further complain that the results of JA would have been more positive if the Territorial Committee (TC) members of the WUA took an active role in the Joint Azmoish. Some of the WUA Presidents shared that they do not have time and also they cannot motivate farmers to pay the cess.

TABLE 7.5: WUA Jurisdiction in Madhira Irrigation subdivision

Name of the WUA	Localised Command (ha)	No of Villages	No of Mandals	No of Districts
177 C.K.konduru	2107	7	2	1
178 Utukuru	2943	8	2	2
179 Si ri puram	1547	7	1	1
180 Penugolanu-I	2020	5	1	1
181 Maturu- I	1985	6	1	1
182 Penugolanu-II	2040	5	1	1
183 Maturu –II	2815	8	1	1
184 Dendukuru	2536	9	2	1 .
185 Meenavolu	2460	7	3	2

Source: Records of WUA in Madhira irrigation sub division, Madhira.

In contrast, my discussions with the TC members illustrate that they are interested in participating the Joint Azmoish, but were never encouraged by their WUA Presidents or department staff. Many of them reported that they never knew that they could participate in the Joint Azmoish. That suggests majority of the WUA Presidents were neither interested in participating nor wanted the TC members to participate.

The Competent Authority view

I discuss in this section how the competent authorities viewed their role in conducting the Joint Azmoish. They also put forward the size argument. I analyse the case of Punyapuram major in Kalluru irrigation sub division. Under the Punyapuram major canal, three water users associations have been formed. The total length of the major canal is 15 km. The total localised command of the major is 4,701ha. About twenty revenue villages fall under the command of major canal. The competent authority (assistant engineer) supervises these three WUAs, assisted by two Work Inspectors (one post was vacant at that time) and seven Luskars. According to the departmental guidelines, one Luskar is provided for every 600 ha to assist in day-to-day irrigation management.

A competent authority from Kalluru irrigation subdivision claimed that in order to conduct the Joint Azmoish two times in a year (that is after *Kharif* and *Rabi* crops) he had to work out a plan to work with as many as twenty Panchayat Secretaries and leaders from three WUAs. According to the engineer, it was not feasible for him to follow the procedures instructed by the government orders due to the number of villages and time available to complete the process. The engineer shared that he cannot participate in all the joint inspections/surveys but delegates subordinates (that is Work Inspector) to participate in the survey. He claims that the JA is only feasible if WUAs take an active role in the process. With this view, every one seems to point to others for the failure of the JA process. In the flowing I analyse the basis for these claims.

The Practices

The Work Inspector (WI) of the Irrigation Department prepares a statement every week using the information provided by Luskars on the type of crop sown and extent of area irrigated. I observed that the Luskars report every day regarding the water supply under each outlet in their jurisdiction. I did not see them using any format or maps with survey numbers. I would say the data process is more on the basis of experience and estimations. The Work Inspector

compiles the information outlet wise and submits this to the competent authority. In the case of Punyapuram, the Work Inspector did not have statistics of detailed irrigated plots with him. The competent authority (in this case the assistant engineer) in turn put those numbers in a format and submitted the report to the Deputy Executive Engineer. The data compiled at irrigation sub division level are then submitted to the Executive Engineer who heads the irrigation division. Then the data goes up in the hierarchy. This same data becomes the basis for the Joint Azmoish.

The mandatory involvement of WUAs in the Joint Azmoish has further added a new dimension to the reporting practices. In present practice, both irrigation and revenue staff prepare their records separately. Instead of making a physical survey (Joint Azmoish) on an agreed date, a meeting is held in the village secretary's office-cum residence to finalise already prepared statements. A final list emerges out of the negotiation between the parties. The list prepared by the revenue staff is taken as final after a few adjustments. The rule of thumb to decide the total irrigated area is the rainfall pattern in a particular year. If the rainfall was better than the preceding year, the irrigated area is reported as increased by 10 to 15 percent. In case of low rainfall, the figures will be adjusted accordingly. Then the record (proforma) is sent to the concerned WUA president through the Luskar to get a signature on it. Once the WUA President signed on the prepared report, the Joint Azmoish is formally completed. This process suggests that the physical verification of plots in each season by the members of participating agencies is amended in the process by securing consent of the participating actors. Whereas, if even a single actor denies the consent, the results could be different.

Case of Rajugudem WUA

The total localised command of Rajugudem WUA no 174 is 2,550 ha. The WUA jurisdiction covers eight revenue villages falling under two revenue Mandals in two different districts. About 526 ha falls under Kalluru Mandal (Khammam District), and the rest of the command falls under Tiruvuru Mandal (Krishna District). The WUA president reported that the association had received Rs 100,000 as its share of cess from the Tiruvuru Mandal. The money was credited in the bank account of the association in two

instalments in May and August 2001. The WUA did not receive any amount from Khammam Revenue Mandal office for the same year.

The WUA president said that he tried his best to coordinate with eight village secretaries, so that JA could be undertaken after the *Kharif* crop in 2002. According to him, he failed to reach consensus among the officers. Coordinating and finalising the dates, which are basic to carry out the JA, proved to be difficult. The WUA president questioned that "I am not aware whether I am empowered to call for a joint survey or not. If the representatives of the participating agency failed to report what rights does the WUA has to finalize the survey". As a result, the WUA could not carry out a Joint Azmoish as suggested by the Act.

According to the Act, joint signature(s) are obligatory. The revenue officials from Tiruvuru approached the WUA president for his signature on the format already prepared. The President refused to put his signature on the statement. Instead, he asked for the plot numbers that did not receive canal water so that he could verify the plots. He believed that there was underreporting. After further negotiation, the revenue officials of Tiruvuru had to increase the final figure. Whereas, according to the WUA President the Kalluru revenue officials neither approached him nor asked for his signature. The President shared that:

Due to my efforts out of 2549 ha of localised command of the WUA, 2434 ha (i.e. 95%) was shown as the Joint Azmoish figure. However I could not enforce the farmers to pay the full cess. Regarding fund transfer also I took a special interest. I had to go and meet personally the concerned Mandal revenue officials to speed up the process of funds transfer to the association bank account, but could not succeed much.

What can be concluded from the field observations? The size argument that is put forward by WUA leaders and participating bureaucrats is not convincing. If the TC members are encouraged to participate it would be quite possible for the WUA to implement the JA. Decentralisation of responsibilities and powers are within the WUA is much needed. As the Panchayat Secretary is responsible for a single village it should not be a problem for him/her to participate. In case of the competent irrigation authority (along with the subordinate staff), it should be possible

though he had to supervise about 20 villages as he would not have any other administrative work during that time. I could not analyse the reasons for the lack of participation of agriculture department staff as they were not available to discuss. The field evidence shows that the formal policy got subverted during local practices that are guided by actor interests.

Role of Panchayat Secretary

As a result of the policy changes in January 2002 at the village administration level, the villages under the Madhira branch canal received newly appointed Panchayat Secretaries. In some cases the old VAOs were reappointed as Panchayat Secretaries. The changes initially were not conducive for implementation of JA in the state. The changes affected cess collection because many Panchayat Secretaries did not have prior experience in dealing with land and revenue issues.

The discussions with the newly appointed Panchayat Secretaries showed that they were new to the system and were expected to carry out multiple activities. They were neither enthusiastic nor clear about their role in the JA process. The VAOs who were reappointed as Panchayat Secretaries told me that the WUAs will not be able to do the job of cess collection (as policy wanted), as farmers will not pay to the WUA. The new secretaries claim that the WUA is not 'powerful' like the Revenue Department. The secretaries knew about the APFMIS Act but not read it. These remarks show the attitude of the revenue bureaucracy towards the WUA and its role in the JA and cess collection.

Politics of cess collection

In this section, I further discuss the possible linkages between the mechanism of cess collection and the reforms that were introduced in the Revenue Department. Though there were organisational changes at village level, the Revenue Department is still arguably the most powerful department in the government administration. The department enjoys a historical monopoly over management of natural resources like land and water at village level. Land is a crucial asset for food production and a key factor for livelihood security. The department derives its power from the management of land resources and related information that it maintains. The revenue bureaucrats at village level maintain interpersonal relationships with the elite farmers and local politicians. As a result they play an important role in the village governance and politics.

In the absence of active role by the WUA leaders, past practices of cess collection continued. As expected by the policy, no visible increase in the rate of collection has been achieved. At the same time, the organisational reforms in revenue administration caused confusion and further delays. In addition, the farmers are not willing to pay cess and continue to default either with the cooperation of the local revenue staff or in expectation of waiver (mass) of the cess by the ruling governments.

The village-level revenue staff, during the discussions expressed that, in years of good rainfall and harvest farmers do not hesitate to pay the irrigation cess. In a bad year they wait and expect the government to declare a cess holiday. According to the rules, a farmer is allowed to pay a certain amount, (usually more than half of the total amount to be paid in a year) and can obtain a receipt from the officer. The rest of the cess money will be carried over to the next year as balance to be paid. In most cases the farmers keep some portion of the cess as a debt in expectation of the government to write off their cess debts. This is locally called as mafi (no need to pay the existing debt to the government). I argue that this particular user practice is an outcome shaped by the past government populist policies under different regimes. The governments tried to write off the debts in order seek farmers' support and enhance the vote base in rural pockets of the state.

The revenue staff told me that, under the Revenue Acts, still the failure to pay the cess could lead to prosecution. Targets were fixed for the village revenue staff to collect the cess. They, in turn report to the Mandal Revenue Officer (MRO). The MRO, in turn, reports to the District Collector. The total revenue collection reported from a district could illustrate the performance of the Collector. Hence there is a pressure from the District administration for higher revenue collections. The pressure translates from the top administration to the village level revenue staff. To meet the targets of cess collection the Panchayat Secretary (VAO in the past) depends on big farmers. That provides a bargaining opportunity for the big farmers.

The Kalluru revenue officer during a discussion shared that there were occasions when VAOs paid the cess from their own pockets to meet the targets and later they collected these from the farmers. It was clear to me from the discussions that the underreporting of irrigated area by the Revenue Department, is mainly to meet the unaccounted expenses incurred by the lower-level revenue bureaucracy. In the words of one revenue official: 'these practices are an open fact, known to everyone and continued right from British time'.

In addition, the records were not updated and common formats were not followed. In revenue records, the lands which were recorded as uplands continue to exist as uplands. In practice some of them have been levelled by the farmers and receive irrigation water. These plots are still recorded as 'non-irrigated' providing a scope for manipulation. The changes in the land use pattern are not recorded in the revenue records. For example, if a farmer had to pay for x acres of wet crop, in the record it will be shown as x-a acres of wet crop. The difference between x and x-a will not be charged and the benefit is shared between the farmer and the revenue official (see Jairath 2001). During drought situations, ²⁸ there will be no pressure from the government and cess collection is not carried out. During these years, head reach farmers who might receive some water, also get the benefit of exemption. ²⁹

The cess collection varied from year to year. The evidence on low rates of cess collection was not only specific to my field research area, but also exists in other parts of the state. ³⁰ Another aspect that I could not analyse was the administrative costs of water cess collection. My guess is that, at present, the administrative costs to collect the cess are higher than the cess collected by the revenue bureaucracy. The performance of cess collection is not only influenced by physical factors like acute water shortages and drought but also institutional and political factors. The process of JA and cess collection reflects the interests of the participating actors and policies of the ruling governments.

7.6 Conclusion

The current practices of cess collection and payments are very much rooted in past policies; and social relations and recent reforms have not been able to transform them. Understanding the pattern of cess collection requires an analysis of data series as the dues from the previous year are brought over to the next year. Hence the point that needs to be distinguished is whether the number of users paying the cess has increased or, whether just a few users are paying the full cess.

Increasing the water charge prices is not the solution in the absence of assured supplies. The reform programme could not address sufficiently these two interlinked issues i.e. assurance of water delivery and cess payment.

The field evidence show that the rate of cess collection has not improved even after introduction of JA under the reform. The majority of the WUA leaders did not show interest in the cess collection for their own political reasons. Though a few of the WUA presidents were interested in JA, the participating bureaucrats were not interested in facilitating the process.³¹ The degree of control over the process by the WUAs was also limited.

The participating bureaucrats and departments have been able to continue their earlier practices and defend their interests by not participating in the process. There seems to be a common understanding between the officials and their practices, and none of them have taken any initiative to improve the process. As a result they continued to use different formats to report the command statistics, and hence the problem of under reporting continued.

I conclude that a host of institutional and political factors influenced the implementation of Joint Azmoish and subsequently the cess collection in the state. The JA policy is highly prescriptive. The policy prescribed the rules and expected farmers, irrigation and revenue bureaucrats to follow the instructions and procedures. The government assumed that the WUAs would function actively and that cess collection would increase in the state. It shows the 'policy as prescription approach'. However, the implementation of JA confirms that the actors tried to continue their practices and interests rather than following the rules prescribed by the policy. This implies that actors play an important role in the policy process by generating their own ideas and practices. In this case, the powerful actors like the Revenue Department influence the direction of the policy. In the following chapter, I discuss bureaucracies as important actors in the reform policy process.

- ¹ See Kautilya: The Arthashastra (1992) Penguin Books: India.
- ² Emperor Akbar during 1556-1605 implemented radical reforms. He replaced the payment of taxes in kind by a monetary tax which was no longer fixed as a share of the actual but rather of the average yield. Thus, it was not calculated according to the yield, but according to the area sown, and the cropping risk was shifted to the cultivators (Kuhnen 1982: 59). The system known as *Mansabdari system* disappeared with the decline of Mughal power in the early 18th century. The officials and others grabbed power where they could and became de facto hereditary land lords and petty chiefs in their local areas (see Banerjee and Iyer 2005).
- ³ For a detailed discussion see Siddiqui (1989).
- ⁴ In 1765, the office of 'dewan' for Bengal, Orissa, and Bihar, namely the financial sovereignty for these areas, was assigned to the [East India] Company with the concession for levying taxes in exchange for a global sum of Rs. 2.6 million per annum. After sometime of experimentation, in 1793, Lord Cornwallis' Permanent Settlement brought a final regulation of the procedure for levying taxes, which led to decisive changes in land tenure (Kuhnen 1982:60, 61).
- ⁵ Changes in land tenure occurred in this region under the stewardship of a brilliant Prime Minister, Sir Salar Jung, who held office from 1853 to 1883. Salar Jung abolished the farming out of land revenue collection to money lenders, placed government servants on salaries, and established a government treasury. To disengage government from the control of local money-lenders and court nobles, he brought in administrators from North India. But after his death, the core of the regime disintegrated into stalemated factional conflict (Elliott 1974: 29).
- ⁶ Mollinga (2003) discusses three different meanings for the concept of protective irrigation. 1. as a general term denoting insurance against drought and famine by irrigation 2. as a financial-administrative class of works in colonial irrigation policy and 3. as a specific type of ir rigation.
- 'To provide another example, the British declared the Kurnool-Cuddapah (K-C) canal project as a financial catastrophe. The government faced a dilemma, when the local farmers were eager to lease project land provided they could grow sugarcane with perennial irrigation. The British engineers allowed wet cropping at the head reaches. It did raise some revenue to the government in contrast to the objectives for which the project had been built. The Inspector General of Agriculture described the results to the Irrigation Commission of 1901-03. The project, he said, had created a 'class of speculative landholders' that had been largely benefited by a project that did nothing for most of the farmers it was meant to serve. The pattern of dominance of wet crops at the head and tail end deprivation became a familiar phenomenon.

⁸ King Lalitaditya of Kashmir is stated to have suggested to his successors to 'tax the agriculturists so heavily that they should have with them corn just sufficient for the current year'. Under King Sankaravarmani of that kingdom, it is said that 'the taxation was so heavy that people were left only with air to live upon'. There are records saying that the agriculturists of some villages in Tanjore district [in present Tamil Nadu state] gave up all cultivation as a protest against heavy taxation (see Altekar 1972). Several revolts occurred in northern India. Imposition of uniform revenue rate in Bhakkar in 1575-76 increased the oppression of peasants. As a result the Mangcha tribe revolted and killed the tax gatherers, though they were defeated later and expelled from their land. The Damodar Canal Tax Movement occurred in the late 1930s in Bengal. The Bengal Development Act 1935 created a serious popular discontent in the canal areas of the river Damodar due to charging of an irrigation levy (for a detailed discussion see Choudhary 2000).

⁹ For example: in the northern region, the Northern Indian Canal and Drainage Act, 1873, amended from time to time, governs the States of Uttar Pradesh, Punjab, Haryana and Rajasthan. The western region (Gujarat and Maharashtra) is governed by the Bombay Irrigation Act, 1879. In the eastern region, the Bengal Irrigation Act, 1896 was applied in West Bengal and Bihar. Within the Madras Presidency, the Madras Irrigation Cess (Amendment) Act, 1900; the Madras Irrigation (Voluntary Cess) Act, 1942; the Madras Irrigation Works (Repairs, Improvement and Construction) Act, 1943 and the Andhra Pradesh (Andhra Area) Irrigation Cess Act, 1865 (Act VII of 1865).

¹⁰ Mokshagundam Visveswaraya, popularly known as Sir M.V, was born in 1860. In 1883, at the age of 23, he stood first in engineering in Mumbai and started his career as an Assistant Engineer at Mumbai, Public Works Department. During 1901 he introduced the Block irrigation system. After his retirement, he rose to become the Dewan of Mysore (1912-1918). During 1919-1959 he served the Indian Government in various advisory capacities. In 1955, in recognition of his services to national development and for the cause of engineering, he was honoured by presentation of Bharat Ratna, the country's highest award.

¹¹ Prior to funding AP irrigation reform programme under AP-III, the World Bank financed projects include: Pochampad Irrigation Project; Godavari Barrage; Andhra Pradesh Irrigation and Command Area Development Composite (AP-I) and Second Andhra Pradesh Irrigation (AP-II). The National Water Management Project financed by the Bank included an A.P component to demonstrate improved network designs in six medium schemes. To this list AP-III Irrigation is added with a loan commitment of U.S \$325 million and the irrigation component of APERP (source: Centre for Environment Concerns (NGO) Reports).

¹² Originally applied in colonial India through the Northern India Canal and Drainage Act of 1873, the laws and infrastructure of Warabandi remain in

place in the Punjab Province of Pakistan, and in India, in the states of Punjab and Haryana, and parts of Rajasthan and Uttar Pradesh. The system is designed to provide a rationed and equitable service (in proportion to landholding) to all farmers under conditions of extreme water scarcity (see Perry and Narayanamurthy 1998)

¹³ These issues and concerns were recognised in many policy documents like the Irrigation Utilisation Commission Report of 1912, the Irrigation Commission Report of 1972 and the National Water Policy documents of 1987 and 2002. The national policy envisages farmer involvement in management, particularly in water distribution, system maintenance and collection of water charges. Pant (1986) argues that the term 'farmer participation' has been replaced by 'farmer organisation' in irrigation policy discussions on the assumption that participation results from effective farmer organizations. Hence the policy efforts were directed more towards the formation of water users associations.

¹⁴ Land reform measures have been in operation in India for more than four decades. Research results show the insignificant results particularly with regard to the redistribute objective of land reforms. The reasons could be that those who formulated the policies were either themselves landlords or their representatives. The dominant landed groups began to infiltrate through political defection whichever political party was in power in their respective states. Once entered in to ruling party, it is easy for these groups to resort to pressure tactics in order to delay the effective implementation of the stringent land reform measures (see Thimmaiah and Aziz 1983).

¹⁵ The 1986 Act, introduced by the NTR government, provided for greater decentralisation by creating a larger number of smaller mandals (sub-district administrative units). In the history of Panchayati Raj legislation, the introduction of this Act can be described as a move to further decentralisation of government administration. The Andbra Pradesh Mandala Praja Parishads (MPP), Zilla Praja Parishads (ZPP) and Zilla Pranalika Abhivrudhi Sameeksha Act, 1986 abolished 330 panchayat samitis and created 1104 mandal praja parishads in their place. The mandal praja parishad was created for a group of villages with a population of thirty-five to fifty thousand.

¹⁶ The system was introduced by Chandra Babu Naidu government through G.O.Ms.No.369 dated 12 December 2001, issued by the Panchayat Raj and Rural Development (MDLII) Department, Government of Andhra Pradesh. The earlier changes to the revenue administration /system were also by the same party but by the (late) N.T.Ramana Rao. This system was already in vogue in Indian states like Rajasthan, Uttar Pradesh, Madhya Pradesh, Kerala and Gujarat.

¹⁷ The functions are: Community welfare and development, Policing, Mandal parishad, Office, Coordination, Motivation, Revenue, Self-help groups, Election and Miscellaneous functions. ¹⁸ The Association got a permanent membership to the State Joint Staff Council only in 2004. Government Order no 347 issued in October 2004 (under the Congress government) enables leaders of the association to represent problems of the employees and also attend the meeting of the council (source: The Hindu, October 27, 2004)

¹⁹ The Chief Minister N.T.Rama Rao also introduced another popular land policy i.e. a crash programme of assignment of lands to tribal under the name Telugu Girijana Magani Samaradhana (TGMS). The policy was launched in 1986. Additional revenue and survey staff were sanctioned for this purpose. TGMS was viewed as a good policy intervention of the Government to promote the tribal development by minimizing the conflicts and to increase the productivity of the land. These records are known as Ramanna records in the tribal villages. The tribals used to demand for these records in the local Mandal revenue offices as they provide details of land ownership.

²⁰ Registration is carried out at the office of the Sub-Registrar of Assurances. In AP there are 387 Sub-Registrar offices that register approximately 1.2 million documents per year. Registration to document changes in ownership and transactions involving immovable property is governed by the Indian Stamp Act of 1899. Deeds of various kinds are required by law to be written on stamp paper of prescribed value. Certain transactions require a fixed duty. The lack of transparency in property valuation under the old system resulted in a flourishing business of brokers and middlemen leading to corruption. To address the corruption computerised counters have been introduced in 200 locations across the state (source: www1.worldbank.org/publicsector/egov/cardcs.htm).

²¹ The revenue officer of Kalluru told me that for every one lakh value of asset the buyer has to pay about seven thousand rupees as stamp duty to the government.

²² Pahani or Adangal is a register, which shows the details of the land and the name of the cultivator. This register is maintained by the Panchayat Secretary. The names of the persons who are cultivating a piece of land with in the village jurisdiction are recorded and need to be updated every year. The register does not show the ownership of the person who is cultivating the plot. But farmers attached a certain value to this register when I discussed about the practices. The discussions with tenant farmers reveal that this record is often not accurate. For example if a plot of land was given for tenancy the name of the tenant should be recorded in the column provided in the register. But the actual practice is that the owner of the land would bribe or provide other incentives to the village secretary and see that his/her name will be registered in the register rather the tenant name. The fear is that if the tenant name is entered in the register for seven consecutive years the owner will lose the ownership of the land. Due to these practices the tenant's rights are overlooked.

- ²³ The State is defined as an organised political community with its apparatus of government. There are different level of understanding while using the terms like state, government, property, ownership, rights and duties. To simplify in the Indian context, the 'state' has three organs, the legislature, judiciary and the government. The term state is being confused to mean government. A nation is some thing organic or natural, but a state is conventional (source: The Advanced Learner's Dictionary of current English)
- ²⁴ A pre-requisite for fixing any water rate is that the water supply to each farmer should not only be adequate but also dependable and timely. It has been opined by experts that the irrigation water rates should be (a) on crop basis, (b) within the paying capacity of the farmer, irrespective of the capital investment, (c) differentiated with regard to the category of irrigation projects. However, different authorities have suggested different criteria for fixing irrigation water charges. These are indicated briefly. Irrigation Commission, 1972: The water rate should range between five to twelve per cent of the gross income of the farmer, the upper limit being twelve per cent. It should be within the paying capacity of the farmer and should aim at full utilisation of the available supply; Vaidyanathan Committee 1992: The level of cost recovery to be aimed at, in the first phase, should at least cover the O&M costs and one per cent interest on capital employed. The National Commission for Integrated Water Resources Development Plan 1999: The water rate should cover the operation and maintenance cost plus one per cent of the agricultural income. The 10th Finance Commission: Irrigation water rate receipts should not only cover the operation and maintenance cost but should also cover one per cent per annum of the capital investment (source: Revenue Reforms Commission, final report, Feb 2004, Government of Karnataka). A full fledged monograph on water rates was published in 1988 by the Central Water Commission entitled Irrigation Water Rates. For further discussions see Prasad and Rao 1991 and Rao 2000.
- ²⁵ The Ninth Finance Commission recommended an O&M allocation of Rs 324 per ha for 1990-95. Actual allocation in AP was only Rs 75 per ha in 1990-92.
- ²⁶ The Principal Secretary, Irrigation Department as Chairman and Secretary, Irrigation (CADA) as Convener will head the Review Committee. The G.O states there will be 15 members drawn from the other government departments including one consultant appointed by the government and three nominees from the Apex committee as members. The Chief Minister chairs the Apex committee.
- ²⁷ This relationship may not be true always. As a contingent evaluation method it is a good argument, yet can be calibrated with capacity to pay issues probably using land size as a proxy. I could not carry out this exercise.

- ²⁸ According to the Irrigation Commission of India (1972) all districts with a normal annual rainfall of 750 mm or less, which experience 25 percent deficiency of rainfall in at least 20 per cent of the years observed, are considered as drought-prone districts. A waiver or reduction on charges can be declared. From the districts thus identified, those districts with assured net irrigation intensity of more than 30 percent are excluded from the drought-prone areas. Subsequent modifications by the central government have led to 11 districts in Andhra Pradesh being classified as drought-prone and 1 district as desert-prone (source: Chapter 9, Report of the Commission on Farmers' Welfare 2005, Government of Andhra Pradesh.Source:http://www.macroscan.com/pol/apr05/pdf/Full_Report_Commission_Farmer_AP.pdf.
- ²⁹ A research study done by Jairath (2001) reports that in Miryalaguda Revenue Mandal, Nalgonda District (the head reach of Nagarjunasagar Left canal, Zone I, Telangana Region) there is a total balance due of more than 20.3 millions rupees. The actual cess collection (between 1 July 1998 to 15 May 1999) was only 4.5 million i.e. 5 percent of the total collection. The year 1998-99 was a good rainfall year and the Miryalaguda Mandal falls in the head reaches of the NSP left canal. Hence, one cannot attribute the rainfall as a reason for low rates of cess collection.
- ³⁰ Another field research study found that due to modernization of the K-C canal works, the department was not able to provide water in Rabi season. However, the departmental records showed that out of 1.1lakh hectares of CCA under K-C canal, the department was able to provide water to 89,474 hectares of Wet and ID cultivation in 2000-2001. The cess demand and collection showed that only 2.31 million rupees were collected out of a cess demand of 37.55 millions in the year 2000-01, and 2.2 million were collected as cess out of the demand of 32.7 million. The rate of cess collection in these two years was about only 6.1 percent and 6.6 respectively. The study was conducted by conducted by Dr. Jasveen Jairath, Mr. Balaraju Nikku and Mr. Srinivas Sajja in June 2003 and supported by SaciWATERs, Hyderabad, and Andhra Pradesh.
- ³¹ During my revisits to MBC, I came to know that the Joint Azmoish did not took place for the year 2003-04 as the government declared a crop holiday and thus the collection of cess was cancelled.

Bureaucracy and Irrigation Reform

Public Duties and Social Settings

... There was some resistance to this change coming from within the Government-the Irrigation Department. They had got used to the exercise of power and like anyone else were reluctant to give it up... if irrigation has to be maintained, our institutional structures and relationships have to change.

Chief Minister N. Chandra Babu Naidu 1

8.1 Introduction

The use of the term 'bureaucracy' has often been taken to imply a rigid red-tape bound organisation² (Ham and Hill 1985:147). A bureaucrat is defined as an official perceived as being overly concerned with procedural correctness. In this chapter, for the purpose of the analysis, I use bureaucracy not as a normative concept but as an analytical concept.

The earlier studies on Andhra Pradesh irrigation reform initially focused on the reform approach, implementation and politics (see Parthasarathy 1998; Jairath 1999; Venkateswarulu 1999; Raju 2001; Mollinga 2002; Reddy 2002). The specific role of the irrigation bureaucracy and its engagement with the policy process has not been focused on. This chapter aims to contribute to the understanding of bureaucracy and its role in the AP irrigation reform policy and programme.

In this chapter, I discuss how irrigation bureaucrats tried to follow official rules but were unaccountable at the same time to achieve the policy goals. I analyse in detail the day-to-day engagement of especially the middle and lower-level irrigation bureaucrats with the reform policy. I discuss the changes that the reform policy aimed to bring about in the irrigation agency, and

how the bureaucracy responded to these policy changes. I was interested to understand: how much resistance or opposition could these bureaucrats mobilise prior to implement the various rules of the reform policy?

I try to show how the bureaucratic engagement with reform policy took place and shaped the policy process. In other words: how has the reform policy been viewed, altered and shaped by the irrigation bureaucracy and vice versa? I especially focus on how lower level bureaucrats responded and adapted to new roles, and how much their actions mattered in the policy process. How did the irrigation bureaucracy engage with a reform policy that explicitly aimed at the decentralisation of its powers? In answering these questions, I try to expand the analysis beyond rent seeking behaviour³ of the canal irrigation bureaucrats and study their actions at different levels in the policy space.

The chapter is organised in four sections. After this introductory section, in section 8.2, I elaborate the nature of the Indian bureaucracy, especially the irrigation bureaucracy. In section 8.3, I discuss the individual and collective resistance by the bureaucrats to different policy provisions. I analyse interests, actions and motivations of the irrigation bureaucrats and show how their actions have influenced the policy processes. To analyse perceptions and actions at different levels of bureaucracy, interviews were conducted with a few senior bureaucrats (involved in policy formulation, monitoring and based in the state capital) and with middle and lower-level bureaucrats who are involved in implementation at local level. In the concluding section, I present the results of the analysis and implications for the policy process.

8.2 Bureaucracy and Policy

Freedman (1976) argues that there is rarely a single rational policy. There are also the genuine problems of substantive policy. Policy by its very nature can look very messy even without the complications introduced by self interested and scheming bureaucrats. Bureaucratic politics are not, therefore, a necessary, let alone a sufficient, condition for policy incoherence (Freedman 1976: 438). Scholars like Egeberg advanced the understanding of bureaucratic choices or decision making through studying bureaucratic structures. Egeberg concludes that most students of

public administration seem to have focused on behaviour and attitudes without relating them explicitly to bureaucratic structure (Egeberg 1999:167). In the current research, I have addressed this observation in some measure by studying bureaucrats in different hierarchical positions and their engagement with the reform policy.

Post Colonial Indian bureaucracy

The Indian bureaucracy of today functions in a context different from that of the colonial bureaucracy. Anant and Mitra analyse that that during the post-Independent era, there was a stupendous growth in administrative law (delegated legislation) between 1965 and 1985. This considerably enhanced the power of the bureaucracy on the presumption that higher growth in productivity would be possible through growth of a strong administration. The bureaucracy at the same time has to work with the political executive (Anant and Mitra 1998: 34). Hence it is crucial for us to understand how politicians and bureaucrats interact.

Bhalerao writes that 'the bureaucracy has to function under democratic political leadership. The cabinets, legislatures, political parties and pressure groups based democratic politics provide the framework of purposes, goals and resources within which the bureaucracy has to operate'(1973:62). There is considerable literature focusing on the many facets of relationship between bureaucrats and politicians (see Kothari and Roy 1969). It is also evident from the literature that the states still need bureaucracies. The common observation in this literature is that both the political executive and bureaucrats seek to protect and strengthen their power. While, doing so, on some occasions they accommodate each others interests resulting in a politician-bureaucrat nexus. Research evidence is available that the Indian administration shows a trend towards politicisation of administration and its involvement in political parties. These phenomena will have a crucial implication on the policy process. In the academic literature, there is also much discussion on bureaucratic behaviour, personalities and culture.6

Researchers like Tendler (1997) showed that state programmes can effectively provide good services to citizens under certain conditions. Good governance emerged partly because government bureaucracy and their subordinates were committed to make their work visible and successful. Factors like motivation, work

environment, incentives and job satisfaction influence the functioning of the bureaucracy. These factors increase the success of a programme and their absence may severely affect a programme. She argues that policy programmes should not only be guided by the need to create accountable public bureaucrats, but should be concerned about how to motivate the bureaucrats, so that they will be committed to their jobs. Bureaucracy is not a homogenous organisation. Within the structure the lower level bureaucrats were often ignored in the policy formulation. However, their working conditions and views about the policy influence the implementation (see Lipsky 1980; Oorthuizen 2003; Makwarimba and Vincent 2004).

Canal Bureaucracy

The Indian canal bureaucracy has enjoyed much power even under post-colonial times. The irrigation sector has been monopolised by public sector state irrigation departments. The irrigation bureaucracy gained control over management of irrigation systems, and management practices were changed to suit the convenience of the irrigation bureaucracy (see Sengupta 1997). In a similar vein Wade (1982) documents that:

Canal officials, on the other hand, have great discretionary powers they allocate big money for maintenance contracts; they are responsible for rationing a valuable input between competing users, who have (officially) to pay much less than they would be prepared to pay for it rather than go without; and the officials make decisions which impinge heavily on the political prospects of politicians and on the economic well being of local communities.

A report of World Bank and Government of India reports that 'the irrigation departments are generally viewed as centralised, bureaucratic, isolated, and financially dependent on state government funds. The departments are not accountable to the end beneficiaries i.e. the farmers. Their emphasis tends to be on system construction rather than operation and maintenance of existing projects' (World Bank & GOI 1999). Experiences from other parts of the world have shown that there is a point beyond which government bureaucracies become an impediment, rather

than an instrument for successful implementation of reform programmes.

Evidence is available that in countries like Pakistan and Indonesia, the irrigation bureaucracies were successful in neutralising the reform efforts that were undertaken (Merrey et al forthoming). Rap et al 2004 showed the crucial role of irrigation bureaucracy in Mexican irrigation reforms. They argued that in the process not only the organisation of irrigation management was changed, but in the bargain the water bureaucracy also regained lost autonomy. In the following section, I show the interface or engagement between the irrigation bureaucracy and reform policy in the state of Andhra Pradesh.

8.3 Reform Policies at the Bureaucratic Interface

In the preceding chapters, I showed how middle level bureaucrats retained control over irrigation works and Joint Azmoish (see Chapters 5 and 7). I showed in chapter 6, how the WUAs lost an opportunity to gain control over the water distribution. In this section, I explain how the bureaucrats individually and collectively negotiated, bargained and aligned with the reform policy. The irrigation bureaucrats retained their traditional control over different activities of irrigation management by using their technical, managerial skills and bureaucratic power collectively (see Table 8.1). The engagement of the bureaucracy as a collective is evident in the form of lobbying for additional powers, resistance to government orders and challenging the state orders. In the following, I discuss the collective resistance or actions of the bureaucrats while engaging with the policy.

Public Consultations

The government issued a white paper on irrigation that was followed by a three-fold increase of water charges in August 1996 (see chapter?). To determine a suitable framework for increasing farmer participation, a series of public consultations were conducted throughout the state in most major irrigation commands (see Peter 2001). The objective of the public consultations was to share the contents of the draft reform policy and elicit public

TABLE 8.1: Policy prescription and actual practice

Activities	Pre reform practice	Reform period (expected roles)	Actual tractice	
Operation and Maintenance	I & CAD department with assistance of field functionaries	WUAs/DCs with assistance of competent authorities (CA)/ Irrigation Department (LD)	Operation is still with I.D. WUAs and DCs involved in maintenance with funds provided by the state.	
Distribution of Water	Department up to the outlet level	WUAs in assistance with TC members and users	Major role played by the L.D. Structures and control measures still under the operation of the L.D	
Cropping pattern	According to the Localisation	Freedom of crop choice	Localization is not relevant and practised. WUAs do not have a say in crop choice. Individual farmers can decide crop.	
Execution of works	By ID through tenders/ contractor	WUA as a corporate body (rule 12 of the APFMIS act). Transparency by displaying financial details at different locations in ayacut villages.	Contractorship is still evident and total transparency has not been achieved.	
Minimum rehabilitation works	I & CAD department with limited grants @ Rs 100 per ha.	WUAs and DCs. No power to alter or interfere designed hydraulic particulars. The CA prepares estimates & sanctions administrative approval.	President or TC members of WUAs felt that the works have to be carried out by them only hence the works are carried out by them in the name of the WUA.	
Collection of water cess	RD & ID prepare separate crop demand lists. Underreporting of ayacut.	Joint Azmoish with ID, WUAs and RD and Agricultural Department. (AD). The WUA can levy additional water fee.	The RD collects cess. ID prepares crop demand list. WUA participation discouraged. Delays in transfer of share of cess to WUAs.	
Conflict resolution	Irrigation department (ID) and Revenue department (RD)	WUA holds right to take action on any offence by users (under rule 23 of the APFMIS act). On conviction violator be punished with imprisonment up to 2 years or fine up to Rs 5000 or both	Evidence that users (most of the cases) depend upon the village elders and/or Revenue Department(RD) and sometimes go to the police	
Audit of funds	Auditors of the Department	Social audit by the members of the WUA	WUAs conducted social audits, but failed to submit audited accounts.	

opinion. For the purpose the government hired retired senior irrigation bureaucrats as consultants in June 1996. The hired consultants conducted meetings with farmers and irrigation staff at the irrigation circle and division levels, and provided feedback to the government. Initially, the consultations met with severe cynicism and indifference from both farmers and agency staff (Peter 2001).

In contrast to the senior level bureaucrats view⁸, the discussions with irrigation bureaucrats at the irrigation circle and division level suggest that the consultation meetings did not yield the expected results. They stated that the meetings were conducted as typical government meetings because the hired consultants were senior retired engineers. The middle and lower level bureaucrats' stated that they were not consulted, or aware of government intentions. They saw these consultation meetings as a source of information and to understand the government's reform policies.

The lower bureaucrats or the frontline workers expressed during the discussions that they found it difficult to justify their role and functions in irrigation management once the PIM programme was initiated. They felt that their functions had been transferred to the WUAs. Before the introduction of PIM, they enjoyed the status of being water providers and a source of information to the farmers. They also served as an important link between the farmers and the Irrigation Department. However, under the new institutional arrangements with improved access of WUA members to higher officials in the department, the frontline workers felt as if they lost their importance and power.

A farmer member who attended the Khammam consultation meeting confirms the above view. He shared with me that only big farmers were invited for these consultation meetings. Since he was involved in canal water distribution in the past, he had a chance to participate. He said he was also active member of the ruling political party.⁹

In addition to these consultation meetings, the statements of the Chief Minister regarding the reform programme, publicised widely in press and electronic media, served as the main source of information. I conclude that the meetings were only useful to inform about the government plans, but not for seeking suggestions from farmers and the irrigation staff at middle and lower levels. The real problem lay not in whether or how many, but in the process of conducting consultation meetings.

Increased water charges

Opposition regarding the increase of water charges by the government was evident from farmers and political parties, also from the street level irrigation bureaucrats. These bureaucrats used the information strategically to raise public opinion against the government policy. I found that the Work Inspectors and Luskars (the street level bureaucrats) took special interest in disseminating the government policy of increased water charges in the command villages. I tried to understand what factors made them actively share government policy information. Why were the lower level bureaucrats interested in disseminating information regarding the increase of water charges? Were they not in support of the government decision, in which they did not participate or consulted? What could have been their interest?

The discussions with Luskars show that they were not in support of the reform and expressed many doubts about its implementation. I interpret their actions as hidden resistance towards the overall reform policy.

The farmers resisted the policy and were supported by opposition political parties in the state. Responding to the resistance, the government first reduced the proposed water cess from Rs 875 to Rs 625 per hectare wet cultivation. The issue was further discussed in the State Legislative Assembly during the 1997 Budget session. ¹⁰ Finally the cess was fixed as Rs 500 per ha in the case of the first single wet crop. The Government tried to justify the threefold increase of water charges on the basis of the feedback received from the consultation meetings conducted across the state. The economic rationale was that a farmer would be able to pay the new cess because it is equivalent to the price of a single bag (70kg) of paddy.

The Luskars are seen as the government representatives in the command villages. They act as a source of government (policy) information and opinion makers in the irrigation context. The nature of their work and their relationship with the farmers gave them the opportunity to share policy information. In this case, by sharing the new policy information, the lower level irrigation bureaucrats have tried to influence the farmers' opinion. I conclude that the actions of these bureaucrats as a strategic move or function of their resistance towards the reform policy.

Open Resistance to Policy

In this section I discussed how the bureaucrats as a pressure group resisted government policy collectively when the state wanted to shift the position of the lower level bureaucrats from the Irrigation Department to water users associations. Middle level bureaucrats have resisted the government orders to provide additional supervision at the district level.

The Case of Luskars

In 1998, the Government directed that the services of WIs and Luskars should be utilised by the Irrigation Department to assist farmers' organisations (WUAs) in their respective areas of operation for the discharge of their functions under the APFMIS Act. For the purpose, the concerned Chief Engineer was requested to redeploy the work between the existing WIs and Luskars in such a manner as to make available the services of one or more Luskars for each WUA. The Government also proposed another rule regarding the method of payment¹¹:

Payment of salary to Luskars shall be made subject to the furnishing of a certificate by the concerned farmers' organisation President that they had attended to their duties during the month (GoRt.No.338 Dated 12.10.1998).

The government order further stipulates that "the concerned Chief Engineer shall complete the process of reallocation of the above personnel to the farmers' organisations and furnish details to the government through the Engineer-in-chief by 30th of October 1998 positively". In the case of resistance, the government gave them three choices: 1.Voluntary retirement scheme; 2. Work according to government instructions and 3. Punishment of erring staff by government. The order says that the competent authority of a users association shall forward such certificates to the drawing officer to enable Luskars to draw their salary. However, the staff shall be under the administrative control of the competent authority only. According to a DC President, even before the present government order, the WUA leaders demanded that the WUA would be provided with additional manpower to carry out its activities:

Twenty-five WUA Presidents passed a resolution in August 1997, immediately after they got elected to the office at Kadam, specifying that Luskars should work under WUAs and meet the managing committee members regularly. They also made a request to the Deputy Executive Engineer of the area to release the salaries of the Luskars based on their recommendation or a certificate issued for the respective month. However the Luskars opposed the idea. ¹²

The Luskars opposed the government orders and WUA leaders' demands. 'We are accountable to the government but not to the WUAs" is a common statement given by Work Inspectors (WIs) and Luskars. According to the president of the Luskars union at Kalluru division office, there were about 3,500 Luskars working with the Irrigation Department in the state by the year 2002. The union president stated that:

The government gave three options to us to choose from in case we are not willing to work under WUAs. We see the government move as a blow to our self-respect. We are enjoying our status as government employees and receiving respect in society. We will lose our respect if we work under the WUAs. We are ready to lose our jobs but not respect by working under the associations.

The Luskars and Work Inspectors represented by their unions sought justice and filed a legal case in the state High Court against the Government. They have succeeded in getting a stay order from the court. As a result the Government order of handing over the Luskars and WIs to the WUA has not been implemented. The government has been unable to vacate the stay and implement the order.

According to the union representative their lobby received support from their higher-level officers too. The engineers' association opposed the transfer of roles and responsibilities of Luskars to WUAs. The Luskars union president concluded that, 'the officers supported us, because they do not want to lose us to WUA presidents. We have been used to do the personal work of the officers. So they cannot afford to lose us'. The case suggests that the Luskars do not want to lose their identity by working for the WUAs, but do not take it seriously to work for their higher officials even outside their job description. The end result was that, the lower level bureaucrats could mobilise their resources and

networks to defend their status and interests against the government policy. In the following section, I discuss the collective resistance by middle level bureaucrats.

Resistance to Additional supervision

The government wanted to appoint the Superintendending Engineer (SE) cadre senior irrigation bureaucrats as PIM coordinators and Consultants at the district level. The idea was that the additional positions would strengthen the implementation of PIM activities at the district level. The move of the government was cleverly resisted by the permanent staff.

PIM co-ordinator

Senior and middle level bureaucrats did not like the idea of being a PIM co-ordinator as became clear from discussions with them. They saw these newly created positions as additional supervision that would create hierarchical problems within the department. But they could not stop the government from appointing the co-ordinators. They waited for an opportunity. When the government asked them to provide feedback on the usefulness of the Coordinator position, they voted against it. A bureaucrat in-charge of the minor irrigation circle stated that many of his colleagues provided negative feedback. He claimed that 'these new posts of co-ordinators were created not with the objective to strengthen the ongoing PIM activities, but to promote a few selected senior officials in the department. The state found a solution to accommodate them'.

I had a discussion with the PIM co-ordinator based in Tekulapalli irrigation office for Khammam district. He complained that the government created these positions but did not provide clear rules, powers and resources at their disposal. Hence their job is restricted to participation in review meetings held by the district collector and to the occasional site supervision visits.

District Consultants and Resource Teams

In addition to the PIM co-ordinators, the government appointed retired engineers from the department (rank of Chief Engineer) as

district consultants in 2000 to provide additional inputs to the PIM programme implementation. They were expected to provide technical advice and guidance on PIM related issues to the regular irrigation staff of the major, medium and minor irrigation department. Discussions with the regular staff about the need and assistance they had received from the consultants revealed that these posts created problems in delivering their duties. The consultants often wanted to force their ideas rather than provide advice. In an internal opinion survey conducted by the government, the regular staff voted for the removal of PIM coordinators and the external consultants.

These preferences of the regular bureaucrats in both the cases of PIM coordinator and District consultants, clearly suggest that, they did not want to have additional supervision. ¹³ They visualised the additional positions as competition to their power and decision-making. By collectively providing negative feed back against the government initiatives, they could resist the government policy. In another incident in July 1999, the bureaucrats opposed the government policies in the form of a pen down strike. They made a protest against the death of the Chief Engineer, allegedly because of the work pressure and due to the Chief Minister's remarks in a video conference with state level officers. The engineer felt a loss of self-respect due to the remarks by the Chief Minister.

Another similar example was the non-functional resource teams. Resource teams were constituted in the year 1999 by CADA at the district level and made responsible for imparting training to the WUA members. Many officers were deputed from the Irrigation, Revenue and Agriculture Departments to constitute the teams. Teams were constituted and members were trained at WALAMTARI in various aspects of institutional building and water management. However, the results were not encouraging as the resource team members either lacked interest or were not motivated to deliver the job requirements. As a result, the capacity building of WUA members suffered. The government idea of capacity building through training of WUA members was not fulfilled.

Transfers

The power to transfer can be understood as a political resource used by politicians and higher-level bureaucrats. At times these decisions can also be forced and changed. I describe below how the frontline workers resisted the transfer orders from their higher officer.

The Luskars usually stay long in one place because transfers for class IV employees are not common. In the study area, I found a few Luskars serving in the same place for more than five years. In the process they established relationships with the local farmers and influential leaders in the command villages. I asked them how they could stay in the same place for so many years. They are aware that this practice is not allowed according to the rules of the department. They stressed that they do not get involved in corrupt practices. Here they referred to the higher officers. They agreed that from the big farmers they get some produce during the harvest season, which they do not demand. Sometimes they share the produce with their higher officials. Also they do some personal jobs for the higher officials. Through these interactions there a personal relationship is built in addition to the professional hierarchy. The relationship that the Luskars maintain with the local powerful leaders also helps them to be posted in the same place for many years.

Responding to complaints by the water users during the Rabi 2001 season, the D.E of Kalluru sub-division wanted to transfer the Luskars within the sub-division to prevent unofficial water supplies. The proposal to change their work places was strongly resisted by the Luskars. They managed to bring pressure on the D.E with the help of (in this case) WUA leaders, and the proposal was withdrawn. As Lipsky suggests, the very position of the Luskars might have provided them with the space to manoeuvre the decisions and protect their interests. He further argues that

The decisions of street level bureaucrats, the routines they establish and the devices they invent to cope up with uncertainties and work pressures, effectively become the public policies they carry out. The public policy is not best understood as made in legislatures or top-floor suites of high ranking administrators, because in important ways it is actually made in the crowded offices and daily encounters of street level workers (Lipsky 1980).

I will provide further examples. The government policy of zero recruitment and retirement of the staff resulted in increased number of vacant positions in the irrigation department. In the case of Kalluru Division office, only two out of six executive

engineers posted over time, served as regular charge. Others only worked in the capacity as in-charge or additional charge capacity. I was informed that only an influential officer would get a regular post. From my material it becomes evident that transfers within the division were favoured.

In the case of a vacancy of a Deputy Executive Engineer (DEE) position, one of the serving DEE will be given an additional charge of another irrigation sub division until a regular DEE is appointed. These additional charge positions are sought after as they enlarge the scope for additional income and power. The relationship that the DEE maintains with the EE and higher officials matters in securing an additional position. Similarly, the Assistant Engineers prefer sub-divisions that will have a chance for implementing a high volume of irrigation works. For example, Tallada sub-division in Kalluru division has a main canal command in addition to majors and minors. That means this sub-division gets more funds for works related to main canal. The working relationship of the AE with a DE and EE matters in securing such a favoured position.

In the literature the common suggestion to prevent corruption and work related favouritisms is regular transfers of bureaucrats ¹⁴ (see Wade 1985; Zwart 1994). I have not found frequent transfers in my study area. ¹⁵ From the field material, I conclude that the Luskars on the MBC tried to prevent any transfer decision by their higher official. The DE tried to procure an additional charge of irrigation sub-division, and the AE tried to get a transfer for another sub-division with prospects of more irrigation works. All of them mobilised their personal, social, professional and political resources to meet their interests. In the process they also established devices to cope with the pressures that come with these favours. The understanding of the process of transfers gives us insights into the networks that were mobilised while resisting or forwarding a particular policy decision.

The irrigation bureaucrats at the division and sub-division level raised different arguments to support their actions. They mobilised different discourses to legitimise their styles of functioning. In the following section, I discuss rent seeking and users capacity to manage the irrigation systems. An in-depth analysis of these arguments is useful to understand further the bureaucratic engagement with the policy.

Justifying Rent Seeking

In many studies corruption is listed among the problems of India's bureaucracy. Robert Wade made an important contribution to understand systematic patterns of corruption in an Indian state (see Wade 1985). Wade argues that it is in the institutionalised circuit of transactions in which bureaucracy appropriates money from clients as well as from the state treasury. It shares this money with higher-level ranks within the bureaucracy and politicians. Together with his earlier writing on the subject we can understand fairly well the rent seeking practices in the irrigation sector (see Wade 1982a; 1982b). Wade's work on the irrigation administration indicates the nature and scope of earning opportunities for bureaucrats through illegal means.

Jagannathan (1986) analyses that the earning opportunities in public agencies exist because they serve relatively large populations. As a result, the services offered by these institutions are constantly facing excess demand despite being designed to offer universal and free public services. Officials who control access to such scarce economic goods (for example scarce irrigation water) will have several rent seeking opportunities. He proposes that corruption is the perpetuation of informal property rights in bureaucratic systems (1986:131).

Renger and Wolff (2000) propose political and economic approaches to understand rent seeking behaviour and process. According to them rent seeking constitutes a form of political behaviour which can be described as lobbying superior regulatory bodies to garner rent. Rent seeking is also an economic form of behaviour which aims at avoiding competitive or market pressure in order to bring about price distortions in one's own interest in the political sphere for the purpose of earning rent (2000:7). They also describe that rent seeking is a process, describing the variety of interactions between seekers and rent providers. Pritzl (1997) argues that rent seeking can be described as corruption at the point where politicians and bureaucrats specifically exploit their current opportunities to manipulate the existing institutional framework so that in future it serves their private interests (cited from Renger and Wolff 2000).

It was not surprising to me to know the fact that additional sources of income or favours in kind are sought, created and exploited by irrigation bureaucracy. The interesting point was the ways in which the bureaucrats saw and justify rent seeking practices. It was expected that the formation of WUAs under the reform policy would lead to transfer of certain irrigation activities and powers from irrigation departments to WUAs. As a result the rent seeking practices would need to be addressed. In real practice the rent seeking practices have continued, if not at the same scale. I came across in my field study area many bureaucrats who were not shy about discussing rent seeking practices. They argued that lack of budgets, peer pressure, departmental practices, lack of incentives and external pressures forced them to become involved in rent seeking practices. At the same time the bureaucrats tried to legitimise their actions. An Assistant Engineer who completed fifteen years of service in the department said:

We do not have a single rupee budget even to buy a white sheet of paper for the office work. As an Assistant Engineer, it costs me at least one thousand rupees per month to meet office expenses. Sometimes the contractors or the WUA representatives buy required stationery. In addition to the office expenses, unaccounted costs like contributions, donations and expenditure during the visits of higher officials and political representatives have to be met by the lower level staff. How will we meet these expenses? Adding to these, the travel allowances are not being paid regularly. Nothing has been changed after the introduction of PIM. If this is the case how can one expect regular supervision and monitoring of the canal systems by the staff? These practices are as old as the department and no one dares to swim against them (Interview dated 5th April 2003).

The lower-level bureaucrats claimed that they are forced to work extra hours, manipulate the water delivery schedules and are subjected to political pressures. The middle level bureaucrats portray lack of essential budgets as the cause of for rent seeking. In addition, a similar attitude of higher-level bureaucrats induces the lower level to continue the practice. Some of the younger staff shared that they are forced to accept these practices due to peer pressure and the threat of isolation and victimisation. Many of them defended themselves in interviews by arguing that in these work conditions accepting additional money (rent in economic terms) for their work is a legitimate action. A deputy executive engineer from a major irrigation system in the Rayalaseema Region

stated the following in a discussion with him at the divisional office:

We had 'canal phones' in the past (till 1980s) to pass on the important information about canals to the respective offices. Today with the advent of modern technology we have neither canal phones nor funds to communicate. Today the sub-division offices do not have telephones. Wireless technology is only available for certain projects that are funded by external funding agencies. The vehicles are not in good condition due to the meagre maintenance funds. The officers in charge of vehicles had to spend their own money in advance to run these vehicles. Whenever there is a budget, the expenditure incurred may be reimbursed. There is no assurance when these bills will be sanctioned. Hence we depend on other sources to meet these expenses. The section and sub-divisional offices are ill-equipped and computerisation of these office administrations may take another ten years (field notes, June 2003).

It is difficult to draw conclusions for me regarding rent seeking from these observations and firsthand discussions that I had with bureaucrats in different irrigation systems. But what stuck me is the degree of openness in discussing the issue of rent seeking which was otherwise treated as a sensitive issue. Most of the bureaucrats, especially the implementing staff, were very forthright while discussing it. Each case and individual action is different from the other, with the result that it is very difficult to generalise.

On the basis of the material it seems to me absolutely true if I argue that rent seeking practices exist in spite of the government's policy checks and measures. The purpose of the argument here is to provide evidence on how these practices are viewed and maintained by the bureaucrats. This seems to be a common issue and yet a complex element of the bureaucratic functioning. During my field research duration I got in touch with middle level bureaucrats who are well articulated with the language of the reform policy. They did not hesitate to face researchers, journalists, and consultants to discuss about issues like rent seeking and their roles after introduction of reforms. The openness of the bureaucrats raises new questions: what factors made them to be so open? Were they equally open even before reforms were introduced? Is it because of the fact that the WUA leaders are also

involved in irrigation works that the bureaucrats do not shy away from discussing these issues?

What can we conclude from the perspective of rent seeking discussed in the beginning? It is clear that by constructing convincing arguments the bureaucrats are trying to legitimise their practices. In this case rent seeking of bureaucrats shows their political behaviour. Rather than seeing it as problem, the bureaucrats are trying to defend their rent seeking culture as a legitimate economic or rational behaviour. But for sure, the behaviour and attitude will have implication for policy implementation.

Innovation and Recognition

In this section I discuss how the middle-level bureaucracy saw the reform policy in terms of opportunities for innovation and recognition for their work. The understanding tells us how these bureaucrats visualised the policy and their expectations from it. A middle level bureaucrat who was in fact very optimistic about the reform programme stated that:

Reforms did not offer an opportunity to correct the system designs. No amount of supervision or transfer of duties to WUAs can improve the system management when basic design issues are not solved. Nagarjuna Sagar Project's (NSP) planning and design of the canal systems was based on the method of continuous flow throughout the crop period. The canals don't allow any flexibility in supply of water. Physical controls like cross regulators for regulating the discharges of canal water are found inadequate. The carrying capacities of the canals are also found inadequate with the existing cropping pattern in the second zone of the NSP left main canal. The canal system is designed to support the cultivation of Kharif crops, where Rabi cultivation has increased in the command, leading to water shortages. The localisation process was not scientifically carried out. Large areas that consist of porous soils have been localised for wet cultivation. No separate outlets or canals to irrigate dry designated plots exist. Head reach farmers appropriated more water to grow a wet crop while water is released for an irrigated dry crop. In many places the farmers dig the field channels to suit their individual needs. Due to the irregular channels, introducing and implementing a rotation scheme is not an

easy and viable task for the irrigation staff. Because of these design complexities we are not able to deliver the services. The higher-level officers knew these problems very well in the field. They also cannot do much because the government is not in a position to change the designs. The lower-level engineers are those who design and seek approval from their superiors. The hierarchical structure of authority of the Irrigation Department does not create an incentive for innovativeness; it does create a strong bias to keep to standard designs. The same practices continued even after introduction of reforms. There is no other option left for us except follow the rules as part of our job (field notes, March 2002).

From the above narration it is clear that the engineer from Madhira irrigation sub-division is making a case for the inability to innovate in his day-to-day work. The engineer articulated the need for design corrections in the system designs and the limited scope for doing the same. He seems to be more interested in invention than adaptation (see Mollinga 2003).

The middle level bureaucrats stated that they spent most of their time in preparing proposals and filling survey forms and formats introduced as part of the reform programme by the government. In addition they were expected to facilitate WUA meetings and supervise the maintenance works implemented by them. They claimed that the channel of communication was top-down even after introduction of reforms. They shared that together with WUA representatives they ended up in implementing the Government Orders rather than coming up with locally specific solutions.

The implementing bureaucrats saw the reform policy as characterised by a top down approach, which limited the scope and opportunity for innovation. They claimed that there is no recognition and incentive for their work. They critically evaluated the reform objectives and expressed their doubts over achieving the stated objectives. In the process they also raised questions regarding the capacity of users' organisations to mange the systems.

Questioning the users' capacity

The irrigation bureaucrats in general subscribe to the usefulness of the PIM programme but raised questions regarding the capacity of the farmers' organisations. They argued that the elected WUAs would not be able to manage the systems if the irrigation bureaucrats restrict themselves to an advisory role as per the policy prescriptions. In their opinion the WUA representatives do not have a clear understanding about their roles under the Act. The competent authorities stated:

The WUA leaders are politically elected and they want the irrigation staff to work for them. It is difficult to work with them because most of the WUA representatives lack clarity on their individual powers and responsibilities. Many of the WUA leaders have spent money to get elected. The leaders placed requests to help them out in earning back the election expenditure. As a result we were in a difficult position to execute the works.

What can we derive from these claims? The majority view of the implementing bureaucrats is that the elected leaders of the WUA are not motivated to do the WUA activities voluntarily but are corrupt and politically motivated. The leaders want to earn back the money spent for getting elected. The bureaucrats tried to put all the blame on the WUA leaders by not including themselves in the process. About two thirds of the irrigation bureaucrats in the study area opined that political interference has increased since the introduction of WUAs in canal management. The WUA representatives demanded more water to their respective WUA territories instead of sharing with downstream WUAs according to the rules.

The bureaucrats articulated that the participation of the farmers is advisable below the outlet rather than in the entire system. They argue that without the help of the Department, the users' organisations cannot manage the entire system. These claims by the bureaucracy clearly show that it sees the WUAs at the receiving end. Against these arguments, I do not come across any plan or initiative by bureaucrats to strengthen WUAs in the study area. It is clear that the bureaucrats have tried to follow government orders (i.e. are rule bound), but at the same time found ways to alienate themselves from sharing the powers and strengthening the user organisations (i.e. are unaccountable).

I also interviewed retired irrigation bureaucrats to seek their views. The majority held the view that user associations cannot manage the entire systems, especially in the major irrigation projects. During an interview a retired senior engineer suggested a

judicial mix of farmers, other water user representatives (industry, and electricity) and the department heads for system level management. There should be no elections for the WUAs. Principles from the traditional system of Kalva pedda (community leader nominated by the community) can be replicated. These views suggest that the bureaucracy prefer community based water management at lower level keeping their power at the higher levels. Both regular and retired bureaucrats seem to have similar views about the role and capacity of WUAs to manage irrigation systems. It is also clear that the bureaucrats do not want to accept the WUAs as partner institutions and work with them to achieve policy objectives. Rather, they tried to show WUA leaders are politically motivated and not having the technical and managerial skills to manage the irrigation systems. From the material evidence, I argue that the irrigation bureaucracy as a collective agency tried to construct a narrative that WUAs are weak and cannot manage systems. In the process, the bureaucrats tried to construct a positive image of their respective roles.

Acquiring more powers

The higher-level bureaucracy played an important role during policy formulation and implementation. It was involved in drafting different policy papers (with the help of external consultants and World Bank), preparation of the APFMIS Act, and its implementation. They did not see the reforms as a threat, but as an opportunity to advance their careers. They were instrumental in implementing government orders through their sub-ordinate middle and lower level staff. I believe that their careful and active participation gave them the opportunity and space to safeguard personal as well as departmental interests, right from policy formulation onwards.

The middle and lower level bureaucrats saw reforms as a threat to their jobs during the early years of implementation. They soon found ways to engage with the day-to-day policy implementation. In the process, they devised mechanisms to protect their interests. By the end of the first five years' term they were confident to deal with the policy that aimed to decentralise irrigation management. In the course of time, as I have shown in this chapter and the preceding ones, the irrigation bureaucracy aligned with other

actors, constructed arguments to legitimise their actions and successfully engaged with the policy.

The APFMIS Act was further amended through the Government Ordinance 9 of 2002. The WUA representatives resisted the amendments and claimed that the irrigation bureaucracy pushed these amendments against the interests of the Users Associations. 16 The President of the 14th Distributary Committee stated that 'the irrigation staff will now have more control on the day-to-day functioning of the WUAs, once the amendments come into force'. The DC President and WUA leaders in the sub-division viewed the amendments as a threat to the autonomy of the WUA (whatever little was left) and argued that the WUAs cannot function as an autonomous corporate body as visualised by the reform policy. They foresaw that it would affect the participatory spirit of the programme. The leaders did not agree to the amendments made to the Act and argued that they were never consulted by the Irrigation Department or government in making these amendments.

What does it suggest? What processes helped the bureaucrats to overcome their fears? The arguments of WUA leaders and Irrigation staff suggest that there is mistrust between them. Both irrigation staff and WUA leaders contested over the policy and tried to gain control over the management of irrigation resources. In the process they mediated with other policy actors and influenced its actual implementation.

8.4 Conclusion

This chapter's main purpose was to provide empirical evidence and contribute ideas that might help improve the understanding of bureaucratic behaviour and aspirations. It shows that policy decisions are important but ultimately the success or failure of a policy is shaped in the implementation process. The AP case showed that great deal of policy is in fact made, or modified, in the implementation process.

The middle and lower level irrigation bureaucrats played a crucial role in the implementation but were largely left out in the policy formulation process. The reliance of the highest political executive on the higher-level bureaucracy also helped these bureaucrats to steer and influence the policy. The Chief Minister

Chandra Babu Naidu's reliance on the bureaucratic machinery for advice, information and decision-making, more than the party leaders and elected representatives, became a source of agony among the latter (see Suri 2001). I conclude that the irrigation bureaucracy has cleverly used its positions of authority individually and collectively to safeguard its interests.

Different bureaucrats viewed the reform differently. It was viewed positively and seen as a necessary step only by higher-level bureaucrats. They perhaps did not see reforms as a threat to their jobs, but an opportunity to improve their career chances. Going down the irrigation hierarchy, resistance to the reform increased. The middle level bureaucrats saw the reforms as a loss of power and an additional work burden without any incentives and rewards. The front-line bureaucrats visualised reforms as a threat to their jobs and social status, and a loss of additional income. The AP reform programme did not recognise the role of middle and lower level bureaucrats as policy mediators and hence failed to provide them with required motivation and space to participate.

At the local level, the lower-level bureaucrats played a variety of roles in implementation of the policy. They played the role of communicators, opinion makers, and a strong workers union to resist particular government policies which they see not in their favour. They also successfully used their alliances with higher-level bureaucrats, local political leaders and with members of water users associations to protect their professional interests. Lipsky's work (1980) provides evidence that the lower-level bureaucrats are very important as they transform the policies in actual field situations. As lower bureaucrats they perform the role of linking the state (policy) and users (policy beneficiaries). This particular location of work gives them a space to manoeuvre.

The Luskars were still responsible for operating (opening and closing) the sluices. Through this space they could favour selected farmers with additional quantities of water supply. They could use their alliances to resist the orders from their higher officials and also the state. I conclude that in this process of hierarchical subordination, the lower-level irrigation bureaucracy has successfully coped with the pressures, and negotiated within the reform policy space to protect their interests.

The middle-level bureaucrats (DE and AE), who acted as competent authorities, restricted themselves to the implementation of the government orders. There were limited communication

channels or space for them to share their experiences and knowledge gained during policy implementation. Since these bureaucrats were not consulted from the beginning they envisage the reform programme as top-down and do not identify with the PIM policy in the state. Their actions towards the programme clearly show that they are not motivated at all as they do not see any direct benefits to them.

The AP irrigation reform programme aimed to reform the irrigation agency. It also expected attitudinal changes among the bureaucrats while implementing the PIM programme. The bureaucracy is not as neutral as theory would suggest. In contrast, the bureaucracy used its newly acquired legal and financial powers and retained its traditional control over irrigation activities. At various levels it also aligned with powerful leaders. As a result, WUA functioning was very much tailored and dependent on the decisions of the bureaucrats. The policy objective of reforming bureaucracy to become user-centred was finally not achieved.

The AP evidence suggests that the presence of a reform policy, legislation and formation of WUAs does not necessarily lead to accountability relationships between the bureaucracy and users. By and large, the policy process is driven by the state and its bureaucratic arm rather than by user stakeholders.

The AP experience suggests that a bureaucracy that supports a reform programme does not necessarily change its attitudes and reorient itself towards participatory methods. In the absence of rewards, incentives and punishments, the rent and position seeking alliances of bureaucrats will stand in the way of transparent functioning and effective policy implementation.

As Weber discussed, an institution served by a bureaucracy will outperform its competitors, and prevail in the struggle for survival: bureaucracy has spread and continues to spread because of its survival value for social institutions. The AP irrigation reform policy only aimed at shrinking the size of irrigation bureaucracy rather revitalising it. I conclude that we need to find innovative ways for making effective and committed irrigation bureaucracy in order to achieve reform goals.

Notes

- ¹Excerpt from the Chief Minister Mr. Chandrababu Naidu inaugural speech at the fourth National Conference on Participatory Irrigation Management held on 19th January, 1999 at the National Institute of Rural development, Hyderabad.
- ² Encarta Dictionary defines bureaucracy as an administrative system, especially in a government, that divides work into specific categories carried out by special departments of non-elected officials. The bureaucracy is a group of well-trained people, expected to exert a 'rational' influence on the entire decision making process. Bureaucracy is rule conducted from a desk or office. 'Bureau' (French, borrowed into German) is desk or by extension an office. Bureaucracy, for a number of scholars, implies something more than a complex and rigid organisation.
- ³ Rent seeking practices in canal irrigation are well documented. Wade (1982) shows how the system of administrative and political corruption is institutionalised in canal irrigation in South India. Moore (1989) discusses rent seeking analysis in his paper published in World Development. He tries to show how public irrigation policy is adversely affected by 'organised private interests using official positions to skew public policy in their favour'. Repetto (1986) examines the practices of governments and international agencies in monitoring public irrigation systems. He argues that the lack of commercial principles in the financing of Third World irrigation leads to the gross misuse of public resources. He shows how these public resources are diverted to private ends. He further argues that the misguided economic incentives cost governments huge sums and distort investment decisions, while encouraging environmental abuse and wasting natural resources. Moore recognises the concept of power in understanding the organizations, but Repetto seems ignore this concept.
- ⁴ This chapter was greatly benefited by participation in a training workshop conducted by Prof. James Manor from IDS, U.K. I presented the preliminary findings in another Policy Processes workshop, organised by the Centre for Economics and Social Studies (CESS) Feb 27-01 March 2003. I acknowledge the small grant provided to carry out further field research. I thank the participants of the workshop for their suggestions and grateful to Dr. Jos Mooij and Prof. Parthasarathy for their critical comments.
- ⁵ I had the opportunity to interview 7 senior level S.E cadre bureaucrats (at Erramanjil, WALAMTARI, NSP Hyderabad camp office, K-C canal, S.E Minor Irrigation Circle office at Warangal and a retired S.E based in Hyderabad) 5 middle level E.E and D.E.E cadre at Tekulapalli Circle office and Kalluru Division office and 12 A.Es, WI and Luskars and from Tallada, Kalluru and Madhira irrigation subdivision offices. To conduct the interviews I adopted a guided interview approach. The interviews are

conducted in the irrigation office environment /premises. I followed a semi-structured format with open ended questions and in-depth probes. The chapter benefited from the conversational interviews carried out in addition with the implementing irrigation bureaucrats during the study period.

- ⁶ Theorists like Weber, Merton and Marx seek to explain how rigid behaviour develops in complex organisations (see Weber 1947; Merton 1957; Marx 1957).
- ⁷ For the purpose of analysis I divide the irrigation bureaucracy into three levels on the basis of their roles and functions. The highest level by virtue of their rank, have the opportunity for involvement in policy issues. The highest level includes the civil servants (IAS officers) who head the irrigation department, the Engineer in Chief (ENC) and Chief Engineers (CE). The middle level bureaucrats supervise and implement the policies and report to the higher authorities. They include the Superintending Engineers (SE), Executive Engineers (EE), Deputy Executive Engineers (DEE) and the Assistant Executive Engineers (AEE). The middle level bureaucrats are involved in the day-to-day management of the irrigation systems and enjoy a lower degree of autonomy in taking policy decisions. The lower-level bureaucrats are the Work Inspectors (WI) and the Luskars, who do not hold a technical engineering degree. They implement orders of their superiors and act as a link between the department and the users on a day-to-day basis. They maintain close contacts with water users and community leaders in the village.
- ⁸ Here I quote Raymond Peter, a senior IAS officer, involved with the irrigation reform programme in the initial years. He writes in his paper 'the objective of the government was to understand the viewpoints of all concerned. Therefore, participation in the public consultations was not restricted to farmers, but also included politicians, political parties, researchers, and the press. In AP, this was perhaps the first attempt by the government to seek out the viewpoints of beneficiaries and the parties likely to be affected. The consultations have enabled the government to steer the reform process in a transparent manner (see Peter 2001).
- ⁹ Mr. Chandrasekar told me that the meeting was useful for him, as he came to know more details about the ruling TDP government policy. He shared this information with other important leaders in the village and showed his interest to become a representative of the WUA. He said (with a smile) that he could prepare himself to contest in the WUA elections conducted a few months later. This is an isolated example to argue that the consultation meetings did not serve the real purpose of consultation. But the example suggests the nature of consultation meetings which are shown as a symbol of participatory efforts.

- ¹⁰ The Water Charges Amendment Act of 1997 was passed in the Assembly the day before the APFMIS Act 1997. The acts were passed on April 16 and 17, 1997 respectively.
- ¹¹ GoRt.No.338 Dated 12.10.1998, regarding assistance to water user association, distributary committees, project committees in the command areas of major and medium projects by Luskars- orders- issued signed by P.K. Agarwal, Principal Secretary to Government of Andhra Pradesh. The orders (G.O no 337 and 338) clearly stated that all Work Inspectors and Luskars working in the area of operation of a farmers organisation shall be accountable to that farmers organisation namely a water user association, a distributary committee or a project committee.
- ¹² Personal communication with Y.Rama Mohana Reddy, D.C. President, Anantapur.
- ¹³ Similar behaviour is evident in bureaucrats in western countries like the UK. For example, political appointees as advisers in successive UK governments were regarded by the permanent civil service with ill-disguised hostility and even contempt (see Wilson and Barker 2003).
- ¹⁴ Wade (1985) argued that the reason why the Indian state is not better at promoting development is to an important degree because of the corruption-transfer mechanism and its effects on bureaucratic initiative. Transfers are not just a small point of administrative mechanics. They are the very centres of the system of bureaucratic surplus extraction. Zwart (1994) analyses that transfers are one of the oldest and most lasting components of the personnel policy of Indian authorities. Transfers serve different goals. They are old and tested instruments used by the Moguls and British to control the administration.
- 15 Mr. Raju served as full time EE from 2.7.97 to 31.7.2000. He got promoted as SE Minor Irrigation Circle. Subsequent to him Tallada Krishna Murthy, K.Radha Krishnaih and K.L Soman served as additional charge for shorter periods. Meaning they performed as DE of an irrigation sub division and also performed EE duties of the Kalluru Division. After him N.G.K. Murthy headed the division office from 7.1.2002 and retired on 31.10.2003 as in-charge EE. Mr. Koteseara Rao, DEE of Tiruvuru sub-division was given additional charge till 4.02.2005. Another EE was posted as in-charge E.E for the division from 04.02.2005. The difference between an additional and in-charge is that the additional charge is not a full promotion. The in-charge E.E will enjoy the same benefits (i.e. powers, scale of pay and perks). Due to problems within the government promotion lists, these officers were posted as an in-charge EE, rather regular EEs, shared the Senior Assistant in Kalluru Division office.
- ¹⁶ On 24th November 1998, the bill for amendments to APFMIS Act was introduced in the A.P Legislative assembly. Ordinance 7 of 1998 was repealed after the introduction of ordinance 9 of 2002. The bill came for discussion in the assembly sessions during March 2003.

Conclusions

The core responsibility of those who deal in public policy-elected officials, administrators, policy analysts- is not to discover as objectively as possible what people want for themselves and then to determine and implement the best means of satisfying these wants. It is also to provide the public with alternative visions of what is desirable and possible, to stimulate deliberation about them, provoke a re-examination of premises and values, and thus to broaden the range of potential responses and deepen society's understanding of itself.

Robert B. Reich (1988) The Power of Public Ideas.

9.1 Introduction

Throughout the research period while discussing with irrigation engineers and other staff members in the field and at the central offices, the common question that I had to answer many times was 'are you an engineer'? The non-engineering community did not ask me the same question, but assumed that I was an engineer. On many occasions I clarified that I was trained in both social work and planning and interested in policy issues. I can assume what a difference it would have made if my answer were 'Yesl I am an engineer'. The curiosity to know my professional background and make a judgement on me was genuine. But that shows the strong affinity to the traditional disciplinary sciences and the need for interdisciplinary research.

This research was motivated by what Guha (2003:1122) calls the criterion of relevance (influencing policy or correcting the injustices of history) and a desire to understand the interplay of complex social, technological and political systems in irrigation management.

Irrigation development continues to be emphasised by Indian governments though many ills were attached to it. Irrigation as a

Conclusions 239

source of food production and security continues to be subject of development discussions. During the post independence period, irrigation policies continued to support the protective type of irrigation, particularly in South India. The Nagarjunasagar irrigation system in which this research took place shows forms of protective irrigation and localisation. The irrigation reform policies that were introduced in the state in 1997 aimed to achieve efficiency, equity and productivity. This context made it possible to investigate the process when a reform policy is superimposed upon a protective type of irrigation system.

In this concluding chapter, I summarise the empirical findings and arguments made in the preceding chapters of the book. I provide a summary answer to the main research question in the third section. How is irrigation reform manifested and contested on the ground? How are irrigation reform policy choices and outcomes contested and mediated by different actors, organisations and political institutions? What are the implications in terms of system rehabilitation, water distribution, and sustainability of water user associations of Madhira branch canal under the Nagarjunasagar left main bank canal irrigation system in the state of Andhra Pradesh? In the concluding section, I present the themes for further research.

9.2 Theoretical Framework

In this book, using a policy contestation model, I have shown how different actors contested the irrigation reform policy in Andhra Pradesh. The chapters provide evidence of differences in policy outcomes at the local level as compared to original policy objectives. The framework builds upon the bureaucratic interests and state politics approach (bureaucracy and state alignment) used in this research. This approach recognises that the bureaucracy has limitations in implementing a policy. It includes the role of state and other actors' interests in shaping a policy.

Unlike the bureaucratic politics approach, the present approach treats bureaucrats as not necessarily rational actors but important policy actors, who interact and bargain with other actors to pursue their own interests. By doing so, the narrow focus of bureaucratic politics has been broadened to cover other aspects of the bureaucracy and its engagement with policy. This modified

approach provided the opportunity to study different policy actors and their interactions among themselves and with others, and their ways and means of contestation and bargaining strategies with each other, thereby producing a particular policy outcome.

9.3 Arenas of Contestation

In this section I answer the main research question. I discussed the policy contestation by different actors in irrigation reform in Andhra Pradesh. I investigated the roles and actions of policy actors in different irrigation arenas and their contestation with the policy. The strikes, claims and protests of irrigators as WUA members at the canal sites and before the irrigation offices, as well as the acts of politicians in support of irrigators and bureaucratic alliances provided a prospect to study the process of policy contestation. I discussed policy contestation in three irrigation management arenas: irrigation works (chapter 5), gap command and water distribution (chapter 6) and Joint Azmoish of the command area of WUAs under Madhira branch canal (chapter 7).

Irrigation Works

Irrigation works (maintenance and rehabilitation) are an important arena for policy contestation. Chapter 5 of this book shows how irrigation bureaucrats, WUA leaders, politicians, contractors, and other elites have used the arena of irrigation works to accumulate power and further their interests. In the process the middle-level bureaucrats could retain their control in implementation of works. The alliance between the WUA leaders and irrigation bureaucrats at the field level led to an alignment of economic interests and influenced the process of decision-making, resource allocation and priority of irrigation works that were executed. The initial maintenance and rehabilitation (MR) works on the secondary and tertiary canals created a hope and impression that the irrigation system would soon function better than in the past. In contrast, the evidence shows that the majority of WUA leaders saw irrigation works as a means to procure funds from the state, and as a source to earn back the money that had been spent during elections to the WUA office.

Conclusions 241

The irrigation bureaucracy retained its control, rather than transferring powers to the water user associations by means of powers sanctioned by the Act. In the absence of project committees, the contractor system was continued at the main canal level to carry out main canal irrigation works. The higher-level irrigation bureaucrats approved the budgets by calling for private tenders implemented through contractors. The users' participation in decision-making at this level was absent. The practice reinforced the conventional model of the politician-contractor-bureaucrat nexus. In addition, the manner in which the government delayed the formation of project committees provides support to the argument that political and bureaucratic interests played a crucial role and influenced the policy.

Gap command and Water Distribution

Chapter 6 showed the contestation of policy by different actors at different levels in the arena of water distribution and development of gap command area. The interference of state and local level political leaders in canal management was apparent. I showed how policy makers and irrigation bureaucrats systematically constructed a bridging the gap narrative to defend their policy actions by magnifying the reform results. The political executive made statements regarding the achievements of the reforms in the electronic media, press and public meetings in an attempt to mobilise public appreciation. However, the field evidence shows that the statements made by officials do not hold truth (chapter 6).

The term 'bridging the gap' is a relative term; while referring to it one has to compare to the previous situation. In the case of AP the political executive has used the data cleverly. The construction of the 'bridging the gap narrative' was explicitly aimed at meeting the interests of different actors. The political executive's multiple interests were to secure the popular vote base, further funding for their programs and to legitimise their government actions. It helped senior bureaucrats in getting better career postings. The external funding agencies that financed the reform programme, by accepting these claims were perhaps interested in show casing the 'Andhra PIM experiment' as a successful model.

The middle level irrigation bureaucracy continued to control water distribution. The Assistant Engineers who were designated as

competent authorities for the WUAs, assisted by subordinates (Work Inspectors and Luskars) could control the water distribution and supply at local level. They managed to execute the orders of their higher officials regarding the water distribution schedules and pressures from the local politicians to supply good flows to their respective constituencies. They also managed the demands of WUA leaders and influential farmers in the command area. Their location in the irrigation hierarchy has given them room to manoeuvre. As a result they could defend their and others' interests. They behaved as important actors and engaged with the policy. As a result of these individual and group contestations in the water distribution arena, the policy objective of ensuring equal access to irrigation water to the users was not achieved.

Joint Azmoish

Revenue collection is another arena of contestation. The policies of reform visualised the role of WUAs in the Joint Azmoish (JA) process as: an empowerment process of WUAs; an economic incentive for WUAs to facilitate higher collection of water charges and retain a share from the collections; and a tool to attain higher revenue for the state. The actual implementation of JA shows that revenue and irrigation bureaucrats dominated the process. The WUA as an institution crafted through a legal act was unable to influence the functioning and practices of the participating government departments. The evidence confirms that government bureaucracies (like Irrigation Department) have a better chance of surviving and are likely to influence the contours of the policy (see chapter 7).

The power relations between irrigation department officials, WUA leaders and irrigation users are evident. The APFMIS Act sanctioned the irrigation users with the right to seek irrigation related information from the department. The legal provisions have certainly increased the users' access to irrigation offices, but very few users could utilise them. Traditional systems of information flow existed in the command villages. The new working relationships that emerged between the WUA leaders and the irrigation bureaucrats, especially at the field level, influenced the decision-making process of the WUAs. The cooperation between the revenue and irrigation staff at local level hindered the JA

Conclusions 243

process. By not cooperating with the WUA to conduct the Joint Azmoish they could serve the interests of their respective departments.

The irrigation and revenue bureaucracy, instead of resisting the reforms that are aimed to decentralise power, managed to protect its interests by lobbying with the government and by forging new relationships with the new leadership (WUA leaders) that emerged. The irrigation bureaucracy had been very creative and resilient and networked with other actors to reinforce their relative power in the policy domain. The irrigation reform received bureaucratic support when the bureaucracy understood that there were no threats to its position.

Bureaucratic interest(s)

In this study I tried to show how the irrigation reform policy manifests itself and became contested during implementation. I also discussed the relationships between policy makers (state) and recipients (located at village) through the prism of policy. The analysis showed that different actors contest new policy, which becomes transformed in the process. The final outcome was different from what was stated in the policy documents.

In chapter 8, I showed that there is no common shared objective among the irrigation hierarchies in resisting or promoting irrigation reform policy. This evidence tells us that we cannot treat the irrigation bureaucracy as a single entity that has unified goals. The chapter shows the engagement of irrigation bureaucrats in political manoeuvres to protect their hierarchical interests.

The irrigation reform policy process in Andhra Pradesh is a complex process in which diverse interests play a role. The AP case shows that reform policies supported by external funding and legal measures alone cannot bring desired changes. The political executive and bureaucratic arms of the state have played a role in design and implementation, with funds provided by the bilateral agencies and available internal resources. Irrigation bureaucrats played an important role as intermediaries and they have exerted considerable power over the reform policy agenda.

The analysis in the previous chapters show that neither the irrigation reform in AP was demanded by the irrigators (WUA members), nor an outcome of civil society advocacy. The

opposition political parties initially showed some resistance to the policy. They were left with no option but to agree to reform policies, when the ruling government was successful in showcasing the policy as farmer-friendly. Contestation among different actors certainly was there in all stages. It was more evident during the policy implementation than at the formulation stage.

The irrigation reform policy process in Andhra Pradesh is a function or combination of conflict, co-operation, negotiation, lobbying and pursuing of self-interests of different actors. The empirical chapters in this book provide evidence of how the individual and agency interests have been aligned and used to safeguard these interests. In the process the actors shaped the policy and influenced the implementation process.

The reform policy aimed to bring new accountability of relationships between the irrigation bureaucracy and users, and between state and users, by transferring the irrigation management responsibilities to the users' domain. The irrigation bureaucrats who are engaged in the operation and maintenance of irrigation systems saw shifting irrigation responsibilities to WUAs as a loss of power. The higher-level irrigation bureaucracy seems to be reasonably successful in negotiating the status of its roles. The lower-level irrigation bureaucracy did not resist the reform policy explicitly initially. Later, it could successfully lobby with the government through its associations and also used legal measures to defend its interests (see chapter 8).

The irrigation bureaucracy showed a high degree of resilience. Bureaucrats played multiple roles as alliance makers; self-interested individuals were bent on procuring favoured positions or as lobbyists, and hence played an active role in the policy process. They successfully interacted with local WUA leaders, users and political leaders, and lobbied with the state to protect their interests. These interactions proved an important factor that influences the policy outcome. Though the explicit objective of the reform programme was to achieve more production and greater equity, the state continued to derive its powers from controlling the canal irrigation structures, property and management. It is clear that only certain management functions were transferred to WUAs. As a result the WUAs could not participate in the process as equal partners.

I hope the individual chapters in this book stimulate deliberation about salient aspects of irrigation reform policy and programme

245

and collectively as a book provoke a re-examination of policy processes. Thus, it can broaden our understanding and the range of views on implementation of a reform policy.

9.4 Themes for Future Research

Further research work on the conceptual elaboration of politics of policy and policy as process perspectives is most warranted as this study shows the value and benefit of using such an approach. Second, bureaucrats as policy actors and the policy reforms and institutional functioning are a third area in which further research needed.

One of the limitations of the current study is that I could not focus on the functioning of higher level bureaucrats based in the state capital and unravel their role in policy formulation and implementation. Understanding their roles and strategies would further reveal the course of the policy process. The empirical chapters in this book showed that the irrigation bureaucrats in Andhra Pradesh are successful in retaining control over works and water distribution. The irrigation bureaucrats are bound to continue as key players in irrigation reform policies and systems management. Hence their behaviour, factors of resilience and their role in the policy process need to be studied in-depth. Understanding reform policy outcomes requires further understanding of how bureaucrats mediate the policy process.

A major input in policy process comes through public bureaucracies. Hence we need to know more about how bureaucracies are embedded in different societies. Further investigation in to bureaucratic professionalism, culture and identity of irrigation agencies will provide insights in to how bureaucracies perform in a given policy space.

Research studies in irrigation management mostly focused on policy prescriptions, models for desired end results, and provided policy recommendations. In this context the present study is an explicit attempt to document the processes of policy. The findings of this study and others (Mollinga and Bolding 2004) clearly show that irrigation reform policy models cannot simply be replicated. Blindly adapting the so called 'success models' is dangerous although they are appealing.

Research that can help to improve ways and methods of policy design and institutional functioning is crucial. Such focus needs to go beyond the usual descriptive accounts of institutions and prescriptive policy implementation methods. For example: what are the ways to make the PIM policy truly 'participatory' not only in documents but on the ground? What could be the suitable WUA and irrigation department structures to implement PIM policies? How to ensure inclusion of water users and increase their role in the policy process? I hope these questions stimulate interest, provide further cues and new entry points for further research in irrigation reforms in the South Asia.

Epilogue

10.1 Introduction

I revisited Madhira Branch Canal in 2003 and 2004 with the purpose to update discussions on irrigation management activities in the study area and policy changes in irrigation.

The five years' term of the WUAs (elected in 1997) ended in July 2002. The government did not conduct elections immediately but delayed the process. The role and functioning of WUAs was in dilemma as there were no clear rules from the government. The government had asked the competent authorities (irrigation bureaucrats who were responsible of the WUAs in the past) to act in the place of the WUAs. As a result the WUAs were paralysed. A few WUA leaders went to High Court against the state. Describing the status of the WUAs during this period, I would say that they were in an uncertain state for about fifteen months.

The elections for WUAs were conducted partially (i.e. only in 13 districts out of 23 districts in the state) in October 2003 in the state.² Before the second round of elections to WUAs, the APFMIS act was amended. The state government endorsed as many as forty amendments to the APFMIS act in one go in 2003. Under the amended APFMIS act, the elections at all levels were not direct. The territorial committee members elect the president and vice president of the WUA. As a consequence of the reorganisation of WUA command size, the total number of WUAs has increased to 10,933 from 10,292 in the state

During my re-visits to the MBC I went to meet the WUA leaders. During discussions, I found them very disappointed about the government actions. Some of the WUA leaders were even reluctant to talk about the WUA activities. Some of them got elected to other political positions and were occupied with different issues and village politics.³ The elections for WUAs in this area were not conducted even in 2003. The government did not give

any explicit reasons for this. The WUA leaders I consulted raised objections to many of the amendments made to the APFMIS act.⁴ According to them they were not consulted and many of the amendments made to the APFMIS act of 1997 were against the interests of the WUAs and the spirit of participatory irrigation management.

10.2 The Amendments

In this section, I discuss briefly some of the amendments made to APFMIS act of 1997 and present the views of WUA leaders and irrigation bureaucrats from the study area. The bill for the amendments to the act was placed in the state legislative assembly for approval in March 2003 and was amended. My purpose in doing so is to further discuss the role of actors in policy changes and enhance the understanding of policy processes in the irrigation sector in the state.

Changes to WUA Structure

The amendments to the APFMIS Act of 1997 led to many changes to the structure of the WUA. The tenure of the WUA office has been reduced to two years. The command size of the WUAs formed under major irrigation was also reduced. According to the amended act:

the President and Vice-President of the managing committee of water users association shall, if not recalled or removed or disqualified by the provisions of the Act, be in office for a period of two years from the date of election or his/her tenure as member of territorial constituency which ever is earlier.' Section 3(2) declares that 'every water users area shall be divided into territorial constituencies which shall be six in minor irrigation (against the earlier maximum of four) and twelve in major and medium irrigation systems'.

The WUA leaders interviewed expressed that they regarded reduction of tenure of the WUA office from five to two years as anti-democratic. According to them a term of two years is not

Epilogue 249

sufficient for a WUA leader to do any meaningful work. It takes at least a year to understand the system details and official procedures. The amendment will lead to frequent leadership changes. The leader's argument is that in the absence of experience, they will depend excessively on the Irrigation Department for decisions. If that is the case the department will continue its control and monopoly over the irrigation system management.

The command size of WUAs under major and medium irrigation systems has been reduced to a maximum of 1620 ha. One would have thought that as the size of the WUA command decreased, the number of TC members will also have decreased. However, under the amended Act the number of TC members increased to twelve instead of ten for each WUA constituted. Each TC member now supervises or represents about 135 ha of command in the WUA. As a result, the number of WUAs (under an irrigation subdivision) and the number of TC members has increased.

In the irrigation sub-division of Kalluru the number of WUAs has now increased from nine to eleven. The irrigation staff in the subdivision stated that the WUA commands have been re-defined according to the rules prescribed by the government. With the increased number of TC members in a WUA, new territorial maps with demarcated boundaries were prepared. In addition, voters' lists have been upgraded according to the new WUA boundaries.

Both the WUA leaders and the irrigation bureaucrats hold the opinion that the changes will not improve irrigation management. The WUA leaders did not like the idea that the WUA will now function as a continuous body similar to that of Rajyasabha in the central parliament. According to them the increase in the number of TC members will lead to increased competition within the WUA for financial resources to be spent in one's territorial constituency. As a result, resource sharing and decision-making in WUAs may become politicised. A majority of the field irrigation staff considered that the increase in the number of WUAs and TC members will further complicate the decision making in irrigation management.

Creation of new positions and Modes of election

Section 4 of the amended Act introduces 'creation of a new position, i.e. the Vice President post in WUA with a view of stand-by arrangements'. In case of death, resignation or recall of WUA President, the Vice President can immediately act as a President. There was no such provision in the past and in case of vacancy the replacement was delayed. In addition the amendment empowered the Vice President to act as a joint signatory to operate the WUA bank account. As explained above the election for the post of President and Vice President is not direct but elected by the TC members.

The WUA leaders interviewed felt that the earlier rule of direct election for the position of President was good and effective. In this case the President was answerable to all WUA members. In case of indirect election, the President and Vice President are responsible to TC members rather than directly to the users. The leaders claim that the state government wants to weaken the importance of the WUA President. The creation of post of a Vice-President is aimed at distributing the powers of the President, argue the WUA leaders.⁷

The WUA leaders interviewed essentially argued that 'the higher bureaucrats and politicians deliberately amended the act in the name of WUA representatives. Now that the amendments are passed, the politicians and bureaucrats have succeeded in dividing the powers of WUA President'. From the view point of WUA leaders, it is evident that there is disagreement and contestation of policy by the participating actors.

In contrast, the implementing bureaucracy during the discussions stated that the introduction of the Vice-President position is rational. They were also positive about the changes in the mode of election. The changes in the act would result in sharing of the WUA president's duties, responsibilities and powers with the Vice-President and TC members. Hence the changes facilitate decentralised decision making in the WUA functioning. However, they also cautioned that the new arrangements would result in increased internal conflicts and politicisation of WUA activities.⁸

My interpretation from the discussions is that the amendments to the Act were not endorsed by the WUA leaders. They felt that their powers were taken away. The objections they raised to some Epilogue 251

extent sounded rather self interested. The rationale behind the introduction of Vice-President could be mainly to address the criticism that the WUAs have become President centered. In the past it was evident that the TC members did not play an active role because decisions were usually taken by the WUA President in consultation with the irrigation staff. Under the new arrangement, the TC members elect the President and Vice-President and hence they might now play a more active role in WUA decision making process.

In the past the powers to nominate a President for the WUA (in case of a vacancy) by the concerned Distributary Committee (DC) President have led to political favouritism and affected negatively functioning of the WUA. With the introduction of this amendment the power to nominate by the DC president ceased. The pessimistic view is that this move could be to balance the powers of not only WUA-level leaders but the DC leaders. Reducing the tenure to two years and introduction of vice-president/chairman position can be read as mechanisms to address the perceived political threat by these positions. The process of amendments to the APFMIS act and the consequent policy changes shows the negotiation of different actors with the policy and its content.

Issue of Recall

The amendment related to recall was another amendment seriously contested by the WUA leaders. The APFMIS act spells out reasons for disqualification of candidates for/from the WUA office. The Act provides WUA members with the 'right to recall' a President or member of the managing committee? of the WUA after one year on the basis of their performance (APFMIS Act, Chapter II, and Section 10). Two thirds of the general body members of the WUA have to vote in favour of recall. The process should be supervised entirely by the WUA.

According to the amended Act, recalling a WUA President or Vice-President or a managing committee member (as the case may be) can be initiated by giving a written notice to the Competent Authority (engineering) of the respective WUA signed by not less than one third of the total number of the members of the WUA, who are entitled to vote. The WUA leaders criticise this provision as a clear move to transfer powers to the Competent Authorities.

They argue that earlier only the District Collector had the power to remove a WUA leader if found guilty. The amended act states that:

No notice of the motion to recall under this section shall be made within one year (of the date of assumption of office by the person) against whom the motion was sought to move. If the motion is carried with the support of a majority of the members present and voting at a meeting of the general body specially convened for the purpose, the Competent Authority (engineering) shall by order remove him or her from office and the resulting vacancy shall be filled in the same manner as underlying vacancy (italics mine).

Under the amended Act the power to remove has also been given to the competent authority. This will tilt the power balance between the Irrigation Department and the WUA. This provision to me seems contradictory as the power to remove only rests with the competent authority (irrigation engineering), though competent authorities are also to be drawn from the Agriculture sector. The WUA leaders pointed out that this provision is a clear indication that the Irrigation Department wants to control the WUA and does not want to share power with officers from other departments.

Power to inspect WUA records

Policy makers in the government at various occasions commented on the performance of the WUAs in the state. They commented that in the last five years of irrigation reform management, the instances of corruption have increased rather than decreased. To address this issue the provision to inspect the WUA records has been included, states a senior irrigation bureaucrat during an interview. According to him the section 28 of the amended Act empowers the Commissioner to authorise an officer or officers to inspect the records of the WUAs:

Section 28 (rule 2) of Chapter VII of the amended Act states that "the books of accounts and other shall be open for information to the members of the farmers organisation and also for inspection to any officer or officers authorised by the Government or Commissioner, as may be prescribed".

253

The WUA leaders interviewed clearly stated that this provision was never discussed in the meetings. The leaders agreed that in principle they do not object the particular provision as a step to achieve financial transparency. The leaders suggested that there should be a written request/complaint from the members of the WUA to the Competent Authority up on which he or she can act and verify the records. This will provide legitimacy for the process i.e. for the members who complain and officer who is to supervise. Otherwise, this provision will result in further bureaucratic control over the WUA.

10.3 Concluding Remarks

What do the irrigation reform policy processes add to our understanding policy, politics and change? The Andhra Pradesh case showed a distinct dynamics in the policy process. The field evidence shows that the evolution of amendments to the APFMIS Act was an outcome of political priorities and bureaucratic choices, and only to some extent reflected the needs of WUA leaders.

The views of WUA representatives and the irrigation bureaucracy regarding the amendments to the Act reflected their own interests. The process of amendments to the Act under the Naidu-led TDP regime suggested that the government wanted to use participatory approaches but at the same time tried to control the process. Policy decisions are influenced by the priorities of ruling political party, and the legal, bureaucratic and interests of financial institutions.

The AP case study confirms that in this case political leaders initiated a proposal for change, empowered technocratic teams to design reform programs and centralised power in the executive branch to facilitate decision-making (Grindle 1999). The demand for reforms in this case has not emerged from the users.

I have showed how more recent macro-political compulsions have further reshaped the content of the irrigation reform policy in Andhra Pradesh. The electoral calculations of the local politicians and WUA leaders and bureaucratic interests appeared at the heart of the reform policy and policy changes.

Understanding policy contestation means better prediction of the behaviour of different policy actors and the strategic choices that they make in gaining access to and control over resources in different resource arenas. In this respect this book aims to link theory and practice by contributing to the understanding of irrigation reform policy processes in Andhra Pradesh. By doing so this book has contributed to the ongoing efforts of making 'politics' a legitimate topic on the agenda of global irrigation management and reform discourse. I hope that these insights from the Andhra Pradesh irrigation reform process will provide insights in implementing participatory reform policies in other states of India.

Notes

- ¹ On the reasons for delay, the Iirrigation Ministry states that 'the government is reviewing performance of WUAs against the objectives set for them. It recognises that there are certain deficiencies in the working of WUAs. The Government decided to bring certain changes in WUA structure, rules and regulations. The objective is to craft simple and vibrant organisations with greater transparency, more accountability and self-management' (*Eenadu*, September 2002).
- ² A possible reason for the delay of WUA elections is the declined popularity of the ruling TDP government. The TDP lost many seats in the elections held for the Panchayat Raj bodies in June-August 2001. The Congress surpassed the TDP in Telangana both in the number of ZPTC and the MPTC, while it came very close to the TDP in coastal Andhra and Rayalaseema (see Suri 2001). The ruling political party leaders must have wanted time to regain the popular vote base to win as many as WUA positions.
- ³ The existence of WUAs further marginalised when the Chief Minister made an announcement in the state assembly. Mr. Naidu announced that the Panchayat bodies would be empowered to implement the Land, Water and Tree Act (Eenadu, 23rd March 2003).
- ⁴ The state level workshop was held on 30th May 2002 at Hyderabad. The Irrigation Minister states that the workshop was held to review the progress achieved by WUAs and to elicit views of the WUA presidents on changes necessary for optimum benefits including amendment of the APFMIS Act (www.blonet.com/2002/05/31/stories/2002053101691900.htm).
- ⁵ The first amendments to APFMIS act 1997 were brought by introducing a bill no 32 in the AP Legislative assembly on 24th November 1998. The Ordinance 7 of 1998 repealed and second time the amendments were introduced through the ordinance of 9 of 2002. For more information visit FAOLEX database at URL http://faolex.fao.org/faolex.
- ⁶ All the TC members for the WUA shall be elected at one time, out of

which one third (in the case of major irrigation the total of 12 TC members, out of twelve one third, i.e. four members) of the members shall retire as soon as may be on the completion of two years, another one third members shall retire after completion of four years, and the remaining one third shall retire after completion of six years in office and their terms of retirement shall be decided by drawing of lots. The term of the office of all the TC members elected subsequent to the first election against the vacancies of retirement, as specified in sub section (3) of the Act shall be of six years if not recalled or removed or disqualified under the provisions of the Act. In this way the WUA functions as a continuous body.

⁷ Mr. Goutama Raju who elected as a President to the WUA office for the second term argued in his presentation at the workshop (titled Water and Farmers Network organised by Jala Spandana and WALAMTARI on 8th April 2004) that "the indirect elections call for unhealthy practices like horse-trading (purchase of TC member's vote) and will destabilise the WUA activities and functions. The Government is not concerned to entrust functions as envisaged in the original Act".

⁸ The implementing irrigation staff in the study area shared that that the change in duration is welcome as it reduces complacency of the President and affords opportunity for more members to serve the association. They are of the view that the indirect elections to the top positions will reduce the scope for the monopolistic tendencies of the President. These changes will result in the collective responsibility of the TC members of the WUA functioning. The bureaucracy felt that conducting elections for every five years is a huge task for the government. It costs huge money for the state's exchequer and administratively not feasible to continue.

⁹ The general body or assembly of the WUA is composed of all members. The Management Committee is the executive body of the WUA, which is consists of one member elected by each of the Territorial Constituencies of the WUA. The TC members are elected by the TC user members in compliance with the arrangements prescribed by the Government.

- Allison, Graham and Morton H. Halperin.1972. Bureaucratic Politics: A paradigm and some policy implications, in *Theory and Policy in International Relations*, eds. Raymond Tanter and Richard H.Ullman, Princeton: Princeton University Press.
- Altekar, A. S. 1972. State and Government In Ancient India, (First Publication 1958). Delhi: Motilal Banarsidass.
- Anant T.C.A. and N.L. Mitra .1998. The Role of Law and Legal Institutions in Asian Economic Development: The Case of India Patterns of Change in the Legal System and Socio-Economy, Development Discussion Paper no. 662, Harvard Institute for International Development, Harvard University.
- Arts, Bas and Jan Van Tatenhove. 2004. Policy and Power: A conceptual framework between the óld' and 'new' policy idioms. *Policy Sciences* (37): 339-356.
- Attwood, D. 1987. Irrigation and Imperialism: the causes and Consequences of a Shift from Subsistence to Cash Cropping. *Journal of Development Studies* 23(3).
- Bagchi A. Kumar.1982. The political economy of underdevelopment, Modern Cambridge Economics Series. Cambridge: Cambridge University Press.
- Balasubramanian, R and K.N.Selvaraj. 2003. Poverty, Private Property and Common Pool Resource Management: The Case of Irrigation Tanks in South India, SANDEE working paper No2-03. Full report is available at www.sandeeonline.org.
- Bardhan, Pranab.1997. Corruption and Development: A Review of Issues. Journal of Economic Literature 35:1320-1346.
- Bardhan, Pranab.1996. The Economics of Corruption in less developed countries: A reviews of issues, CIDER Working Paper no C96-064. Accessed at http://iber.berkelev.edu//Wps/cider/C96-064.pdf.
- Bardhan, Pranab. 1989. The New Institutional Economics and Development Theory. World Development 17(9).

257

- Baumann Pari, Ramakrishnan Rajesh, Dubey Manish, Raman Rajiv K., and John Farrington. 2003. Institutional Alternatives and Options for Decentralised Natural Resource Management in India, Working Paper no 230. London: Overseas Development Institute.
- Banerjee, Abhijit and Lakshmi Iyer. 2003. History Institutions and Economic Performance: The Legacy of Colonial Land Tenure Systems in India. *American Economic Review*.
- Berkoff, D.J.W.1988. Irrigation Management in South India: The Approach of the National Water Management Project, ODI Irrigation Management Network paper no 88(2d):1-24. London:ODI.
- Bhalerao, C.N. 1973. Bureaucracy as an instrument of modernisation in India: Some Issues. In *Administrative Change in India*, ed. Ramesh K.Arora, pp61-71. Delhi: Aalekh Publishers.
- Bhambri, C.P. 1971. Bureaucracy and Politics in India, Delhi: Vikas Publishing House.
- Blair, W. Harry. 1972. Ethnicity and Democratic Politics in India: Caste as a Differential Mobilizer in Bihar. Comparative Politics 5(1):107-127.
- Bogdan, Robert.1972. Participant Observation in Organizational Settings. Syracuse, NY: Syracuse University Press.
- Bolding Alex, Peter P Mollinga and Kees Van Straaten. 1995. Modules for Modernisation: Colonial Irrigation in India and the Technological Dimensions of Agrarian Change. The Journal of Development Studies 31(6):805-844.
- Bowles, P. 1993. Recipient needs and donors interests in the allocation of EEC aid to developing countries *Canadian Journal of Development Studies* 10(1):7-19.
- Breman, Jan. 1997. The Village in Focus in The Village in Asia Revisited, ed. Jan Breman.
- Brewer, J. et.al. 1999. Irrigation Management Transfer in India: Policies, Processes and Performance. A Collaborative Study by IIMA and IWMI, eds. J. Brewer et.al. New Delhi/Calcutta: Oxford & IBH.
- Brewer, J. D and K.V.Raju. 1996. Types of irrigation management transfer in India. Paper presented at the Meeting of the International Association for the Study of Common Property', Berkeley, CA, USA, 5-8 June 1996. 24p.
- Bruns, Bryan and Ruth Meizen-Dick. 2000. Negotiating Water Rights, New Delhi: Sage.
- Bruyn, Severyn. 1966. The human perspective in Sociology: The methodology of participant observation. Englewood Cliffs, NJ: Prentice-Hall.

- Carrol, Barbara Wake. 1990. Politics and Administration: A Trichotomy? Governance 3(4):345-366.
- Centre for Civil Society. 2003. Concept paper: Managing Water Resources: Communities & Markets. Accessed at http://www.ccsi.ndia.org/water-brief.pdf on 12 January, 2006.
- Choudhary, Kameshwar. 2000. Historical Overview of Social Movements in India and Water Management. Paper presented at the Eighth Conference of the International Association for the Study of Common Property', Bloomington, Indiana, USA, May 31-June 4. Accessed at http://dlc.dlib.indiana.edu/archive/000002 37/00/ choudharyk062100.pdf on 8th November 2005.
- Coffey, A. and P.Atkinson.1996. Making Sense of Qualitative Data: Complementary Research Strategies. Thousand Oaks, CA: Sage.
- CWC.1992. An Approach to Organisational and Procedural Changes in Irrigation Sector. New Delhi: Central Water Commission.
- Dahl, R. 1961. Who governs? Democracy and Power in an American City. New Haven: Yale University Press.
- de los Reyes and P. Romana. 1982. Sociocultural Patterns and Irrigation Organization: The Management of a Philippine Community Irrigation System. Ph.D. dissertation, Berkeley: University of California.
- Deshpande, R. S. (nd) Land Policy Issues in the Development Context.Consultancy report to ADB. Accessed at http://www.adb.org/documents/Reports/Consultant/TAR-IND-4066/Agriculture/deshpande.pdf.
- Deshpande R.S. 2003. Current land policy issues in India, Land Reform:

 Land Settlement and Cooperatives, Special Edition, No 3 Rome: FAO.

 Accessed at ftp://ftp.fao.org/docrep/fao/006/y5026e/y5026e00.

 pdf
- Denscombe, Martyn. 1999. The Good Research Guide for Small Scale research Projects. London: Open University Press.
- DFID. 2001. Andhra Pradesh Impact and Expenditure Review: Irrigation Sector (Phase 1 report), Babtie International Ltd, Glasgow.
- Dhawan, B. D. 1993. Trends and New Tendencies in Indian Irrigated Agriculture. New Delhi: Commonwealth Publishers.
- Directorate of Economics and Statistics. 2000. An Outline of Agricultural Situation in Andhra Pradesh 1999-2000. Government of Andhra Pradesh. Source: http://www.ap.nic.in/apdes/summary outline.htm.
- Directorate of Economics and Statistics. 2000. Monsoon wise Rainfall by Districts. http://www.ap.nic.in/apdes/agrioul/annexure_1.htm.
- Directorate of Economics and Statistics. 1994. Statistical Abstract 1994.

- Hyderabad: DEC, GoAP.
- Diamant, Alfred. 1964. Bureaucracy and Developmental Movement Regimes:

 A Bureaucratic Model for Developing Societies, Comparative Administration Group, Occasional Papers (Seminar) University of Michigan, June15-July 24.
- Dumont, Louis. 1980. Homo Hierarchicus: The Caste System and Its Implications. Complete English edition, revised. 540 p. 1970, 1980 Series: (NHS) Nature of Human Society, The University of Chicago Press.
- Duncan, Henry S.1980. The Social Organization of Irrigation: A Study of the Channasut Land Consolidation Project in Thailand. Ph.D. dissertation, Berkeley: University of California.
- Dye, Thomas R .2001. Top Down Policymaking. New York and London: Chatham House Publishers.
- Egeberg, Morten. 1999. The Impact of Bureaucratic structure on policy making. *Public Administration* 77(1):155-170.
- Eisenstadt, S.N. 1963. The Political Systems of Empires, the Free press of Glencoe.
- Elliott, M. Carolyn.1974. Decline of a Patrimonial Regime: The Telangana Rebellion in India, 1946-51. *The Journal of Asian Studies* 34(1): 27-47.
- Epstein T. Scarlett, Suryananrayana A.P., and T. Thimmegowda. 1998. Village Voices: Forty Years of Rural Transformation in South India, New Delhi/Thousand Oaks/London: Sage Publications.
- Escobar, Arturo. 1995 Encountering Development The making and unmaking of Third World. New Jersey: Princeton University.
- Ferguson, J.1990. The Anti-Politics Machine: Development, De-politicization and Bureaucratic Power in Lesotho. Cambridge: University Press.
- Freedman, Lawrence. 1976. Logic, Politics and Foreign Policy Processes: A critique of the Bureaucratic Politics Model. *International Affairs* 52(3):434-449.
- Garcés-Restrepo, Carlos., and Douglas L. Vermillion. 1995. Irrigation management transfer in Colombia: Assessment of seven transferred districts. In *Irrigation Management Transfer*, ed. S. J. Johnson., D. L. Vermillion, and J. A. Sagardoy. Water Report no. 5. Rome: Food and Agricultural Organization of the UN and the International Irrigation Management Institute.
- Gay, P. du. 2000. In praise of bureaucracy. London: Sage Publications.
- Geer, Scot .1969. The Logic Of Inquiry, Chicago: Aldine.
- Geijer, J.C. et al. 1996. Transferring irrigation management responsibility in Asia: Results of a workshop FAO/IIMI Expert Consultation

- on Irrigation Management Transfer in Asia, Bangkok and Chiang Mai, 25-29 September 1995. Short report series on locally managed irrigation no.13. Colombo: IIMI.
- Gibson, Ralph and Martin, Blinkhorn. 1991. Landownership and Power in Modern Europe, ed. London: Harper Collins Academic.
- Gonzales, Leonardo S. 1993. Management turnover of a Pump Irrigation System in the Philippines: The farmers' way. IIMI country paper-Philippines no.2, Colombo: IIMI.
- Gopal, Rao, M. 1979. Nagarjunasagar: The epic of a Great Temple of Humanity-World's largest Masonry dam. Bombay: Bharatiya Vidhya Bhavan.
- Gorriz, C. M., A. Subramanian, and J. Simas. 1996. Irrigation management transfer in Mexico: Process and progress. World Bank Technical Paper no. 292. Washington, D. C.: The World Bank.
- Government of Andhra Pradesh. 2002. The Andhra Pradesh Farmers Management of Irrigation Systems Act (Act 11 of 1997) with Updated Amendments, inclusive of Ordinance 9 of 2002, September 2002, p31, Hyderabad: Irrigation and CAD Department, GoAP.
- Government of Andhra Pradesh. 2000. Economic Survey 1999-2000 Hyderabad: Planning Department, Government of Andhra Pradesh.
- Government of Andhra Pradesh. 1999. Swarna Andhra Pradesh: Vision 2020. Hyderabad: State Secretariat, GoAP.
- Government of Andhra Pradesh. 1998. Andhra Pradesh Economic Restructuring Project Irrigation Component, Project Implementation Plan. Hyderabad: I&CADD.
- Government of Andhra Pradesh.1997. The Andhra Pradesh Farmers Management of Irrigation systems Act (Act 11 of 1997). Hyderabad: Irrigation and CAD Development, GoAP.
- Government of Andhra Pradesh.1996. Irrigation sector: A Factual Note, Hyderabad: Irrigation and CAD Department, GoAP.
- Government of Andhra Pradesh.1995. Action Plan for Completion of Irrigation Projects. Hyderabad: Department of Irrigation and Command Area Development, GoAP.
- Government of Andhra Pradesh 1982. Report of the Commission for irrigation Utilisation, Vol 162. Hyderabad: GoAP.
- Grindle, Merilee S. 2000. Designing Reforms: Problems, Solutions, and Politics, Faculty Research Working Paper Series RWP01-020, John F. Kennedy School of Government, Harvard University

- Grindle, Merilee S.1999. In quest of the Political: The Political Economy of Development Policy Making, CID working paper No.17, Centre for International Development, Harvard University.
- Grindle, Merilee S.1997. Getting good government: capacity building in the public sectors of developing countries. Harvard University Press
- Grindle, Merilee S. 1980. Politics and Policy Implementation in the Third World. New Jersey: Princeton University Press.
- Grindle, Merilee S. 1977. Bureaucrats, Politicians and Peasants in Mexico: A Case study in Public Policy. Berkeley: University of California Press.
- Groenfeldt, David. 2004. Gradualism or Big bang, INPIM News Letter No 2. Accessed on Jan 27, 2006 at: http://www.inpim.org/leftlinks/Newsletters/N2/Newsletters/N2/n2a7.
- Groenfeldt, David.1997. Transferring irrigation systems from the state to users: Questions of Management, Authority, and Ownership, Paper presented at 'the 96th Annual meetings of the American Anthropological Association', Washington, DC.
- Guha, Ranajit. 1963. A rule of property for Bengal: An essay on the idea of permanent settlement. Paris: Mountain & Co.
- Guha, Ramachandra. 2003. The Ones Who Stayed Behind, Economic and Political Weekly, 38(12&13):1121-1124.
- Gupta, Deepak and L.P.Srivastava.1999. Status of Participatory Irrigation Management in India: A Documentary Critique, ISS Manuscript Report 13. New Delhi: Institute of Social Sciences.
- Gulati, Ashok., Meinzen-Dick R, and K. V.Raju. 1999. From Top Down to Bottom Up: Institutional Reforms in Indian Canal Irrigation. New Delhi: Institute of Economic Growth.
- Guilmoto, Z Christophe. 2002 Irrigation and Great Indian Rural Database: Vignettes from South India. Economic and Political Weekly, March 30, pp1223-1228.
- Ham, Christopher and Michael Hill. 1985. The Policy Process in the Modern Capitalist State, U.K: Hervester Press.
- Hasan, S. Nurul. 2000, Thoughts On Agrarian Relations In Mughal India, (First Publication 1973), New Delhi: People's Publishing House.
- Hanumantha, Rao T. 2002. Challenges in the Indian Irrigation Sector, The Er. A.P. Ranganatha Swamy Fifth Endowment Lecture, August 7,2002. Hyderabad: The Institution of Engineers.
- Hakim, C 1982. Secondary Analysis in Social Research. London: Allen and Unwin.

- Hammersley, M. 1992. Deconstructing the qualitative quantitative divide, in J.Brannen (ed)., *Mixing Methods: Qualitative and Quantitative Research*. Pp39-55, Aldershot: Avebury.
- Hunt, Robert C and Eva Hunt 1976. Canal Irrigation and Local Social Organisation, *Current Anthropology* 17(3):389-411.
- Huppert, Walter, Svendsen Mark and Douglas L.Vermillion. 2003. Maintenance in Irrigation: Multiple actors, multiple contexts, multiple strategies. *Irrigation and Drainage Systems* 17: 5-22.
- Hussain, Intizar. 2004. Pro-poor Interventions Strategies in Irrigated Agriculture in Asia, Poverty in Irrigated Agriculture: Realities, Issues, and Options with Guidelines: India, Pakistan, Bangladesh, China, Indonesia, Vietnam. Colombo: International Water Management Institute.
- Hyden, Goran and Michael Bratton. 1992. Governance and Politics in Africa. Boulder and London: Lynne Reienner Publishers.
- Jagannathan, N.Vijay.1986. Corruption, Delivery Systems and Property Rights. World Development 14(1):127-132.
- Jairath, Jasveen.2001.Water User Associations in Andhra Pradesh: initial feed back. New Delhi: Concept Publishing
- Jairath, Jasveen. 2000. Participatory Irrigation Management in Andhra Pradesh: Contradictions of a Supply Side Approach, Paper presented at 'South Asia Regional Poverty Monitoring and Evaluation Workshop', New Delhi, June 8-10, 2000, http://lnweb18.worldbank.org/sar/sa.nsf/Attachments/apirrig/\$File/apirrig.pdf
- Jairath, Jasveen.1999.Participatory Irrigation Management: Experiments in Andhra Pradesh. *Economic and Political Weekly 34* (40): 2834-2837.
- Jain, R.B and H.K. Asmeron. 1993. Politics and Administration: Some Conceptual Issues in Politics, Administration and Public Policy in Developing Countries: Examples from Africa, Asia and Latin America. eds. Asmerom H.K and R.B Jain. Amsterdam: VU University Press.
- Jayaraman, T.K. 1980. Implementation of Warabandhi: A management approach. Paper presented in Workshop on 'Rotational System of Canal Supplies and Warabandhi', 23-26 April, Hyderabad: Administrative Staff College.
- Joshi, L. K. 1997. Irrigation and its Management in India: Need for Paradigm Shift, Paper presented in the workshop held at the Centre for India and South Asian Research, University of British Colombia, December 15-17.

- Joshi, L.K and Rakesh Hooja. eds. 2000. Participatory Irrigation

 Management: Paradigm for the 21st Century, (2volumes). Jaipur: Rawat
 Publications.
- Johnson, J., D. L. Vermillion, and J. A. Sagardoy. Water Report No. 5.
 Rome: Food and Agricultural Organization of the UN and the International Irrigation Management Institute.
- Jurriëns, M., and Peter, P. Mollinga. 1996. Scarcity by design: Protective irrigation in India and Pakistan. ICID Journal 45(2):31-53.
- Jurriens, Rien. 1996. Assessing seasonal irrigation service performance.

 Working Papers on Irrigation Performance 3. Washington D.C.:
 International Food Policy Research Institute.
- Jurriëns, Rien and Kornelis de Jong. 1989. Irrigation Water Management: a literature survey. Working party irrigation and development publication no 01189, Institute of Land reclamation and Department of Irrigation, soil and water conservation.
- Keeley, James and Ian Scoones. 1999. Understanding Environmental Policy Processes: A Review. IDS Working Paper 89. Sussex ,UK: Institute of Development Studies.
- Kelly, W. William. 1983. Concepts in the Anthropological Study of Irrigation. American Anthropologist. (New Series). 85(4): 880-886.
- Kerkvliet, Benedict J.1990. Everyday politics in Philippines: Class and Status Relations in Central Luzon village. Berkeley: University of California Press.
- Kikuchi Masao, Fujita Masako and Yujiro Hayami. 2005. State, Community and Market in the Deterioration of a National Irrigation System in the Philippines, in *Communities and Markets in* Economic Development, ed. Masahiko Aoki and Hayami Yujiro, Oxford University Press
- Kloezen, Wim. H., C. Garcés-Restrepo, and S. H. Johnson III. 1997.

 Impact assessment of irrigation management transfer in the Alto Rio Lerma Irrigation District, Mexico. Research Report 15. Colombo: International Irrigation Management Institute.
- Kloezen, Wim. H and Madar Samad. 1995. Synthesis of issues discussed at the international conference on irrigation management transfer, Wuhan, China 20-24 September 1994. Short Series on Locally managed irrigation, Colombo: International Irrigation Management Institute.
- Kochanek, Stanely A. 1996. Liberalisation and Business Lobbying in India. Journal of Commonwealth and Comparative Politics 34(3).
- Korten, Frances F. 1988. The working group as a catalyst for Organisational Change, in Transforming a Bureaucracy: The Experience

- of the Philippine National Irrigation Administration. eds. F.F. Korten and R.Y Siy, Jr. Pp 61-89, West Hartford, CT: Kumarian Press.
- Korten, David C.1988. From Bureaucratic to Strategic Organisation in Transforming a Bureaucracy: The Experience of the Philippine National Irrigation Administration. eds. F.F. Korten and R.Y. Siy, Jr. Pp117-144, West Hartford, CT: Kumarian Press
- Korten, David C. 1989. Social Science in the Service of Social Transformation. In *A Decade of Process Documentation Research: reflections and Synthesis*, ed. Cynthia C.Veneracion. Quezon City: Institute of Philippine Culture, Ateno de Manila University.
- Kothari, Rajni. ed. 1970. Caste in Indian politics. Delhi: Orient Longman.
- Kothari, Shanti and Ramashray Roy. 1969. Relation between Politicians and Administrators at the District level. New Delhi: Indian Institute of Public Administration.
- Kurian, Mathew. 2003. From Project to Process: Participatory Watershed Development in Himalayan Foot Hills, Ph D Dissertation. The Hague: ISS
- Kuhnen, Frithjof .1982. Man and Land: An Introduction in to the Problems of Agrarian Structure and Agrarian Reform, Germany: Verlag breitembach.
- Lanning, Edward P.1967. Peru before the Incas. Englewood Cliffs: Prentice Hall.
- Lasswell, H.D. and A.Kaplan. 1950. Power and Society. A Framework for Political Inquiry. New Haven and London: Yale University Press.
- Leach, E.R. 1959. Hydraulic Society in Ceylon. Past and Present 15: B2-26
- Lewis, Oscar.1965. Village life in Northern India: Studies in a Delhi village. New York: Vintage Books.
- Levine, G., A.Cruz Galvan and D.Garcia. 1998. Performance of Two Transferred Modules in the Lagunera Region: Water Relations. Colombo: International Water Management Institute.
- Lindblom, C.E. 1980 The Policy- Making Process. Englewood Cliffs, New Jersey: Prentice Hall.
- Lipsky, Michael .1980. Street Level Bureaucracy: Dilemmas of the Individual in Public Services. New York: Russell Sage Foundation.
- Long, Norman and Jan Douwe van der Ploeg. 1989. Demythologizing Planned Intervention: An Actor Perspective, *Sociologia Ruralis* 29(3/4): 226-249.
- Makwarimba, Edward and Linden Vincent. 2004. Job Satisfaction and the Organisational lifeworlds of extension workers in irrigation in

- Manicaland, in Agrarian Institutions between Policies and Local Action: Experiences from Zimbabwe, ed. Moll et.al, Zimbabwe: Weaver Press.
- Malhotra, S. P. 1982. The warabandhi system and its infrastructure. New Delhi: Central Board of Irrigation and Power.
- Maloney, Clarence and K.V. Raju. 1994. Managing Irrigation together: Practice and Policy in India. New Delhi: Sage publications.
- Marx, F.M.1957. The Administrative State. Chicago: University of Chicago Press.
- Mason J. Alden.1968. The ancient civilizations of Peru. Baltimore: Penguin Books.
- Meinzen-Dick, Ruth S., Raju, K. V. and Ashok Gulati 2002. What Affects Organization and Collective Action for Managing Resources? Evidence from Canal Irrigation Systems in India. World Development 30(4): 649-666.
- Meinzen-Dick, Ruth S.1997. Farmer Participation in irrigation: 20 years of experience and lessons for the future. *Irrigation and Drainage Systems* 11(2): 103-188.
- Meinzen-Dick Ruth S., Mendoza Sadoulet L., Abiad-Shields, G. and A.Subramanian. 1994. Sustainable Water Users' Associations: Lessons from a Literature Review. Paper presented at 'World Bank Water Resources Seminar', Lansdowne, Virginia, December 13–15.
- Meinzen-Dick Ruth S., Mendoza Sadoulet L., Abiad-Shields, G. and A.Subramanian. 1994. Water User Associations: review and best practices study. Washington D.C.: The World Bank and IFRI.
- Meinzen-Dick Ruth S., and Mark Svendsen. 1991. Future Directions for Indian Irrigation: Research and Policy issues, India Collaborative Research Programe. Washington, D.C.: International Food Policy Research Institute.
- Merton, R.K. 1957. Social Theory and Social Structure. Glencoe Ill:Free Press.
- Metcalf, R. Thomas 1962. The Struggle Over Land Tenure in India, 1860-68. The Journal of Asian Studies 21(3): 295-307.
- Mintzberg, Henry. 1983. Power in and around organizations. Englewood Cliffs, N.J.: Prentice Hall
- Mitchell, P. William .1973. The Hydraulic Hypothesis: A Reappraisal, Current Anthropology 14(5): 532-534.
- Mitra, Ashok K. 1992. Joint management of irrigation systems in India, Economic and Political Weekly 27(26).

- Ministerio de Agricultura. 1993. Ley de Adecuacion de Tierras. Bogota, Colombia.
- Miles, M.B and A.M. Huberman 1994. Qualitative Data Analysis. Thousand Oaks, CA: Sage.
- Mollinga, Peter P., Doraiswamy, R and Kim Engbersen. 2004. Capture and Transformation: Participatory Irrigation Management in Andhra Pradesh, India in *The Politics of Irrigation Reform: Contested Policy Formulation and Implementation in Asia, Africa and Latin America*, eds. Peter P.Mollinga and Alex Bolding, 240-262, England: Ashgate.
- Mollinga, Peter P and Alex Bolding. 2004. The Politics of Irrigation Reform: Research for Strategic Action in The Politics of Irrigation Reform: Contested Policy Formulation and Implementation in Asia, Africa and Latin America, eds. Peter P.Mollinga and Alex Bolding, 291-318. England: Ashgate.
- Mollinga, Peter P. 2003. On the Waterfront. Water Distribution, Technology and Agrarian Change in a South Indian Canal Irrigation System, Wageningen University Water Resources Series 5. Hyderabad: Orient Longman.
- Mollinga, Peter P. 2002. Power in Motion: A Critical Assessment of Canal Irrigation Reform In India, in *Users in Water Management: The Andbra Model and its Replicability in India*. eds. R.Hooja, G.Pangare and K.V.Raju, Jaipur and New Delhi: Rawat Publications.
- Mollinga, Peter P. 2001. Water and Politics: Levels, Rational Choice and South Indian Canal irrigation. *Futures* 33: 733-752.
- Mollinga, Peter P., Doraiswamy, R and Kim Engbersen. 2001. Participatory irrigation management in Andhra Pradesh, India: policy implementation and transformation in the Tungabhadra Right Bank Low Level Canal. *International Journal for Water* 1(3/4):369-379.
- Mollinga, Peter P and C.J.M. Van Straaten. 1996. The Politics of Water Distribution: Negotiating Resource use in a South Indian Canal Irrigation System, in *Water Policy: allocation and management in practice*. Proceedings of the International Conference on Water Policy' held at Cranfield University, 23-24 September 1996. ed. Howsam Peter and R.C.Carter, 243-250.London: E&FN Spon Publishers
- Mollinga, Peter P.1992. Protective Irrigation In South India: Deadlock or Development? Working Paper 24, Policy and Practice Research Group. Milton Keynes: The Open University.

267

- Mooij, Jos. 2005. Hype, Skill and Class: A Comparative Analysis of the Politics of Reforms in Andbra Pradesh, India, Working paper series no.413. The Hague: Institute of Social Studies.
- Mooij, Jos and Veronica de Vos. 2003. Policy Processes: An annotated Bibliography on Policy Processes, with particular Emphasis on India. ODI Working paper no 221, London: Overseas Development Institute.
- Mooij, Jos. 2003. Smart Governance? Politics in the Policy Process in Andhra Pradesh. ODI Working Paper No. 228, London: Overseas Development Institute.
- Moore, Mick.1989. The fruits and fallacies of Neo-liberalism: The Case of Irrigation Policy. World Development 17(11):1733-50.
- MOWR.1996.Report of Working Group on Participatory Irrigation Management for Formulation of Plan proposals for Ninth Five Year Plan. August 1996, New Delhi: Ministry of Water Resources, Government of India.
- MOWR.1991. Status Report on the Centrally Sponsored Command Area Development Programme. New Delhi: Ministry of Water Resources, Gol.
- MOWR.1987. National Water Policy (Amended in 2002). Ministry of Water Resources, GoI.
- Mosse, David . 2005. Cultivating Development: An Ethnography of Aid Policy and Practice . London: Pluto Press.
- Mosse, David. 1997. The Symbolic making of a common property resource: history, ecology and locality in a tank irrigated in South India. *Development and Change* 28, 467-504.
- Mui, Vai-Lam. 1995. The Economics of Envy, Journal of Economic Behavior and Organization 26: 311-316.
- Mukherjee, Nilamani. 1962. The Ryotwari System in Madras, 1792-1827. Calcutta: Firma K.L. Mukhopadhyay.
- Naik, Gopal and Amar H. Kalro.1998. Two Case Studies on the Role of Water Users' Associations in Irrigation Management in Maharashtra, India in *The World Bank/WBI's CBNRM Initiative*. Accessed on 27 January 2006 at http://srdis.ciesin.columbia.edu/cases/india-038.html.
- Narasimha, Reddy D. 2002. Designer Participation: Politics of Irrigation Management in Andhra Pradesh in Users in Water Management: The Andhra Model and its Replicability in India. eds. R.Hooja, G.Pangare and K.V.Raju. Jaipur and New Delhi: Rawat Publications.
- National Commission on Agriculture.1976. Report of the National Commission of Agriculture, Delhi: Ministry of Agriculture,

- Government of India.
- National Irrigation Commission. 1972. Report of Irrigation Commission. Delhi: Ministry of Irrigation, Government of India.
- Natraj V. K and Kripa Ananthpur. 2004. Delegation to Devolution: Karnataka, Working Paper no. 184. Madras: Madras Institute of Development Studies.
- Naidu, Chandrababu and Sevanti Ninan. 2000. *Plain Speaking*, New Delhi: Viking by Penguin Books.
- Neeti Samakya. 2003. Let the Waters Flow: A Backgrounder for Citizens on Water Issues in Andhra Pradesh. Hyderabad: Manchi Pustakam.
- Nikku, Bala Raju and Pranita Bhushan. 2004. Water User's Associations in Irrigation Management: Opportunities and Challenges for Collective action, Evidence from Andhra Pradesh Participatory Irrigation Management Programe, in Management of Natural Resources for Sustainable Livelihoods and Poverty Alleviation, ed. Srivastava O.N. Vol II, pp527-546, Hyderabad: National Institute of Rural Development.
- Nikku, Bala Raju. 2003. Irrigation Reforms, Institutions and Livelihoods: Case of Andhra Pradesh, South India in Water Resources Sustainable Livelihoods and Eco-System Services, ed. Chopra Kanchan et.al. 341-369, Delhi: Concept.
- Norman, Denzin and Yvonna S. Lincon. 1994 Handbook of qualitative research. Newbury Park: Sage
- Oblitas, Keith and J. Raymond Peter. 1999. Transferring Irrigation Management to Farmers in Andhra Pradesh, India. World Bank Technical Paper no. 449. Washington, D.C.: The World Bank.
- Oblitas, Keith and J. Raymond Peter. 1999. From Political Leadership to Systemic Incentives for Irrigation Sector Reform The Case of Andhra Pradesh, India. Paper presented at 'the World Bank Rural week', March 1999, Lansdowne, Virginia.
- Omvedt, Gail. 2000. Gandhi and Ambedkar: Why the Confrontation? in B.R. Ambedkar: Life, Work and Relevance, ed. M.L. Ranga. Delhi: Manohar Publications.
- Oorthuizen, Joost. 2004. The Politics of Irrigation Policy Implementation: Networks of Votes, Bribes and Coca-Cola in the Philippines, in *The Politics of Irrigation Reform: Contested Policy Formulation and Implementation in Asia, Africa and Latin America*, eds. Peter P.Mollinga and Alex Bolding, 263-290. England: Ashgate.
- Oorthuizen, Joost. 2003. Water, Works and Wages: The Every day Politics of Irrigation Management Reform in the Philippines, Wageningen University Water Resources Series no 3. Hyderabad: Orient

- Longman.
- Oorthuizen, Joost and Kloezen W.H. 1995. The other side of the coin: a case study on the impact of financial autonomy on irrigation management performance in the Philippines. *Irrigation and Drainage Systems*, 9:15-37.
- Ostrom, Elinor. 1992. Crafting institutions for self-governing irrigation systems. San Francisco:Institute for Contemporary Studies Press.
- Ostrom, Elinor.1990. Governing the Commons. The evolution of institutions for collective action. New York: Cambridge University Press.
- Overseas Development Institute. 2001. Summary of Research Findings on Andhra Pradesh, Overseas Development Institute and TARU. Accessed through www.panchayats.org
- Pant, Niranjan and R.K. Verma. 1983. Farmers' Organisations and Irrigation Management. New Delhi: Ashsh Publishing House.
- Panella, Thomas. 2004. Irrigation Development and Management Reform in the Philippines: Stakeholder Interests and Implementation, in *The Politics of Irrigation Reform: Contested Policy Formulation and Implementation in Asia, Africa and Latin America*, eds. Peter P.Mollinga and Alex Bolding, 95-144. England: Ashgate.
- Panella, Thomas. 1999. Irrigation Development and Management Reform in the Philippines: Stakeholder Interests and Implementation, Paper presented in the International researchers' conference on Irrigation reforms, December 11-14, Hyderabad.
- Pangare, Ganesh. 2003. Scaling up Participatory Irrigation Management in India: Lessons Learnt from the Andhra Pradesh Model and Future Strategies in *Users in Water Management* ed. Hooja Rakesh, Ganesh Pangare and K.V.Raju, Jaipur and New Delhi: Rawat Publications.
- Pathak, R.S.1991. Farmers' Participation in Irrigation Water Management, New Delhi: Ministry of Water Resources.
- Parthasarathy R. 2002. Comparing Gujarat with Andhra Pradesh: Reforms in Irrigation Management and People's participation, in Users in Water Management: The Andhra Model and its Replicability in India. eds. R.Hooja, G.Pangare and K.V.Raju. Jaipur and New Delhi: Rawat Publications.
- Parthsarathy, R and Barbara van Koppen. 2001. Poverty Dimensions of IMT in Large scale Canal Irrigation in Andhra Pradesh and Gujarat, India. Paper presented at the 'International Water History Association Conference', University of Bergen, Bergen, Norway, August 10-12.

- Parthasarathy, R and Harish Joshi. 2001. Access to Water and Equity Dimensions of Irrigation Management Transfer: A Comparison of Gujarat and Andhra Pradesh, India. Report Submitted to the International Water Management Institute, Colombo, Sri Lanka.
- Parthasarathy R.1998. Reforms in Irrigation management: Bottoms-up versus Top down models, working paper no 104, Ahmedabad: Gujarat Institute of Development Research.
- Patel, Sujatha., Bagchi Jasodhara and Krishna Raj. 2002. Thinking Social Science in India: Essays in Honour of Alice Thorner, ed. New Delhi: Sage Publications.
- Patel, G.D. 1969. The Land Revenue Settlements and the British Rule in India, Theses Publication Series 7, Ahmedabad: Gujarat University.
- Patrick, Fleuret. 1985. The Social Organization of Water Control in the Taita Hills: Kenya. American Ethnologist 12 (1): 103-118
- Perry, C. J and S.G.Narayanamurthy. 1998. Farmers Responses to Rationed and Uncertain Irrigation Supplies, Research Report 24. Colombo: IWMI.
- Perera, J. 1998. Farmer Organization and Social Change in Andhra Pradesh: A Participatory Rapid Appraisal Evaluation. Mimeograph.
- Peter, J. Raymond. 2002. Case Study on Andhra Pradesh, Paper presented at 'the Sixth International Seminar on PIM: Institutional Options for Users Participation', 21-26 April, Beijing, China.
- Peter, J. Raymond. 1999. Water User Associations in Andhra Pradesh.

 Paper presented at the 'Fourth National Conference on

 Participatory Irrigation Management', National Institute of Rural

 Development, Hyderabad: I & CADD.
- Peter, J. Raymond. 1998. Management of Irrigation Systems by Farmers in Andhra Pradesh India: The Process. Paper presented at the 'Fourth International Seminar on Participatory Irrigation Management', Bali, Indonesia.
- Peter, J. Raymond. 1998. Irrigation Management Transfer and the Andhra Pradesh Farmers' Management of Irrigations Systems Act of 1997. Paper presented at the First National Participatory Management Seminar', Rampur, Nepal: Institute of Agriculture and Animal Science.
- Pierce, Holton Richard.1976. Land Use, Social Organisation and Temple Economy. RAIN,15:15-17.
- Plusquellec, Herve. 1989. Two irrigation systems in Colombia: Their performance and transfer of management to user's associations. Policy,

- Planning and Research working paper series no. 264. Washington D.C.: The World Bank.
- Powis, Benjamin. 2003. Grass Roots Politics and Second Wave of Decentralisation in Andhra Pradesh. Economic and Political Weekly 38(26):2617-2622.
- Pradhan, Prachanda. 1989. Patterns of Irrigation Organization in Nepal. A Comparative Study of 21 Farmer-Managed Irrigation System. Country Paper-Nepal no 1. Kathmandu: IIMI.
- Pradhan Prachanda. 1987. Organization Issues: A Brief Review of Studies on Irrigation. Organisation. Administration and Management Review (1).
- Pradhan, Rajendra., Franz von Benda-Beckmann, Keebet von Benda-Beckmann and H.L. J. Spiertz.1996. Water Rights, Conflict and Policy, ed. Khadaka and Haq, Proceedings of a Workshop, 22 to 24 January, Kathmandu.
- Praksh, Anjal. 2005. The Dark Zone: Groundwater Irrigation, Politics and Social Power in North Gujarat, Wageningen University Water Resources Series 7, Hyderabad: Orient Longman.
- Prasad, K. and P. K. Rao. 1991. On irrigation water pricing in India, International Journal of Water Resource Development 7(4).
- Punch, K.F. 2005. Introduction to Social Research: Quantitative and Qualitative Approaches.London:Sage
- Punch, K.F 2003. Survey Research: The Basics. London: Sage.
- Quarles van Ufford, Philip. 1988. The myth of rational development policy: evaluation versus policy making in Dutch Donor agencies. In *The Hidden Crisis in Development: Development Bureaucracies.* eds. P.Quarles van ufford, D.Kruijt and T.downing. Tokyo and Ansterdam: United Nations and Free University Press.
- Quintero-Pinto, E. Luis. 2000. Benefits and Second-Generation Problems of Irrigation Management Transfer in Colombia, Chapter 4, in *Case Studies in Participatory Irrigation Management*, ed. David Groenfeldt and Mark Svendsen. WBI learning resources series. Washington, D.C., U.S.A: World Bank Institute.
- Rabitoy, Neil. 1975. System V. Expediency: The Reality of Land Revenue Administration in the Bombay Presidency, 1812-1820. Modern Asia Studies 9(4): 529-546.
- Raby, Namika. 2000. Participatory Irrigation Management in the Philippines: National Irrigation Systems, chapter 5, in Case Studies in Participatory Irrigation Management, ed. David Groenfeldt and Mark Svendsen, WBI learning resources series. Washington, D.C., U.S.A: World Bank Institute.

- Raju, K.V and C.V.S.K.Sarma. 2003. Water rights in India: a case study of Andhra Pradesh, paper presented at the 'International working conference on Water Rights: Institutional options for improving water allocation', Hanoi, Vietnam, February 12-15, 2003. Accessed at http://theme5.waterforfood.org/pubs/200302conf/papers/33 Ind ia.pdf.
- Raju,K.V. 2001. IMT Case study: Participatory Irrigation Management in India (Andhra Pradesh), International E-mail Conference on Irrigation Management Transfer, June- October, FAO and INPIM.
- Raju, K.V. 2000. Participatory Irrigation Management in Andbra Pradesh: Promise, Practice and Way Forward. Working Paper 65. Bangalore: Institute for Social and Economic Change.
- Rao, Hanumantha C.H., and S. Mahendra Dev. 2003. Economic Reforms and Challenges Ahead: An Over View in Andhra Pradesh Development: Economic Reforms and Challenges Ahead. ed. C.H. Hanumantha Rao and S.Mahendra Dev. Hyderabad: Centre for Economic and Social Studies.
- Rao, P.K. 2000. A tale of two developments of irrigation: India and USA. International Journal of Water 1(1): 41-60.
- Rao, Bhaskara G. 2000. Strengthening of Panchayts: Beyond Contractors Role: A Note on Andhra Pradesh experience, Compilation of papers of the Workshop on Role of PRI's in Natural Resource Management, Organised by Society for Promotion of Wasteland Development (SPWD), New Delhi.
- Rao, G.N. 1988. Canal irrigation in Colonial Andhra: A study of Godavari District, C. 1850-1890. The Indian Economic and Social History Review 25 (1):25-60.
- Rao, G.N.1985. Transition from subsistence to commercialized agriculture. A study of Krishna district of Andhra, C.1850-1900. *Economic and Political Weekly* 20(25&26):A60-69.
- Ramamurthy, Priti. 1995. The political economy of canal irrigation in South India. Ph.D. thesis. The Graduate School of Syracuse University.
- Ray, Ratna and Rajat Ray. 1975. Zamindars and Jotedars: A Study of Rural Politics in Bengal, *Modern Asian Studies*. 9 (1): 81-102.
- Rap, Edwin., Wester Philippus and Luz Nereida Perz-Prado. 2004. The Politics of Creating Commitment: Irrigation Reforms and the Reconstruction of the Hydraulic Bureaucracy in Mexico, in The Politics of Irrigation Reform: Contested Policy Formulation and Implementation in Asia, Africa and Latin America, eds. Peter P.Mollinga and Alex Bolding, pp57-94. England: Ashgate.

- Rap, Edwin. 2004. The Success of a Policy Model: Irrigation Management

 Transfer in Mexico. Ph.D. dissertation, Wageningen: Wageningen
 University.
- Rawal, Vikas. 2001. Irrigation Statistics in West Bengal. Economic and Political Weekly 36 (27):2537-44.
- Reddy, V.Ratna and P.P.Reddy. 2005. How Participatory Is Participatory Irrigation Management? Water Users' Associations in Andhra Pradesh. Economic and Political Weekly, December 31: 5587-5595.
- Reddy, V. Ratna. 2003. Irrigation: Development and Reforms, Economic and Political Weekly 38(12 and 13):1179-1189.
- Reddy, V.Ratna. 2003. Irrigation: Development and Reforms In: Andhra Pradesh Development: Economic Reforms and Challenges Ahead, ed. C.H. Hanumantha Rao and S. Mahendra Dev. Hyderabad: Centre for Economic and Social Studies.
- Reddy, V.Ratna and P.P.Reddy. 2002. Water Institutions: Is Formalisation the Answer? A Study of Water Users Associations in Andhra Pradesh. Indian Journal of Agricultural Economics 57(3): 519-534.
- Reddy, M. Gopinath. 2003. Decentralsied Local Bodies: Post 73rd Amendment Secnario in Andhra Praddesh Development: Economic Reforms and Challenges Ahed, ed. C.H. Hanumantha Rao and S.Mahendra Dev. Hyderabad: Centre for Economic and Social Studies.
- Renger, Jochen and Birgitta Wolff. 2000. Rent Seeking in Irrigated Agriculture: Institutional Problem Areas in *Operation and Maintenance*, Maintain-Thematic Paper no 9. Germany: GTZ
- Repetto, Robert. 1986 Skimming the water: Rent Seeking and the Performance of Public Irrigation Systems, Research Report no 4. Washington: World Resources Institute.
- Reich, B. Robert. 1988. The Power of Public Ideas, Harvard University
- Roth, Dik. 2003. Ambition, regulation and reality: complex use of land and water resources in Luwu, South Sulawesi, Indonesia. Ph.D Thesis, Wageningen University.
- Russell, B.1938. Power: A new social analysis. London: Allen and Unwin Sabatier, Paul A. 1991. Toward Better Theories of the Policy Process', Political Science & Politics, June, pp 147-156.
- Sabatier, Paul A.1988. An Advocacy Coalition Framework of Policy Change and the Role of Policy-Oriented Learning Therein. *Policy Sciences* 21(fall): 129-168.

- Sabtier, Paul A.1986.Top-Down and Bottom-Up models of Policy Implementation: A Critical Analysis and Suggested Synthesis. Journal of Public Policy 6 (January): 21-48.
- Salman, M.A.1997. The Legal Framework for Water User Associations: A Comparative Study. World Bank Technical paper No. 360. Washington DC: World Bank.
- Sahay, G.R. 2001. Village Studies in India: A Case of Bihar, Delhi: Rawat. Saravanan, Velayutham. 2001. Technological Transformation and Water Conflicts in the Bhavani River Basin of Tamil Nadu, 1930-1970, Environment and History 7: 289-334.
- Schlager, Edella and William Blomquist. 1996. A Comparison of Three Emerging Theories of the Policy Process. *Political Research Quarterly* 49(3): 651-672.
- Sengupta, Nirmal.1997.The Rise of the Bureaucracy in Tamil Nadu: Water Control vs. Management, Water Nepal 5(2):125-135.
- Sengupta, Nirmal.1991. Managing Common Property: Irrigation in India and Philippines. New Delhi: Sage Publications.
- Shah, Anil C. 2003. Fading Shine of the Golden Decade: The Establishment Strikes Back. Paper accessed on January 10, 2006 at www.ccsindia.org/Decade.pdf.
- Shah, Esha. 2003. Social Designs: Tank Irrigation Technology and Agrarian Transformation in Karnataka, South India, Wageningen University Water Resources Series 4. Hyderabad: Orient Longman.
- Shleifer, Andrei and Robert W. Vishny 1993. Corruption. *Quarterly Journal of Economics* 108: 598-617.
- Siddiqui 1989. Land Revenue Administration under the Mughals, New Delhi: Munshiram Publishers
- Sitaram, S. 2002. Interface of Panchayati Raj Institutions and Community-Based Organisations in Andhra Pradesh. Rural Poverty Reduction Project, Society for Elimination of Rural Poverty, Hyderabad.
- Sivamohan, M.V.K and Christopher, A. Scott.1994. *India: Irrigation, Management, Partnerships.* Hyderabad: Booklinks Corporation.
- Sivamohan, M.V.K and Christopher, A. Scott. 1992. The Command Area Development Programme in India: A Policy Perspective, ODI-Irrigation Management Network paper no 20, pp.1-25.ODI: London.
- Skutsch, J.C. 1998. Maintaining the Value of irrigation and drainage projects. Report OD/TN 90. Wallingford, UK: HR Wallingford.
- Smith, B.E. 1988. Bureaucracy and Political Power, Sussex: Wheatsheaf Books.

275

- Srinivas, M.N.1962. Caste in Modern India and Other Essays, Bombay/ New York: Asia Pub. House
- Srinivas, M.N. 1959. The Dominant Caste in Rampura. American Anthropologist, pp1-16.
- Srinivas, M.N.1952. Religion and Society among the Coorgs of South India, Oxford: Clarendon Press
- Srinivasan, N. 1956. Village Government in India. The Far Eastern Quarterly 15(2): 201-213.
- Srinivasulu, K. 2002. Caste, Class and Social Articulation in Andbra Pradesh: Mapping Differential Regional Trajectories, ODI Working Paper 179. London: Overseas Development Institute.
- Steward, Julian H. 1949. Cultural Causality and Law. American Anthropologist 51:1-27.
- Stone, I. 1985. Canal Irrigation in British India, Cambridge: Cambridge University Press.
- Sun, Peter and David Groenfeldt. 1995. Big bang versus gradualism. Presentation held at Department of Irrigation, Wageningen Agricultural University on November 8. Washington D.C.: Economic Development Institute, World Bank.
- Sutton, Rebecca.1999. The Policy process: An over view, Working paper 118. London: Overseas Development Institute.
- Suri, K.C. 2001. Set back for TDP in Panchayat Elections. Economic and Political Weekly, October 13:3892-3895.
- Svendsen, Mark and Gladys Nott. 2000. Irrigation Management Transfer in Turkey: Process and Outcomes in Case Studies in Participatory Irrigation Management, ed. David Groenfeldt and Mark Svendsen. WBI learning resources series, Washington, D.C.: World Bank Institute.
- Svendsen, Mark and Walter Huppert. 2000. Incentive Creation for irrigation System Maintenance and Water Delivery: The Case of Recent Reforms in Andhra Pradesh, Maintain Case Study No.5, Germany: GTZ.
- Svendsen, Mark., Jose Trava., and Sam H. Johnson III. 2000. A Synthesis of Benefits and Second-Generation Problems, Chapter 6, in Case Studies in Participatory Irrigation Management, ed. David Groenfeldt and Mark Svendsen. WBI learning resources series, Washington, D.C.: World Bank Institute.
- Svendsen, Mark., Jose Trava, and Sam H. Johnson III. 1997.
 Participatory Irrigation Management: Benefits and Second Generation Problems, Lessons from an International Workshop held at Centro Internacional de Agricultura Tropical (CIAT) Cali,

- Colombia, 9-15 February, 1997. Accessed on Feb 1st 2006 at http://www.worldbank.org/wbi/pimelg/case7.htm.
- Svendsen, Mark.1991. Sources of Future Growth in Indian Irrigated Agriculture in Future Directions for Indian Irrigation: Research and Policy Issues, ed. Ruth Meinzen-Dick and Mark Svendsen, Washington, DC: International Food Policy Research Institute.
- Svendsen, Mark.1991. Assessing effects of policy change on Philippine irrigation performance, Working papers on irrigation performance no 2. p24. Washington: IFPRI.
- Tendler, Judith.1997. Good Government in the Tropics, Baltimore and London: The Johns Hopkins University Press.
- The Hindu. 1999. From a Drop to an Ocean, dated 24th May, Hyderabad edition.
- The Hindu.1999. 5.12 lakh acre of land benefited from irrigation works: Tummala, dated 15th March, Hyderabad edition.
- The Hindu.1998. Ministers Statement on Gap in irrigation potential bridged, dated 16th December, Hyderabad edition.
- The Hindu. 1998. <u>Irrigation Official Suspended</u>, dated 25th May, Hyderabad edition.
- Thelen, Kathleen and Sven Steinmo.1992. Historical Institutionalism in Comparative Politics in Structuring Politics: Historical Institutionalism in Comparative Analysis, eds. Steinmo, Thelen and Longstreth. Cambridge: Cambridge University Press.
- Thimmaiah, G and Abdul Aziz.1983. The Political Economy of Land Reforms in Karnataka, A South Indian State. *Asian Survey* 23(7): 810-829.
- Thomas, John W. and Merilee S. Grindle.1990. After the decision: Implementing Policy reforms in developing countries, World Development 18(8):1163-1181.
- Thompson, J. 1995. Participatory Approaches in Government Bureaucracies: Facilitating the process of Institutional Change. World Development 3(9):1521-1554.
- Toye, John. 1988. Political economy and the analysis of Indian development. *Modern Asian Studies* 22(1):97-122.
- Tullock, G. 1965. The Politics of Bureaucracy. Washington, D.C: Public Affairs Press.
- Turner, M and D.Hulme. 1997. The Policy Process: Politics and Techniques in Governance, Administration and Development: Making the State Work. Kumarian Press.
- Upadhya, Carol Boyack. 1997. Culture, Class and Entrepreneurship: A Case Study of Coastal Andhra Pradesh, India, in Small Business

277

- Entrepreneurs in Asia and Europe: Towards a Comparative Perspective. eds. M. Rutten and C.B. Upadhya. Delhi: Sage.
- Upadhya, Carol Boyack .1988. The Farmer-Capitalists of Coastal Andhra Pradesh, *Economic and Political Weekly* 23 (27):1376-1382 and 23(28):1433-1442.
- Uphoff, Norman with Priti Ramamurthy and Roy Steiner.1991.

 Managing Irrigation: Analyzing and improving the performance of bureaucracies. New Delhi: Sage.
- Uphoff, Norman. 1986. Getting the process right: improving water management with farmer organisation and participation, Working Paper. Ithaca: Cornell University.
- Vaidyanathan, A.1999. Water Resource Management: Institutions and Irrigation Development in India. New Delhi: Oxford University Press.
- Vaidyanathan, A.1998. Political Economy of Water pricing paper presented at workshop on 'Alternative Approaches to Canal irrigation Reforms in India', 18-22 December, Hyderabad.
- Valera, A.1992. Irrigation management for diversified cropping in rice-based systems in the Philippines, IIMI country paper Philippines, no.1, Colombo: IIMI.
- Velasco Hector Garduño. 2001. Water Rights Administration Experience, Issues and Guidelines, FAO Legislative Study 70. Rome: FAO. Accessed on Feb 1st 2006 http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/003/x9419e/x9419e06.htm.
- Vermillion, Douglas L. 2000. Guide to Monitoring and Evaluation of Irrigation Management Transfer. Colombo: IWMI.
- Vermillion, Douglas L and Carlos Garces-Restrepo.1998. Impacts of Colombia's Current Irrigation Management Transfer Program, Research Report 25. Colombo: IWMI.
- Vermillion, Douglas L. 1997. Management Devolution and the Sustainability of irrigation: Results of Comprehensive versus Partial Strategies, Paper presented at 'the FAO/ World Bank Technical Consultation on Decentralization and Rural Development', 16-18 December, Rome.
- Vermillion, Douglas L. 1997. Impacts of irrigation management transfer: A review of the evidence, Research Report 11. Colombo: IWMI.
- Vermillion, Douglas L and Carlos Garces-Restrepo.1996. Results of Management Turnover in Two Irrigation Districts in Colombia, Research Report no 4. Golombo: IWMI.
- Vermillion, Douglas L. 1992. Irrigation Management Turnover: Structural adjustment or Strategic evolution? IIMI Review 6(2): 3-12.

- Venkateswarulu, D. 1999. Politics of Irrigation Management Reforms in Andhra Pradesh. Paper presented at the 'Researcher's Conference: The long road to commitment: a socio-political perspective on irrigation reform' held in Hyderabad (A.P) 11-14, December.
- Vidyarthi, L. P 1961 Monograph on village Ghagra: a Village of Chhotanagpur, Monograph no. 3. Delhi: Census of India.
- Vincent, Linden. 2005. Social aspects of irrigation designs: the interaction of water, technology and people. Invited paper at the International Research on Food Security, Natural Resource Management and Rural Development', University of Hohenheim, Stuttgart-Hohenheim, October 11–13. Accessed at http://www.tropentag.de/2005/proceedings/node43.html.
- Vijaykumar, A and E. Sudhakar. 2003. Role of Panchayat Secretary in Andhra Pradesh- A study. Indian Journal of Public Administration XLIX, No 2.
- Wade, Robert. 1995. The ecological basis of irrigation institutions: East and South Asia. World Development 23(12):2041-2049.
- Wade, Robert. 1988. Village republics: economic conditions for collective action in South India. Cambridge South Asian Studies No.40. Cambridge: Cambridge University Press.
- Wade, Robert.1985. The Market for Public office: Why the Indian State is not better at development. World Development 13(4):467-497.
- Wade, Robert. 1982a. The System of Administrative and Political Corruption: Canal Irrigation in South India. The Journal of Development Studies 18(3): 287-328.
- Wade, Robert. 1982b. Corruption: Where Does the Money go?. Economic and Political Weekly 37(40).
- Wallach, Bret. 2004. British Irrigation Works in India's Krishna Basin, Revised from the 1985 version published in the Journal of Historical Geography.11(2):155-174. Accessed http://geosciences.ou.edu ~bwall achdocuments/British%Irrigation%20Works%20in%20India.pdf.
- Wallach, Bret.1984. Irrigation Developments in the Krishna Basin since 1947. Geographical Review 74(2):127-144.
- Weber, Max. 1968. Economy and Society. Berkeley: University of California Press.
- Weber, Max. 1921/1968. Max Weber on Law in Economy and Society. ed. Max Rheinstein. Translated by Edward Shils and Max Rheinstein. New York: Simon and Schuster.

- Weber, Max.1947. The Theory of Social and Economic Organization. New York: tr. Henderson and Parsons
- Wegerich, Kai. 2000. Water User Associations in Uzbekistan and Kyrgyzstan : Study on Conditions for Sustainable Development, Occasional Paper No 32. Water Issues Study, Group School of Oriental and African Studies (SOAS), U.K.: University of London, In cooperation with IWMI.
- Whitcombe, Elizabeth.1982. Irrigation and Railways, in *The Cambridge Economic History of India*, Vol. II (1757-1970), ed. Dharma Kumar. Orient Longman in association with Cambridge University Press.
- Whitcombe, Elizabeth .1972. Agrarian conditions in northern India. Vol.1. The United Provinces under British rule, 1860-1900. Berkeley: University of California Press.
- Wilson, K. Graham and Anthony Barker. 2003. Bureaucrats and Politicians in Britain. Governance: An International Journal of Policy, Administration, and Institution 16(3):349-372.
- Wittfogel, Karl A. 1969. Results and Problems of the Study of Oriental Despotism. *The Journal of Asian Studies* 28(2): 357-365.
- Wittfogel, Karl A. 1957. Oriental despotism: A comparative Study of total Power. New Heaven: Yale University Press.
- World Bank and The Government of India. 1999. The Irrigation Sector, South Asia Rural Development Series in collaboration with Ministry of Water Resources, the Government of India. Washington D.C / New Delhi: The World Bank and Allied Publishers.
- World Bank. 1998. Andhra Pradesh Economic Restructuring Project, Project Appraisal Document. Washington DC.: South Asia Poverty Reduction and Economic Management Unit.
- World Bank. 1997. Andhra Pradesh Economic Rehabilitation project-Irrigation component, Pra appraisal/Appraisal Mission, Draft, Aide Memoir, November 17,1997.
- World Bank. 1997. India-Andhra Pradesh; Agenda for Economic Reforms. South Asia Country Department 2: The World Bank.
- World Bank. 1997. Staff Appraisal Report: India Third Andhra Pradesh Irrigation Project April 25, 1997, Report No. 16336-IN, Agriculture and Water Operations Division, South Asia Country Department II(Bhutan,India,Nepal). Accessed at http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1997/04/25/000009265
 3970818101639/Rendered/PDF/multi page.pdf
- World Bank.1995. Water Resources Management: A World Bank Policy Paper. Washington D.C: The World Bank.

- World Bank. 1994. A Review of World Bank Experience in Irrigation, Report No. 13676. Washington, D.C: The World Bank.
- World Bank .1991. India Irrigation Sector Review. Washington DC.: Agriculture and Water Division, South Asia Department 2,The World Bank.
- Yin, Robert K.1984. Case study research, design and methods. Applied social research methods series. Vol. 5. Newbury Park: Sage.
- Zapanta L. S and Magos, A. P. et.al .1995. Services of provincial irrigation offices to communal irrigation systems in Western Visayas, the Philippines. IIMI country paper: the Philippines no.3. Colombo:IIMI.
- Zelditch, Morris. 1962. Some methodological problems of field studies.

 American Journal of Sociology. 67(5): 566-576.
- Zwart, De Frank. 1994. The Bureaucratic Meery-go-round: Manipulating the transfer of Indian Civil Servants. Amsterdam: Amsterdam University Press.

Summary

This thesis studies the emergence, process and politics of the Andhra Pradesh reform policy of Participatory Irrigation Management (PIM). The reform has been labeled as the 'AP model' of irrigation reforms and supported by external aid agencies like World Bank. Within a short span of time Andhra Pradesh's PIM programe has received internal attention. The program has been seen as a successful model because of the political will and legal bureaucratic support it received and its big-bang approach to implementation. Consequently the reform program influenced the thinking on irrigation management policies in other states within India and abroad.

This study investigates the process of PIM policy implemented since 1997 in the state. The objective is to understand the nature and dynamics of the policy process i.e. the role of different actors such as water users, water users' association leaders, politicians, irrigation bureaucrats and their contestation of policy and shaping of courses of action and outcomes. By doing so the study aims to contribute to the general debate on reform policies and particularly irrigation reform policy in the state of Andhra Pradesh.

The thesis is a product of intensive field work carried out from March 2001 to June 2002 with additional field work visits at different intervals during 2002-2004. The research was also benefited by my earlier research work carried out Gujarat Institute of Development Research on PIM in Andhra Pradesh during 1999-2000. The first stage concerned a reconnaissance survey of WUAs in the state and a detailed study of WUAs formed on Madhira branch canal under Kalluru and Madhira irrigation sub-divisions. I studied the outcomes of reform policy contestation in key arenas of irrigation management namely, irrigation works, irrigation expansion (i.e. bridging the gap command) and irrigation revenue assessment (known as Joint Azmoish) in Madhira branch canal. I focused on the day-to-day engagement of the WUA leaders and middle and lower level irrigation bureaucrats with the policy and

implementation on the ground. The second stage of field work focused on policy actors at the state capital.

The thesis is divided into nine chapters and an epilogue. After the introductory chapter, chapter 2 presents the conceptual framework used for the analysis. The subsequent empirical chapters set out to study the key means of policy implementation and related irrigation management policy process arenas. Chapter 3 discusses the emergence of Participatory Irrigation Management (PIM) policy in the state of Andhra Pradesh. Chapter 4 introduces the details of the irrigation and social organisation of Madhira Branch Canal (MBC). The Chapter shows how irrigation organisation linked with local social organisation.

Chapters 5, 6, 7 and 8 are based on empirical analysis and together answer the main research question. Chapter 5 focuses on the first management arena of reform studied of irrigation works. It analyses the process of carrying out physical works (operation and maintenance and minimum rehabilitation works) after the introduction of the PIM programme in the state, and the key actors reshaping outcomes. Chapter 6 focuses on the second irrigation management arena of irrigation expansion and focuses in to government claims on bridging the gap command. Chapter 7 discusses the third irrigation management arena of reform in joint irrigation supervision and revenue collection (Joint Azmoish). It examines the role and participation of the Irrigation, Revenue, Agriculture departments and the WUA in a new process created under the reforms through which the extent of area that received canal irrigation in a crop season will be jointly finalised. Chapter 8 returns to the issue of socio-political embeddedness as it reshapes reforms, looking this time at the system-bureaucracy domain and irrigation bureaucrats, especially the field level staff. Chapter 9 is the concluding chapter and summarises the key findings of the research. Many changes have taken place in the irrigation sector after 2002. The Naidu government that introduced the irrigation reforms stalled the elections for WUAs after the completion of their first term in the office. A Congress government came in to power in 2004. As a result there were many changes in the course of irrigation reform policy. I discuss these changes as a brief epilogue to the book.

This thesis show how reform policies are interpreted and reconstructed by the participating actors. Initially the reform policies were resisted covertly by middle and lower level of irrigation bureaucrats. They understood that the programme aimed to decentralise their powers and transfer irrigation management activities to water users associations. In process these bureaucrats made alliances with WUA representatives and local leaders and controlled the irrigation management arenas. The lower level bureaucrats could successfully lobby with the higher officials and with government using legal measures and retained their status within the irrigation hierarchy. The irrigation bureaucracy gained more technical and financial powers in the process and retained their control in irrigation management and decision making processes. Hence I argue that, contrary to what is generally expected, PIM in Andhra Pradesh did not lead to participatory management of irrigation resources, but served to preserve or strengthen the actors' interests.

Curriculum Vitae

Bala Raju Nikku was born in Budithi village, Srikakulam District in the state of Andhra Pradesh, India in 1970. He graduated in Master of Arts (Social Work) from Andhra Loyola College under Nagarjuna University in 1994. He pursued further higher education and obtained a Postgraduate Degree in Planning with specialization on Regional Planning from CEPT University, Ahmedabad in 1999. He has worked with Gujarat Institute of Development Research before he joined PhD programme at Wageningen University, the Netherlands in September, 2000. He worked with various Governmental, Non-Governmental and Donor agencies in India and Nepal. Currently he is heading the Department of Social Work at St. Xavier's College of Social Work, teaches at the Department of Social Work, Kadambari Memorial College of Science and Management and serve as the Executive Director for SUTRA Centre for Development Education and Research, a not for profit organisation based in Kathmandu, Nepal. His current research interests include institutions, policy process and international social work.