

# **PARTICIPATORY IRRIGATION MANAGEMENT IN ANDHRA PRADESH, INDIA: Policy implementation and transformation in the Tungabhadra Right Bank Low Level Canal**

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Paper presented at the 8<sup>th</sup> biennial conference of the International Association for the Study of Common Property (IASCP), held at Bloomington, Indiana, USA from 31 May – 4 June 2000

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## ***Summary***

This paper discusses the implementation of irrigation reform policy in the State of Andhra Pradesh, India. It reports on the impact of the introduction of participatory irrigation management (PIM) in two secondary canals (distributaries) in the Tungabhadra Right Bank Low Level Canal irrigation system. The findings are that the rural elite has captured most of the seats in the water users associations' managing committees, that committee membership is strongly linked to party politics, that a significant amount of physical rehabilitation works have been undertaken resulting in a technically improved canal system, that the reform has had no significant impact on water distribution so far and has not lead to increase in irrigated area (unlike in some other parts of the State), and that the relationship between Irrigation Department and water users is 'in flux' but is yet to qualitatively change. Despite this capturing of the policy by the rural elite, a framework has been created that in principle allows far-reaching reforms. However, special efforts are required to achieve the stated objectives of equitable and democratic irrigation management. It is unlikely that existing government agencies will be able to address these issues effectively.

## **1. INTRODUCTION**

Since 1996-97 the State of Andhra Pradesh in south India is witnessing the implementation of a dynamic reform process in the canal irrigation sector, aiming to introduce PIM (participatory irrigation management) in the irrigation systems of the State. In the South Asian context it is a rather special reform effort, as it is characterised by strong political support of the State government – no lack of the infamous 'political will' - and implementation by a dynamic of group of committed reform managers. It is also the first large-scale effort at delegation of substantial water management powers to

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water users in the South Asian canal irrigation sector. The process has attracted a lot of national and international attention, and reference is now made to the 'Andhra model'.

This paper reports on fieldwork conducted in two secondary canals (called distributaries in India) in the Tungabhadra Right Bank Low Level Canal irrigation system.<sup>2</sup> The paper investigates what has happened to the irrigation reform policy 'on the ground'. The argument moves at two levels. The first is a description of the impact of the implementation of the reform package by looking at:

- a) the constitution and composition of the Water Users Associations and Distributary Committees that have been formed;
- b) the conduct of the canal system rehabilitation works;
- c) the impact of the introduction of PIM (participatory irrigation management) on water distribution practices;
- d) the impact of PIM on area irrigated;
- e) changes in the relationship between farmers/water users and the Irrigation Department.

At the second level the impact data is used for an analysis of the way local interest groups have captured and transformed the reform policy aiming at the introduction of PIM. Instead of measuring success or failure in terms of achievements against stated objectives, the analysis of policy transformation looks at the process that has been induced by the policy reform initiative, and the constraints and opportunities for further reform inherent to that process.

Below we begin with an outline of the 'politics of policy' approach that underlies the paper's analysis of policy transformation (section 2). The paper then briefly describes the characteristics of the Andhra Pradesh irrigation reform experiment (section 3), after which the impact of the reform programme is presented (section 4). Section 5 analyses the capture and transformation of PIM policy 'on the ground'. Section 6 contains the conclusions of the paper.

## **2. THE POLITICS OF POLICY IMPLEMENTATION**

Irrigation management as a form of water control has three dimensions: 1) a technical dimension related to the regulation of physical processes, notably the flow of water, 2) an organisational dimension related to the regulation of human behaviour in day-to-day irrigation practices, and 3) a socio-economic and political dimension referring to the wider societal conditions of possibility for particular management practices to take place. These three dimensions are intimately related, and policies that seek to achieve changes in irrigation management therefore have to address all three simultaneously (Mollinga, 1998; Bolding, Mollinga and van Straaten, 1995).

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<sup>2</sup> The fieldwork was conducted between June and October 1999, with a short additional field visit in April 2000. The geographical location of the research is the Yemmiganur sub-Division of Tungabhadra Right Bank Low Level Canal, located in Kurnool district, Andhra Pradesh.

In regions like South India where irrigation water is a scarce resource, and livelihoods directly depend on it, water control is contested. This contestation is an inherently political process when politics is understood as the set of activities through which the balances of power that shape resource use are (re-)negotiated. The political contestation of water use takes place at different levels (Mollinga, 2000). The first is the level of the everyday politics<sup>3</sup>, the day-to-day struggle over irrigation management. The second is the level of the politics of policy<sup>4</sup>, the social process in which policy formulation and implementation are contested. The third level is official state politics and inter-state politics. For the latter the term hydropolitics is commonly used.<sup>5</sup> The fourth level finally is the newly emerging level of the global politics of water. The recently held World Water Forum (The Hague, March 2000), aiming at the development of a world water vision and framework for action, is an example of this.

This paper focuses on the politics of irrigation policy implementation. Analysis of the politics of policy is a counterpoint to dominant models of linear or rational planning. *“According to [the latter] view, a proposed reform gets on the agenda for government action, a decision is made on the proposal, and the new policy or institutional arrangement is implemented, either successfully or unsuccessfully.”* (Thomas and Grindle, 1990:1164) Implementation is seen as basically a technical task, to be undertaken by a strong enough institution with professional managers. When reforms do not materialise as envisaged, institutions need to be strengthened, managers trained, and enforcement monitored better. In South Asia policy making and implementation is characterised by strongly legalistic and administrative approaches, with a top-down nature. This is also true of the Andhra Pradesh irrigation policy reform exercise.

The contrasting approach emphasises a ‘policy as process’ perspective, while the linear planning framework can be characterised as a ‘policy as prescription’ approach (Mackintosh, 1992). A process-oriented framework starts from the observation that the outcomes of policy implementation are highly variable. Implementation is an ongoing, complex and interactive process of decision-making by the different interest groups involved: governments, managers, and ‘beneficiaries’.<sup>6</sup> Policy implementation is an example of strategic action in which a government agenda becomes articulated with local interests, the policy content is renegotiated and transformed, and particular intended and unintended outcomes are produced. Analysis of such processes focuses on the interests and motivations of relevant actors, their strategies, the resources (financial/economic, material, social, cultural, political etc.) they mobilise, the structure of the implementation process, and the outcomes produced.

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<sup>3</sup> The term is Kerkvliet’s (Kerkvliet,1990)

<sup>4</sup> The term is Grindle’s (Grindle, 1977)

<sup>5</sup> See for example Ohlsson (1995).

<sup>6</sup> The same can be said about policy formulation, though the range of actors may be different (and the ‘beneficiaries’ usually excluded). The politics of the formulation of the Andhra Pradesh irrigation reform policy is not the subject of this paper. On that see Narasimha Reddy (1999).

### 3. THE ANDHRA PRADESH IRRIGATION REFORM POLICY FOR PIM

The Andhra Pradesh irrigation reform policy seeks to address all three dimensions of irrigation management as a form of water control. The major focus is the organisational component: the establishment of Water Users Associations (WUAs) and Distributary Committees (DCs), and finally even Project Committees, fully controlled by water users. This organisational intervention is accompanied by a technical intervention and a socio-political change. The rehabilitation of the physical infrastructure is the technical intervention. The formulation of a new law that defines the powers delegated to the new institutions, and the overall procedures and conditions within which they can operate, is the most important element of the change of the socio-political environment. This can thus be called a comprehensive approach, though we will comment later on how well the three dimensions of the reform policy fit together.<sup>7</sup>

The specific characteristics of the Andhra Pradesh approach to irrigation reform have been discussed in detail in several publications (see for example Oblitas and Peter, 1999; Raju, 1999) and I will only highlight some of the main elements as they exist on the ground.<sup>8</sup> In 1997 the Andhra Pradesh State Legislature adopted the Andhra Pradesh Farmers Management of Irrigation Systems Act.<sup>9</sup> In the same year the water rates were increased by a factor three, and State-wide elections were held for the establishment of WUAs (June) and DCs (November).<sup>10</sup> WUAs are based on hydraulic units and composed of Territorial Constituences (TCs), each having one representative on the WUA Managing Committee. Each WUA has a president, elected by the TC members from among them in case of 'unanimous' nomination.<sup>11</sup> Clusters of around 9 WUAs form a DC. The WUA presidents form the DC Managing Committee and they choose a DC president among them. So far, Project Committees have not been formed.

The WUAs and DCs have legal personality, and their own bank account. In the first years after implementation of the Act, the State government has given a fixed amount per acre for maintenance and rehabilitation work on the canal infrastructure, directly to the bank accounts of WUAs and DCs.<sup>12</sup> The first year this was mainly used for canal clearing and desilting, the second year for repairs of structures. The WUAs and DCs can prioritise

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<sup>7</sup> Earlier efforts at achieving irrigation management improvement in South Asian canal irrigation were also characterised by the twin activities of physical works for rehabilitation and the establishment of Water Users Associations (usually limited to the local/tertiary level of the irrigation systems), but lacked the necessary legal and other general policy changes necessary for making the changes enduring.

<sup>8</sup> The policy is implemented in steps, so not all elements of the new policy are implemented in one go. One example is the linking of payment of water rates and provision of maintenance funds, which is still to take effect (see below).

<sup>9</sup> The conception of the Act is an interesting story in itself, but will not be discussed here. It can be noted that after extensive public debate and political canvassing the Act was supported by all political parties.

<sup>10</sup> In the State 10292 WUAs were formed and 174 DCs. Around 2000 of the WUAs are located in larger-scale canal systems (major irrigation 1699, medium irrigation 413 as on 31 May 1999), the others in minor irrigation, particularly tanks.

<sup>11</sup> In case elections are held each member has two votes, one for the TC member and one for the president.

<sup>12</sup> In the first year, Rs.100 per acre was allocated: 50 for the WUA, 20 for the DC, 20 for the Project Committee (though non-existent) and 10 for the Village Council. In the second year this was changed to Rs.100 for the WUA and DC each, of which farmers had to contribute 15% themselves.

works to be undertaken, and they in principle control the funds, and decide who executes the works. The Irrigation Department gives technical advice and makes estimates. These maintenance/rehabilitation activities have been the main focus of activity of the WUAs and DCs. This shift in control over maintenance/rehabilitation budgets from Irrigation Department to farmers is a qualitative shift in the structure of irrigation management. WUAs and DCs have also been empowered to organise water distribution themselves. A Government Order was issued that put the *laskars*, the irrigation field staff executing water distribution activities, under the control of the WUAs. 3500 *laskars* in the State have opposed this order in the courts, and the legal battle is ongoing. The transfer of water distribution responsibilities has thus not been effected so far.

The implementation of the Act, that is the introduction of PIM, has been accompanied by massive awareness campaigns, including training of office bearers of WUAs and DCs and issuing of newsletters and other written material. There is also regular monitoring by the State government of activities and progress, for example through the regular organisation of video-conferences of the Irrigation Secretary with Irrigation Department staff.

#### **4. IMPACT OF PIM INTRODUCTION IN THE TUNGABHADRA RIGHT BANK LOW LEVEL CANAL**

This section discusses the impact of the implementation of the government PIM policy in two distributary (secondary canals) in the Yemmiganur sub-Division of the Tungabhadra Right Bank Low Level Canal. This irrigation system has a projected irrigated area (command area) of approximately 252,000 acres (102,000 in the upstream State of Karnataka and 150,000 acres in the downstream State of Andhra Pradesh). It is designed for protective irrigation (on this concept see Mollinga, 1998). Protective irrigation means that the system is designed for supplementary irrigation of a legally prescribed cropping pattern predominantly consisting of low-water using 'light' or 'irrigated dry' crops (like sorghum, millet, oilseeds, and also cotton), and limited amounts of 'wet' irrigation, notably paddy. Average rainfall in this area is 500-600 mm, and erratic. Protective irrigation also implies spreading waters thinly over a large area. In this particular case this means that the design of the command area consists of long secondary and sub-secondary canals, running through non-localised areas, that is areas not planned to be irrigated, to bring water to patches or blocks of localised land near villages, that are meant to be irrigated. Canal lengths of 5 km to irrigate a few hundred acres are very common. The planned irrigated area thus looks like a grapes-on-a-vine design.

The two distributaries studied are located in the tail end section of the Tungabhadra Right Bank Low Level Canal (they take off around km 300 of the 324 km long main canal<sup>13</sup>). Some characteristics of the two canals are summarised in table 1.

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<sup>13</sup> With the Kurnool Branch Canal added to this the total length becomes 374 km.

**Table 1: Characteristics of distributaries studied**

Distributary	A	B
Length (km)	16.7	19
Localised command area (acres)	12,199	8,140
Design discharge (cusecs)	66	46
Number of WUAs	5	3

The two distributaries are adjacent distributaries and have one joint Distributary Committee, of which one of the WUA presidents is the president.

This section focuses on 5 elements central to the present phase of the implementation.<sup>14</sup>

- a) the constitution and composition of the Water Users Associations and Distributary Committees that have been formed;
- b) the conduct of the canal system rehabilitation works;
- c) the impact of the introduction of PIM (participatory irrigation management) on water distribution practices;
- d) the impact of PIM on area irrigated;
- e) changes in the relationship between farmers/water users and the Irrigation Department.

#### **The constitution and composition of WUA and DC management boards**

What is noticeable about the elections of WUA TC members is that they were not always held. The government put a financial incentive of Rs.15,000 on the proposal/election of consensus candidates. This incentive applied when all members of the WUA Managing Committee were elected in this way. In distributary A all WUA TC members and presidents were elected unanimously, that is without a vote. In distributary B all elections were contested. The intention behind the provision of a financial incentive for uncontested nomination may have been reduction of the organisational burden of holding State-wide elections, and the avoidance of conflicts in local communities. However, the arrangement had some unintended consequences, which are discussed below.

Table 2 gives some characteristics of the WUAs studied. Looking at the social status of the WUA Managing Committee members it can be observed that most of the presidents belong to the higher/dominant caste groups (Reddys and Brahmins). TC members and presidents tend to be larger landholders also. In distributary A 85% of the Managing Committee members of the WUAs had landholdings larger than 10 acres (4 ha). The presidents generally had much larger holdings, and many of them had additional activities as businessman or politician. A total of 6 of the 8 presidents (and perhaps 8 out

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<sup>14</sup> Other elements, like the levy of water rates are not discussed here. When this was written, early April 2000, the Government of Andhra Pradesh had just announced to irrigation officers that the availability of maintenance/rehabilitation funds was going to be made dependent on the collection of water rates by WUAs. The percentage of collection necessary was still to be decided by the Chief Minister. As part of the policy reform water rates have been increased, and according to the government collection has also increased.

of 8), including the DC president, undertook rehabilitation contracting work in their own WUA/DC jurisdiction (and elsewhere/other works).<sup>15</sup> The membership of the Managing Committee was closely linked with party politics. In the local office of the ruling party (TDP = Telugu Desam Party) lists were kept of which TC members and presidents were party members, in the same way as these were kept for other local representative bodies. We assume that the same is done in the main opposition party office, the Congress Party. Though generally parties influenced candidature of TC members, there are also cases where proposed/elected members only became active in the party after this.

**Table 2: WUA characteristics in the study area**

WUA	Distributary A					Distributary B		
	1	2	3	4	5	1	2	3
No. TC Members	7	5	5	7	9	7	7	7
<i>TDP</i>	6	3	4	2	6	4	2	2
<i>Congress</i>	1	1	1	2	-	-	-	-
<i>Unknown/no party/other</i>	-	1	-	3	3	3	5	5
President <i>Party</i>	TDP	TDP, switched to Cong	TDP	Cong	None	TDP	TDP	Cong
<i>Caste</i>	Reddy	Reddy	Brahmin	Reddy	Kamma (from coastal AP)	Reddy	Brahmin	Baliya
<i>Landholding1)</i>	70L 2W	35D	30W	8W 2D	60L 20W	50W 4D	25W	4W
<i>Other activities2)</i>	B, C	P, C	D, C	B,P,C?	None,C?	P,C	B,C	P,C

1) in acres; L= lift irrigation (well or river); W=localised area for wet crops (paddy); D=localised area for dry crops (sorghum, millet, oilseeds, cotton, etc.)

2) B=businessman; P=politician; C=contractor (C?=probably); D=doctor

The functioning of the WUAs is characterised by a low level of interaction between leadership and members. The meetings held by WUAs are reported in the WUA records, which are kept at the Irrigation Department office. In Distributary A each of the WUAs held 3-5 meetings in the period January-August 1999. Most of these were about the rehabilitation works to be undertaken in the May-June period. In all 5 WUAs one of the meetings was of the WUA President only with the Irrigation Department. In the other meetings the recorded average attendance was 59 people (total 14 meetings). Our guesstimate is that this number is about 25-30% of the total membership.<sup>16</sup> However, we have reason to assume that the records paint a too optimistic picture. We have observed

<sup>15</sup> Whether a president of a WUA operates as a contractor on his own account or as the WUA-head executing and overseeing the work is not always a very clear distinction. It largely depends on what happens with the money, which is not easy to fully document. Additional research is being undertaken on this issue. The table may therefore have to be adapted on this point at a later stage.

<sup>16</sup> Estimation is not easy as there are likely to be discrepancies between the official register of landowners, and the actual situation, due to backlogs in registration of sales and property divisions. Also there is a degree of (unofficial) tenancy. In 2000 the APFMIS Act was amended to the effect that tenants can also become members of WUAs.

that in several cases the president basically worked on his own, without even consulting the TC members. In 1999 the government gave instructions to hold general body meetings, as these did not occur naturally. Cases have been reported to us where signatures for attendance were collected the day after the meeting.<sup>17</sup> Several presidents and TC members expressed to us that they had no clear idea who the members exactly were. These disappointing phenomena are partly the result of the consensus-focused process of appointment/election of office bearers. Had elections been held more generally, it would also have become clearer who the members actually were.<sup>18</sup>

### **Canal system rehabilitation works**

The cleaning and repair works undertaken in the first two years of the PIM programme have no doubt improved the technical state of the system considerably.<sup>19</sup> There simply was an enormous amount of work to catch up, given that the Irrigation Department maintenance budgets were mainly spent on staff and establishment costs.

In the study area, the design of the rehabilitation works has been done by the Irrigation Department staff. For this they have used the standard designs and design criteria that they also used earlier. The orientation is to 'bring the system back to the design state'. Farmers generally also feel they do not have the expertise to make these designs, or even suggestions for designs. We have come across only very few instances where there seems to have been local discussion among water users on the design characteristics of the structures. One exception is a tail end WUA covering a set of spread-out pockets/blocks for irrigation with a complex rotation system. In this case widths of openings in division structures were modeled in proportion to the area irrigated. Generally speaking however, there are no signs of a participatory technology development process.

Also in the execution of the works there was little farmer/water user involvement in the study area. The Irrigation Department Work Inspector was practically in charge of day-to-day construction works, and at each work a *laskar* was posted. In six to eight cases the presidents themselves were among the contractors for the execution of the works in their jurisdiction.<sup>20</sup> In other cases/works the contractors were outsiders (not members of the WUA). Labour was also employed from outside the WUA (that is farmers/water users were not the construction workers).

The quality of the work thus fully depends on the skills of the labourers and the expertise and motivation of the (Irrigation Department) supervisors. Field observations have shown

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<sup>17</sup> The problem of low attendance of general body meetings of the WUAs seems to be a general phenomenon. The *Hindu* newspaper reports that in West Godavari district "the attendance did not exceed five per cent questioning the legitimacy of the bodies." (25 March 2000)

<sup>18</sup> A disadvantage of elections along party political lines is that a lot of money will be spent on campaigning, which somehow has to be recovered.

<sup>19</sup> The works are conducted in the period that the canal is closed, that is May-June in the case of Tungabhadra Right Bank Low Level Canal.

<sup>20</sup> Either as officially registered contractors, or as unofficial contractors working under the name of an officially registered contractor. The issue of how the works are exactly contracted out needs further research, as indicated above already. Not *all* works in a WUA jurisdiction were necessarily done by the president-contractor.



a series of examples of poor quality construction. An example is construction with uncleaned, muddy stones. If this is done cement will not hold, and quickly these works will crack and partly collapse. There is no working system for quality control. WUA members, with few exceptions, are not actively monitoring, and external monitoring through a special inspection force is also not adequate. The chances of getting caught are small, also because these inspectors do not always get full cooperation of the concerned Irrigation Department staff (through not making available transport facilities for example). Nevertheless, many farmers feel that the quality of work has improved, and that more cement per unit of sand is used.

The presidents execute the works without much consultation with their membership. The main contact they have is with the Irrigation Department officers. In most cases the accounts and other files of the WUAs are kept in the Irrigation Department office. The Irrigation Department staff is strongly involved in the financial management of the WUA budget. The funds are still channeled through the Irrigation Department administratively, the ID has to technically approve the design, and it draws up the final bill and releases the outstanding balance.<sup>21</sup>

Given this situation it is not surprising that the 15% anticipated contribution by farmers is not forthcoming, neither in cash, nor in labour. Farmers suspect there is leakage of funds to both I.D. staff and presidents/contractors<sup>22</sup>, and therefore see no reason to contribute. Even when this is not the case, it is very difficult for presidents and TC members to collect money from farmers. Suspicion of misappropriation will always be there, which makes presidents less than keen to collect, as the social costs may be high. For many presidents the WUA leadership role is part of a larger agenda of local leadership and building political careers. They are therefore interested in the accumulation of social capital, to which the sensitive task of collecting money may not contribute. Those presidents who do not interact with the membership at all, have no basis to collect money or demand labour contributions. The central issue thus is accountability of the leadership.

### **Water distribution practices**

The peculiar design of the Tungabhadra Right Bank Low Level Canal, with its grapes-on-a-vine pattern of localised blocks of legally irrigable land, was already referred to above. This design has induced widespread illegal tapping of water from the 'idle' parts of the canals. Illegal outlets have been constructed, but more common is siphoning of water, and pumping. The pumping is sometimes direct pumping from the canal, but more commonly from wells close to the canal, largely fed by the seepage from the earthen canals. (but these farmers of course argue that they do not take water from the canal

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<sup>21</sup> The money for the WUAs does not come at once, but in installments. A next installment is only released when a certain part of the works is finished. In practice this means that presidents/WUAs have to advance money from their own pocket to finish the works, as the first installment is not more than 40%. Only well to do presidents can afford this, and it creates a logic for economising on construction costs and quality of works.

<sup>22</sup> We have collected oral evidence that suggests that in some cases the WUAs/presidents have to pay the same level of bribes as other contractors used to pay before. On corruption practices in this region, see Wade (1982).

illegally).<sup>23</sup> This illegality has been institutionalised through payments that the concerned farmers make to the Irrigation Department officials for allowing this. The usual payment is Rs.500 per acre for a full crop, and Rs.100 for a single wetting.<sup>24</sup>

The new PIM policy declares the *ayacutdars*, the farmers with land in the localised areas of the rightful irrigators and WUA members. Thus emerges an issue of water rights and entitlements. The formally illegal irrigators have a practical entitlement to irrigation water, are in a location where that entitlement can be denied only with great difficulty, and in a number of areas are supporters of the sitting TDP member of parliament (the MLA = Member of the Legislative Assembly). Tail end farmers consistently complained that the 'whole water distribution here is in the hands of the MLA'. We have found no indications that WUAs are trying to address this issue on a systematic scale.<sup>25</sup> WUAs have so far not undertaken activities in the field of water distribution, other than already existed (for example existing rotation schedules are continued).

### Area and intensity of irrigation

Substantial increases in area irrigated as a result of PIM implementation has been reported for different parts of the State (see for example Oblitas and Peter, 1999; Raju, 1999). This is not an unlikely course of events: clearing, desilting and repair of canals and structures increases the efficiency of water use, and allows water to flow further down the canals. In the study area this phenomenon can not be observed. Farmers and officials both stated that there is no increase in irrigated area over the past years, and this is also suggested by the statistics of cropping patterns (see table 3).

**Table 3: Irrigated area of different crops (acres)**

Year/season	Distributary A		Distributary B		Sub-Division	
	<i>kharif</i>	<i>rabi</i>	<i>kharif</i>	<i>rabi</i>	<i>kharif</i>	<i>rabi</i>
1993-94	3513	8674	2093	4203	12141	16188
1994-95 (a)	-	8674	-	4276	-	20918
1995-96	3549	8682	2093	3581	12033	20730
1996-97	3549	8692	2085	3784	12056	21058
®1997-98	3549	8692	1560	3058	11406	17412
®1998-99	3549	8692	2056	3252	12236	19534
®1999-2000			1991		11441	

(a) Canals closed in *kharif* for repairs

® Years reforms were implemented.

Both farmers and Irrigation Department officials feel that factors like the rainfall pattern and availability of water in the main canal are the dominant factors in the determination of irrigated area. Farmers reported small expansions of irrigated area in particular sub-secondary canals as a result of canal repair (no overflow of canal banks, cleared cross

<sup>23</sup> The illegal head versus legal tail problem was further exacerbated by the circumstance that in the head reach of the distributary canal wells could be constructed in red soils, but not in the tail end, where black vertisols are found.

<sup>24</sup> Details on the collection and sharing arrangements can be supplied on request.

<sup>25</sup> We have statements of farmers that WUA presidents and TC members now sometimes take payments from illegal irrigators, but we have no first hand evidence on this.

section, etcetera). There also reports that some farmers manage to give their crops three wettings now instead of two. These are all examples from the head and middle reach of the distributaries. There is qualitative evidence for the existence of a mechanism that in this case any gains in water use efficiency are absorbed in the head reaches (Jairath, 1999 also makes this point). When structures are repaired and canals cleaned, head reach sub-secondary canals make be able to draw more water, which is absorbed by more intensive irrigation in the (illegal) head reaches of these canals. It can be hypothesised that in areas with full paddy irrigation, like the delta regions, canal improvements do more quickly lead to area increase: the water that becomes available is as it were pushed out at the tail, because there are no possibilities for absorption in the head reaches. This issue needs further research.

### **Changing relations between farmers and Irrigation Department**

For the Irrigation Department officials working in the canal commands areas bureaucratic life has become more uncertain. Particularly the transfer of control of maintenance/rehabilitation works to farmers may imply a serious reduction of control over the system, and loss of additional income. However, because the WUAs in this area have been predominantly captured by rural elite presidents, regularly in the contracting business themselves, and operating rather individually, or in a small circle of supporters, the engineers are able to maintain much of their earlier control. There seems to have been a shift in who the contractors are who execute the works, but the set of relationships surrounding it have not fundamentally changed. Also the structure of social relationships in water distribution, with strong influence of politicians, seems to be unaltered. The Irrigation Department engineers are under considerable pressure from the top to work in a different manner, but hardly so from the bottom. The philosophy of the Act that I.D. staff provides services to the WUAs and DCs, on request as it were, has not (yet) materialised.

## **5. CAPTURE AND TRANSFORMATION**

We have no reason to doubt the sincerity and hard work with which the irrigation policy reform managers are pursuing their project. They try to incorporate the newest insights from (inter)national debates on irrigation policy reform in their approach, adapted to and within the constraints provided by the Andhra Pradesh situation.<sup>26</sup> The reform managers are probably taking a top-down approach to irrigation reform as far as it can go in the Indian context.<sup>27</sup>

However, the programme seems not to be sufficiently equipped to cope with on the ground realities such as those occurring in the Tungabhadra Right Bank Low Level Canal. In private discussions, senior policy actors in Andhra Pradesh have argued that the

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<sup>26</sup> What is striking is that despite a high degree of standardisation there is a capacity to learn and adapt within the executing bureaucracy, and such learning and adaptation is actively pursued.

<sup>27</sup> A more cynical interpretation would analyse the irrigation reform programme mainly as a political strategy by the present government to mobilise the rural vote (and successfully so, given the re-election of the TDP government in October 1999), but as an exercise with little substance otherwise. Though this consideration is undoubtedly there, it would be unfair to reduce the reform to that. These broader political support base issues may however well hamper further advance of the reform.

Tungabhadra system should not be used as a standard for evaluation because it is the most difficult situation to address, given the design characteristics of the system, and the socio-political relations in this region. There may be some truth in this. Nevertheless we feel that the processes and issues discussed below are likely to carry general relevance, though the degree and intensity of their occurrence may differ from place to place.

An overall interpretation of the reform programme so far could be that in the first few years the programme has realised the relatively easy gains related to much needed technical maintenance and rehabilitation. In many systems this was the first time in many years that serious investment in the physical system took place. After these first years the reform programme is now starting to face new issues, of a more difficult kind: those related to re-distribution of irrigation water and the mobilisation of financial resources by the farmers in exchange for increased control over the system's functioning.

In the study region the reform programme has been captured by the rural elite. This elite exhibits the usual pattern of the combination of economic and political power. A basic contradiction in the reform programme is that the political support base of both the ruling TDP and the opposing Congress relies on these rural elite members through the vote banks that they control. Taking up the more difficult issues of re-distribution and resource mobilisation is likely to create considerable tension within the parties.

The capture of the programme by the rural economic and political elite could occur because of several reasons. First, the programme was carried out with great speed in 1997 after acceptance of the Act in parliament. Despite publicity campaigns many ordinary farmers were hardly aware of the existence of the policy, and certainly not of its possible significance. Even during our fieldwork in 1999 we talked to many farmers who were unaware of the PIM initiative and the existence of a Water User Association in their area. The rural elite with its better contacts and access to information, is likely to have heard about, and realised earlier the possible importance of the programme.<sup>28</sup> Still, at the local level even the political parties were not fully prepared and aware, and overtaken by the speed of implementation. All agree that the next elections of the Managing Committees will be far more contested than the first one.

A second reason for the capture of the programme by the rural elite are the modalities of the maintenance and rehabilitation works. These works constitute an interesting business opportunity, and because of the financing structure of the works, affluent people are required to pre-finance the execution of the works. The Irrigation Department also willingly cooperated in this development, as it provided an opportunity to continue existing relationships with a partly changed group of contractors. In a sense the situation

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<sup>28</sup> It can be noted that training activities for water users have first trained office bearers of WUAs. The idea may have been that such office bearers pass on information to their membership, but that seems to be a somewhat too optimistic assumption. The training may in fact have helped to increase the information gap between office bearers and membership. It can well be argued that training should have started with the normal members. There is no guarantee that the office bearers will be re-elected. Training of members is preparing the ground for democratically functioning WUAs. However, the logistics of training of WUA members are somewhat overwhelming.

for the Irrigation Department improved, because more funds for physical works have become available.

A third reason is that unless special efforts are made there is no reason why the WUA should be treated differently by local interest groups as any other local representative body: a stepping stone for political careers, a site for the accumulation of social and political capital, and an institution for the distribution of resources to supporters. The irrigation policy reform programme invested much time and effort in the formulation of the APFMIS Act, to prevent such pitfalls. However, no Act can enforce democratic principles when these are not also actively claimed by local groups. The reform programme has not undertaken activities so far to enable the emergence of such claims.

In the study area the irrigation reform policy has been transformed into something that is controlled by the rural economic and political elite, and that allows the Irrigation Department to more or less continue business as usual (with an added possibility to escape from unpleasant tasks by stating that they are now the responsibility of the WUAs and DCs). The continued pressure from the government policy reform managers keeps the I.D. officials on their toes. In the absence of this the changes in mode of operation would in fact be minimal.

No sophisticated strategies were required to effect this transformation, and the capture was contested only to a very limited extent. The struggle, at a personal level, and in terms of political parties, was more over which section of the rural elite would capture the reform policy. Given existing social, economic and political relations the observed pattern is the pattern that one would expect to occur, unless additional efforts would have been made.

Nevertheless, the outcomes are not altogether negative. The canal system has been technically improved and some efficiency gains are evident, even when in this study area these were absorbed in the already privileged head and middle reaches, due to the specific design features of the irrigation system. And, in principle a framework for more democratic forms of water management is in place. In this respect the next elections for the WUA Managing Committees are crucial. They may provide an opportunity for establishing improved accountability and transparency at this level, but this will depend on how they are prepared. If no special efforts are made there is little reason to expect that the outcome will be qualitatively different from what it is now, at least in the study region.

Also in a more pragmatic perspective – ‘forget about the redistribution for the moment, let them take up management responsibilities’ – there is reason for doubt. The touchy issues of water distribution and water rates collection are not likely to be taken up by the WUA Managing Committees with great enthusiasm in this region. With regard to the matter of water rates collection, the collection percentage fixed for the release of maintenance/rehabilitation funds is of great importance. If it is on the low side, one can imagine that payment by head reach farmers will suffice. If it is higher it may serve as a mechanism to induce negotiation between head enders and tail enders, though it may also

mean that WUAs will refrain from this activity. What is also striking in this respect, is that in the irrigation reform implementation no contractual arrangements regarding water delivery from the Irrigation Department to WUAs and DCs have been introduced so far. The experience in lift irrigation makes clear that farmers are willing to pay considerable amounts of money for water supply (there are examples of 25% of the crop value) as long as the supply is secure. Though in large surface canal systems the arrangements for contractual delivery with liability on both sides are more complex than in lift irrigation, examples in other Indian States show that it is far from impossible.<sup>29</sup> Another step to be considered would be the introduction of financial autonomy of the Irrigation Department concerned, which could further induce process of re-negotiation of resource use.

## 6. CONCLUSION

This paper has shown how, in the Tungabhadra Right Bank Low Level Canal study region, the Andhra Pradesh irrigation reform policy has been captured by the local economic and political elite. It has made available funds for system improvement, which are probably used more efficiently as they would otherwise have been. The design and construction activities are however not participatory in nature, but controlled by a small group, in cooperation with the I.D. Apart from this the situation has remained pretty much as it was. In this area no extension of irrigated area has taken place (though for reasons discussed above this is different in other systems), water distribution has not been taken up by WUAs and DCs, the power of WUAs to collect fees/water rates has remained unutilised, and head-tail issues have not been addressed.

The capture of the reform policy by vested interests took place without much contestation. The approach chosen by the government for policy implementation was a top-down one. This more or less automatically resulted in the described pattern. One of the reasons to adopt a large-scale, State-wide top-down approach was the dissatisfaction with NGO induced reform in other States, which never developed beyond limited numbers of local examples of successful WUAs (the 'scaling up' problem). This may be appreciated, and indeed a legal and policy framework is now in place in Andhra Pradesh that in principle allows far-reaching reforms in all areas. Ironically however, the reform programme now runs into the same problems that many of the NGO initiatives seek to address: devolution or decentralisation of resource control to users is a highly complex, social and political issue, which requires special mechanisms to go beyond reinforcing the unequal and undemocratic status quo.

It is unlikely in our view that a bureaucratic government machinery is able to address these new complex issues effectively, no matter what the commitment may be at the higher levels. One would first have to reform the bureaucracies themselves completely, to generate the necessary flexibility and creativity, and overcome engrained resistance to

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<sup>29</sup> The reference here is to experiments with volumetric supply in Maharashtra, organised by NGOs. It should be noted that in cases where this volumetric supply has been successful, it has been accompanied by intense efforts of local organisation across the boundaries of existing social divisions (see Lele and Patil, 1994).

reform. Bureaucratic reform is part of the Andhra Pradesh reform initiative, but it seems a long route to addressing the local issues in the irrigation systems. More practical would perhaps be to establish a semi-government organisation, with a mandate to implement the policy within the given parameters, but without the administrative hurdles common to normal government agencies. Such an institution could directly address local issues at WUA and DC level, work on training and awareness, etcetera. Given the international popularity of the 'Andhra model' it would not be difficult to mobilise donor funding for this.

## REFERENCES

Bolding, Alex, Peter P. Mollinga and Kees van Straaten (1995) 'Modules for modernisation: colonial irrigation in India and the technological dimension of agrarian change' *Journal of Development Studies* Vol.31, No.6, pp.805-844

Grindle, Merilee S. (1977) *Bureaucrats, politicians and peasants in Mexico. A case study in public policy*. University of California Press, Berkeley

Jairath, Jasveen (1999) *Participatory irrigation management (PIM) in Andhra Pradesh: contradictions of a supply side approach*. Paper presented at the Researchers Conference 'The long road to commitment; a socio-political perspective on the process of irrigation reform', held in Hyderabad, December 1999.

Kerkvliet, Benedict J. *Everyday politics in the Philippines. Class and status relations in a Central Luzon village*. University of California Press, Berkeley

Lele, S.N. and R.K. Patil (1994) *Farmer participation in irrigation management : a case study of Maharashtra*: Horizon India Books, New Delhi

Mackintosh, Maureen (1992) 'Introduction'. In: Marc Wuyts, Maureen Mackintosh and Tom Hewitt (eds.) *Development Policy and Public Action*. Oxford University Press, in association with the Open University, Oxford, pp. 1-9

Mollinga, Peter P. (1998) *On the waterfront. Water distribution, technology and agrarian change in a South Indian canal irrigation system*. Wageningen Agricultural University (Ph.D. thesis)

Mollinga, Peter P. (2000) 'Water and politics: levels, rational choice and South Indian canal irrigation' *Futures* (forthcoming)

Narasimha Reddy, D. (1999) *Designer participation: politics of irrigation management reforms in Andhra Pradesh – India* Paper presented at the Researchers Conference *The long road to commitment: a socio-political perspective on irrigation reform* held in Hyderabad, December.

Oblitas, Keith and J. Raymond Peter (1999) *Commencing irrigation sector reforms through management transfer to farmers: the case of Andhra Pradesh, India* World Bank Technical Paper

Ohlsson, L. (1995) *Hydropolitics: conflicts over water as a development constraint*. Zed Books, London

Raju, K.V. (1999) *Participatory irrigation management in Andhra Pradesh: a way forward*. Paper presented at the international conference *The long road to commitment: a socio-political perspective on irrigation reform* held in Hyderabad, December.

Thomas, John W. and Merilee S. Grindle (1990) 'After the decision: implementing policy reforms in developing countries' *World Development* Vol.18, No.1, pp.1163-1181

Wade, Robert (1982) 'The system of political and administrative corruption: canal irrigation in South India' *Journal of Development Studies* Vol.18, No.3, pp.287-328