“Why is collective participation not progressing in Irrigation Water Management systems in India today?”

Case study Distributary 54 in Tungabhadra River Project, Karnataka, India

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Illustrations

Acknowledgements

The path to this Master Thesis has been long, yet wonderful and exciting – full of surprises, obstacles, and challenges, but nonetheless worth every second. I hope that the knowledge I have gained will, overtime, become transferable into action.

Special thanks to my supervisor Desmond McNeill (SUM) for your encouragement, time and effort and to David Barton at (NIVA) for your amazing support and friendship, for including me in the STRIVER project and making the trip to India possible. A warm thanks you to the entire ISEC team in India – Professor K.V. Raju, Mrs. Manasi, Mrs. Latha, Mr. Lenin, Mr Umesh, Mr. Harish, Mr. Avinandan and Ms. Cavita. This thesis is built on the India you showed me.

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Last by not least a million thanks to my dearest mother, Linda. This thesis would not have existed without the endless love, constant encouragement, and hours of effort that you have devoted to helping me with this thesis. It is appreciated all the way to the moon and back again. Thank you for believing in me.

Thank you to everyone who has helped to make this “journey” such a magnificent experience.

Three stepping-stones have made this thesis a reality

Stepping-stone 1: When I joined the Master's program Culture, Environment and Sustainability at the Centre of Environment and Development (SUM), it was because I wanted to write a Master Thesis on India and India's deteriorating water status. This interest was born by coincidence when I worked on the international advertising strategy for Coca Cola at Naked Communications in London in 2005[1]. During the preliminarily research, I discovered how the public in the state of Kerala in south India forced a ban on Coca Cola. Later, the state government of Kerala also backed the initiative. The ban lasted for over a year. The reason for the ban was Coca Cola's intrusiveness over usage of local groundwater, pollution, and a general lack of respect for the consequences this had on the local communities.[2] Coca-Cola was held accountable for water shortages and pollution in this area and in March 2004 the local community forced the Coca-Cola bottling plant to shut down. I was amazed to find such power in the Indian public.

Stepping-stone 2: The second stone was the focus of the masters' course Development and Environment: Theory and policy challenges (SUM 4000). It made me aware of how the world of theory does not necessarily depict reality and practice. After travelling to India in 2007, it became evident to me that there was a missing link in the theories I had learnt. I was overwhelmed with both India's greatness in size and in the number of people. Norway, where I live, is a small country with 5 million people, and ranks as the second best nation to live in[3]. However, the people I met in India during my one-month stay had a different kind of vitality, willingness, and energy. India, with 1.3 billion people and ranking as the 128th country on the human development index[4] , had a diversity of living standards across its vast area that intrigued me. I was informed that

[1] My background is a BA in Graphic Design, Central St. Martins, (London). After graduation, I landed a job as a strategist, focusing on tailor-made communication strategies for national and international companies at Naked Communications, London.
[2] http://www.indiaresource.org/index.html
[3] (UNDP rapport 2007/2008)
[4] (UNDP rapport 2007/2008)

India was trying to leapfrog the most disastrous steps of industrialization by investing in the latest technology and indigenous techniques. There seemed to be interesting local solutions for local problems and a strong local grass root initiative. Yet, at the same time, I was told that a thousand new cars were entering the already congested streets of Delhi each day. The fact that India is one of the world's fastest changing countries, that it is labelled as the world's largest democracy and has an increasing population growth each year, made me want to investigate more. How can the Indian government listen to so many people, consider their diversities, and ensure each individual the philosophical principle of equal rights?

Stepping-stone 3: The third stepping-stone came when I was introduced to the Norwegian Institute of Water Research (NIVA). Through them, I became aware of the EU-funded project STRIVER, a project concerned with creating a better understanding of Integrated Water Resource Management (IWRM). STRIVER is an ongoing project (until 2009), conducting research to better methods for integrated water resources management (IWRM) in an Asian-European context. I wanted to learn more about its core objective, as the project has a strong emphasis on local stakeholder involvement, enabling and supporting local capacity development and uptake.[5] After I walked out of the first meeting, I had been offered a job as NIVA's research assistant in India. I was to participate in research, mainly concerning irrigation water and willingness to pay for irrigation water. I therefore decided to write my thesis about this topic, irrigation water in India. These three stepping-stones resulted in the following research question:

Why is collective participation from farmers in Irrigation Water Management processes not progressing in India today? Case study Distributary 54 of the Tungabhadra River, Karnataka, India

[5] www.striver.no

Abbreviations and Indian words

ADB – Asian Development Bank
CADA – Command Area Development Authorities
CAD program – Command Area Development program
CD – Cropping Design
CRP's – Common Pool Resources
D54 – Distributary 54 is located at the middle of left bank canal in the Tungabhadra River irrigation system.
D22 – Distributary 22 is located in Bhadravati upfront of the Tungabhadra Dam and River
ED – Engineering Department
GOI – Government of India
GOK – Government of Karnataka
IMT – Irrigation Management Transfer
IWM – Irrigation Water Management
ID – Irrigation Department
Jowar – Millet
KWDT – The Krishna Water Dispute Tribunal
KWSP – Karnataka State Water Policy (2002)
LBC – Left Bank Canal in the Tungabhadra

NWP – National Water Policy (2002)
NIVA– Norwegian institute for Water research
O&M – operation and maintenance costs
RD – Revenue Department
STRIVER – is a three-year EC funded project (2006-2009). STRIVER will contribute towards improved interdisciplinary Integrated Water Resource Management, based on the coupling and balancing of ecological, social-economic and policy variables in an Asian-European context
STRIVER HHS – STRIVER Household Survey conducted in Sindhanur and D54 March 2008. The survey interviewed 216 farmers. 72 in head reach, 72 farmers in mid reach and 72 farmers in Tail end of D54.

TBRP – Tungabhadra River Project
WRD – Water Resource Department

Paddy – Rice
Panchayati Raj system – village community ruling system that was adopted by state governments during the 1950s and 60's

Taluk – A taluk is a town that serves as the local government headquarters - an administrative unit hierarchically above the local city, town, or village, but subordinate to a larger state or province

Warabandi – an irrigation water release system, in the distributary where the different farmers receive a fixed time with water proportionate to the extent of his land

Basics concepts of Irrigation Water Management

The following key terms and expressions are central to this thesis. In this section, I will introduce the complexity of 'irrigation water management' (IWM) and define some of the main parameters.

Throughout this thesis, the IWM process relates to the control of irrigation water from an organisational point of view. It involves the acquisition and distribution of water for agriculture (Uphoff, 1986). When I use the term 'process', it refers to the actions taken by the community or other organizations. The results of those actions bring about change, e.g. man-made structures, or the founding of organizations, the increase in membership, or specific actions taken (Flora et. al. 2000). Hitoshi Fukuda defines irrigation water management as: "the comprehensive control of such functions as taking in, conveyance, regulation, measurement, distribution, application at the proper time and in proper amounts, and drainage of excess water, if any, all aiming at the common target of increasing productions and improving techniques for farming." (1976:143)

'Irrigation' is the action of supplying moisture to land; 'irrigation management' is about the regulation and control of human behaviour, particularly concerning cooperation necessary to make irrigation systems function (Mollinga, 2003). An 'irrigation system' is a system of physical structures, such as dams, canals, gates, and pumps and management systems that capture water from a natural source and distributes it to farmers (Brewer et. al., 1993: 11).

According to Uphoff (1986), the basic irrigation management activities in an irrigation system are as following:

1. Water Acquisition: the capturing of water for distribution within an irrigation system
2. Water Distribution: the distribution of water in an irrigation system

3. Operation & Maintenance: repairing and maintaining the physical structures of the irrigation systems
4. Resource Mobilization: raising the resources needed for operation and maintenance (O&M)
5. Conflict Resolution: resolving conflicts among users and the system managers above items

These five irrigation activities are the basis for all irrigation management institutions (Brewer et. al. 1993).

When referring to an 'irrigation institution' I will use Ostrom's definition: the set of working rules for supplying and using irrigation water in a particular location (Ostrom, 1992:19), referring to the process in which the shifting of responsibilities for the water is occurring. Hence, an 'irrigation water management institution' (IWM institution) is a group of organisations and departments with the Government of India, (GOI) and the state Government of Karnataka (GOK) at the top level. In this thesis, the IWM institution may also include a collective group of farmers, Water User Association (WUA), or an individual farmer.

The Indian constitution clearly designates the responsibility for water and irrigation water to the State. Hence, this thesis is mainly concerned with the State of Karnataka – and the laws and regulations of this state.

This thesis is concerned with a canal irrigation system, which is a man-made structure, often consisting of a dam, a right bank canal (RBC), and a left bank canal (LBC) which guides water through a systematic network of distributaries to arid (very dry) or semiarid (half dry) areas. The distributaries can have several minors, which flow into sub distributaries, before reaching the farmers' field channels. This thesis will not include research on water for domestic and industrial usage, nor ground water, tank irrigation systems and other related systems.

The following illustration shows D54 in Tungabhadra

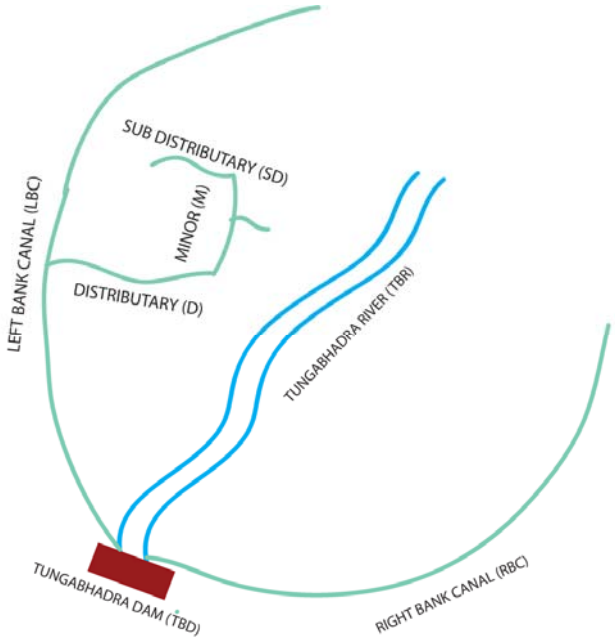


Figure 1: Source: Mai Simonsen (2008)

The area of study is Distributary 54 (D54). Data is collected from minor S3R being the head reach, minor S10L in mid reach and minor S18R in the tail end of D54. These minors were selected according to their location in D54. It is common to divide a distributary, into three reaches: head reach, mid reach, and tail end. The minors are also divided into head, mid and tail end. The numbers on the illustration show where the villages are situated in mid reach of each minor. I conducted my interviews there.

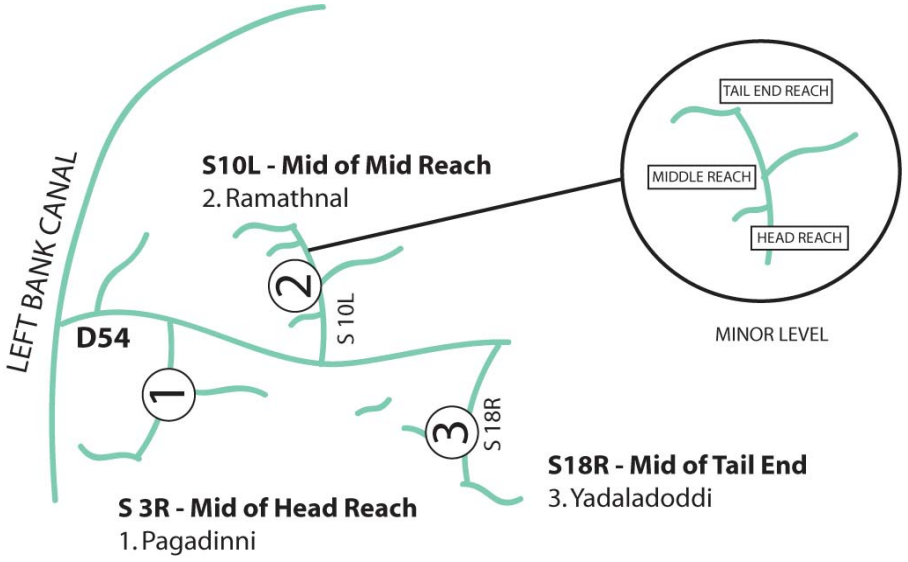


Figure 2: Source: Mai Simonsen (2008)

In India, it is common to refer to irrigation projects according to their size. A major project has a command area larger than 10,000 HA. A medium project is a project covering a command area between 2000 HA and 10,000 HA. A minor project is less than 2000 HA. The Tungabhadra River Project (TBRP) is a major project.

In Karnataka, or more specifically in the Tungabhadra basin, there are three growing seasons. The rainy season Kharif (July to November), Rabi season (January to mid-April), and summer season is mid-April to the end of May. The need for water supply and distribution varies according to these seasons.

Introduction

This chapter is an introduction to my thesis. I will explain my three hypotheses and my three objectives that will give an understanding of the role of farmers and the IWM process in relation to sustainability of irrigation systems. In my acknowledgements, I have explained the three stepping-stones that led me to my research question: *Why is collective participation not progressing in Irrigation Water Management systems in India today?*

Participation is throughout this thesis related to the idea that farmers are active claim-making agents (Hickey and Mohan, 2004) in the IWM process. Hence, participation becomes an act done to impact or influence the current management of irrigation water. The understanding of collective participation relates to a formation of active claim making farmers, who together as a group actively want to influence the IWM process.

This chapter introduces the Methodologies and Area of Study**,** clarifying which methods I have used when conducting research and explaining the context in detail. At the end of this introduction, I have included a Structure of the Thesis.

Project Background

I was given the fortunate opportunity to take part in the research project STRIVER. This included travelling to India for a field study as a representative of the Norwegian Institute for Water Research (NIVA), and gave me the possibility to search for a more in-depth understanding relevant to my own Master Thesis. Choosing to write about the farmer's scenario in Karnataka was a consequence of my involvement in the STRIVER project. While experiencing the situation in India, I realised what I wanted to focus on. The farmers who manage to influence or participate in the IWM situation caught my immediate

attention. Yet at the same time, there appeared to be a lack of a collective action force. This dilemma was the starting point of this thesis.

Although my first priority was being part of the STRIVER team, I was able to work my own research into the excursions. STRIVER predetermined the tight time schedule and locations, but on a daily basis, I was able to influence the planning process to include my own studies as my ideas developed.

Throughout the history of India, farmers have been the central initiator of activity related to irrigation structures and the management of irrigation water. Today the farmer's role has changed and in my area of study the farmer is perceived to be a receiver and beneficiary of irrigation water, rather than an active participating farmer. Thus, to understand the essential objectives of this thesis, I will briefly explain the main historical events leading to today's situation.

The beginning

In the early stages of evolution, a great change occurred when an awareness of the location of water gave the possibility of settling. A shift from a nomadic lifestyle with hunting and gathering food to a more permanent community can be linked to this. The first known settlements were on the banks of rivers, where easy access to water gave the possibility of both growing food and sustaining animal husbandry. The knowledge of leading water in a systematic network, to irrigate land away from the original source, is seen as one of the most important reasons for the sustainability of societies. One of the earliest civilizations, the Indus Valley Civilization, flourished along the Indus river valley primarily in Sindh province of Pakistan, extending westward into Balochistan province, then into Northwest and West India. Learning how to control and use the river's resources can be seen as one of the main reasons why people settled here forming communities.

This led to a steady population increase, where people also spread to less fortunate areas with fewer basic resources. History has shown that the

communities who managed their resources in a way benefiting its members, prospered to become large rural villages and cities. However, with growth and development come the need for hierarchies of power, laws and regulations, and other ways of ensuring equity and order.

In India, the legal body and hierarchy grew as several powerful kings took control and created empires the different regions. During the 16th century traders from Europe realized the potential of India's resources. They brought with them new hierarchies and structures, influencing the existing traditional power relations. In 1857, the British claimed India as one of their colonies. From this year onwards, the Indian traditional systems slowly shifted to resemble the British power structure.

The turning point

During the 19th century, when India was Britain's colony, it faced the verge of famine (1876-78). The British rulers invested in new irrigation infrastructures, in order to secure the food supply. The system was modernized by introducing large-scale irrigation systems, which could turn semiarid land into fertile land. Though primarily done to eliminate the famine, these systems also increased the agricultural produce for export, which was a win-win situation worth investing in. The British system at the time, a centralized government, functioned well with the shift from small-scale to large-scale irrigation systems. Due to its cost and size, the responsibility for the larger infrastructures automatically became the governments, and the traditional IWM process, mostly managed by farmers, adapted to these new conditions. This can either be seen as an "overruling phase" (Whitcombe 1972) or an "adaptation phase," (Stone 1984), and it has, in my mind, strongly influenced today's situation. It would appear to have kindred a shift of attitude in the farmer's traditions. The current situation, where the GOI is initiating a decentralization process, can in many ways be seen to resemble the situation before the British ruled. Prior to British rule, the farmers were collectively active participants in the IWM process. During British rule, they

seemed to become less collectively coherent and more individual. Throughout this period, the farmers became beneficiaries and end users, with less means of influencing the IWM process.

Today's situation

This was particular clear when the degradation of irrigation structures and availability of irrigation water worsened during the mid 20th century. In the 1970's, the GOI called for more collective participation and less centralized control, as they believed the lack of farmer's participation to be the reason to the worsening state of the IWM process.

The idea of collective participation was seen as the way forward in achieving sustainable irrigation systems. The main focus of the GOI moved towards promotion of local governance and transfer of responsibility in the irrigation management process to the farmers' user groups. Today these user groups are commonly referred to as Water User Associations (WUAs) (Vermillion, 1999, Meinzen-Dick et al, 2002, Johnson et al., 2002). However, the success of this decentralization process is widely debated. The emerging IWM institution consists of several new governmental departments and some external organizations appeared along with acts, amendments, and plan to better the situation at the farmers' level. GOI put many resources and efforts (on paper) into assuring farmer's participation; training workshops on how to start up WUAs led to a wave of optimism, and the idea of farmers as active participants in the IWM process was seen as the way forward. Tools like cropping design guidelines; an environmental assessment made by the official body suggesting the type of crops most suitable for the area etc. were also warmly welcomed. However, what became evident was that the practical outcome at farmer level was not successful, and thus refrained from breeding more sustainable IWM systems.

GOI is still today claiming that the key lies in collective participation, and recommends WUAs by law, in order to achieve more sustainable irrigation

systems. The failure of the system practised in the 70´s was due to many issues. I will, in this thesis, highlight why collective participation is not progressing in the selected area of study. The use of the word "sustainable" relates to the definition coined by the Brundtland commission in 1987 on sustainable development[6], often used when similar issues are being analysed. The purpose of sustainable water management is simply to manage water resources while taking into account the needs of present and future users. [7] I will use the word sustainable in relation to the result and the ability the management process has in ensuring long-term outcomes rather that short-term solutions.[8]

Why is the current situation not progressing?

Firstly, one of the observations in the field was that the decentralization process had not affected the current situation in D54. The farmers' frustration over a non-functioning system with several badly handled issues by the officers of the IWM institution seemed to result in a status quo situation. There was little evidence of what could have been a profitable relationship between the farmers and the rest of the IWM institution. What was visible was the degrading standard of the irrigation system in my area of study. The problem appeared to be that the farmers expected the IWM institution to be responsible – and the officials I talked to from the IWM institutions expected the farmers to be responsible.

The second main observation I made was that the farmers not only had trouble participating in the IWM institution, but that the collective spirit or activity amongst themselves, was almost non-existent. However, when times were at their worse, i.e. when there was no water in the canal or when there were violations by other farmers, a collective spirit did appear.

[6] "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs"
[7] http://www.devalt.org/water/WaterinIndia/swm.htm
[8] It is also meant to highlight the ability to maintain a fixed level of irrigation water without exhausting the natural resource or damaging the environment

The farmers' main concerns were those, which affected everyone. But when the farmers explained their current scenarios, the tendency was to focus on how it affected them personally. The idea of a collective way of participating with more sustainable benefits for the farmers as a whole was more or less absent their minds. This took me completely by surprise, as I had read many similar incidents where collective action saved several small villages and whole regions from poverty and degradation.

The lack of communal attitude and action is essentially the main research question: *Why is collective participation from farmers, in an Irrigation Water Management process not progressing in India today?* In order to understand this, I had to narrow my study down to three core areas.

I developed the following three hypotheses:

1. *The farmers do not see Water User Associations (WUAs) as a realistic alternative to better the current irrigation water management process, due to too few benefits for the individual farmer.*
2. *The individual act of paying for water is done with the intention of participating in a system (IWM institution) more than paying for water as such.*
3. *The individual choice of crop has collective consequences for the farmers in an area, and should therefore be a matter of a collective organisation.*

These hypotheses are the research areas for this thesis, to understand why collective participation from farmers is not progressing. Even though these are the main three issues within the IWM process and institution, the complexity of the IWM process is crucial to acknowledge.

Thesis Objectives

To answer these three hypotheses I have made the following three objectives:

Objective 1*:* to identify the institution

Who are the organisations, governmental institutions, and other actors involved in the current irrigation water management institution (IWM institution). Who is responsible for the IWM process, and how is this structured at organisational levels? What are the rules to ensure participation and good irrigation management?

Objective 2*:* to understand the role of the farmers

What is the current everyday life of the farmers in D54? Who are they, and how do their needs differ along the distributary? Does the location of the farmers' land implicitly relate to water scarcity?

Objective 3*:* to look at the interaction between the farmers and the IWM institution

On what level does this interaction take place? Who is benefiting? Does it result in a sustainable future?

These objectives will clarify the understanding for why collective participation is not progressing in D54 today.

Structure of Thesis

Chapter 1 is a Methodology chapter

Chapter 2 is a short theory chapter outlining the ideas behind participation and the relevant context of the Indian IWM traditions.

Chapter 3 outlines the current IWM Institution. It focuses on the hierarchy and levels of authority: national level, stately level, Taluk level, D54 level, and finally the farmer level.

Chapter 4 seeks to grasp and comprehend the role of the farmers and their everyday lives in D54. It focuses on the differences within the three reaches: head reach, mid reach, and tail end. The statistics collected from the STRIVER household survey along with my observations, paint a picture of the farmers we encountered along D54. This will tie in with my three hypotheses from the introduction chapter - participation through WUAs, payment for water, and choice of crop. It will also reveal how the participation is either violated or followed according to the existing rules.

Chapter 5 reveals how the farmers themselves are experiencing their role within the IWM process. By using the farmers' own statements, their argumentation describes the status of today's situation in D54. This chapter also relates back to the first hypothesis: The farmers do not see Water User Associations (WUAs) as realistic alternatives to better the current irrigation water management process, due to too few benefits for the individual farmers. By confirming or rejecting this, the farmers reveal their thoughts on this concept.

Chapter 6 addresses how the two individual actions, payment for irrigation water and choice of crop, can position the farmer in the IWM process. By asking the farmers the reason for their actions, I determine if the somewhat individual actions are done with the collective in mind, or whether the action is solely concerned with individual benefits.

Chapter 7 looks at the farmers view on why the current situation in D54 is not progressing. It also reveals what they see as the way forward.

Lastly, **Chapter 8** concludes with a summary of the core aspects of my initial findings and research. It also looks at possible new policy implications and other ways the farmers can have a genuine participation in the IWM process.

1. Methodology

1.1 The area of study

The Tungabhadra River Project

The Tungabhadra River basin is located in the southern part of India in the state of Karnataka and the eastern state Andhra Pradesh.

Figure 3. Source : http://www.worldportsource.com/images/maps/india_pol96.jpg

During the 19th century, the Tungabhadra area of Karnataka only had a small river running through it. Along the riverside, people used the water for their everyday lives, but there were no large irrigation systems. Simple lifts were used to lift water for small, nearby fields – but these simple constructions limited the area of irrigation. The first proposal for a large-scale irrigation system was put forward in 1859. The Indian Irrigation Commission put the Tungabhadra River Project (TBRP) on the political agenda and in 1944, an agreement was reached between Madras Presidency, Nizam's Dominions (Hyderabad capital of Andhra Pradesh, 1956), and the Mysore state (later Karnataka and capital of Karnataka).

The construction of a dam started in 1948, and from 1953 it was possible to the utilise part of the canal system (Mollinga 2003:104). According to Peter Mollinga (2003), there was no evidence of local participation or influence in the construction or design process of Tungabhadra River project (TBRP). The selected engineers considered the physical costs of the construction and the whole project was designed without any socio-economic conditions, meaning it did not take into consideration the link between the economic activity and social life - which the structure should function in (Mollinga, 2003:105).

Today, the communities in the Tungabhadra river basin in India are facing different water challenges in different parts of the river. For example, in the downstream sub catchments of Tunga and Bhadra, which comprise mostly of arid and semi-arid regions, water management has reached a high level of sophistication, both for surface and groundwater utilization in agriculture. Nevertheless, over the last decades the Tungabhadra reservoir has constantly been losing its water storage capacity due to an accumulation of mud caused by mining, dust, soil erosion, and debris. This is an area of concern for the government. In addition to this, the amount of rainfall has decreased, depleting the water level in the reservoir even further. Water can be released for one crop (www.striver.no). Despite this decision made by the top level of the Tungabhadra River project Board, the farmers are violating this law by growing in two seasons

(double cropping). The outcome of this single action is a serious challenge for the environment, which encapsulates numerous serious social impacts.

The issue of water scarcity and unequal water allocation amongst those who live closer to the source of water (i.e. the head reach) and those who are at the end of the river, distributary or minor (i.e. the tail end), are very often distorted.[9] This shows how individual acts from farmers, in form of a simple violation, become a major challenge in terms of water use and allocation. Who is responsible for resolving this action? The conflict is to be found on a transprovincial level, between Karnataka state and Andhra Pradesh, as well as on the lower levels of the irrigation system – at the distributary and Minor level. For the purpose of this thesis, I will concentrate on the state of Karnataka, excluding information about the neighbouring state of Andhra Pradesh. My chosen distributary is Distributary 54 (D54), located in the Left Back Canal, in the district Raichur and the taluk[10] Sindhanur.[11]

Left Bank Canal

D54 is part of Left Bank Canal (LBC). LBC is 227 km long, has 87 distributaries, and thousands of pipe outlets across the designed 240,000 hectares of command area (Mollinga, 2003). The designed command area (DCA) is the actual area designed by the TBRP engineers that can be utilized by farmers in this particular area, which is connected to the irrigation network (Mollinga, 2003). D54 is approximately in the middle of the LBC and has a capacity of 250-300 cusecs (cubic foot per second) of water.

Distributary 54

My selection of area of study was linked to my involvement in the STRIVER team. Collectively we decided that D54 and D22 in Bhadra Reservoir was

[9] See explanation of reaches in the Basic Concepts of Irrigation Management

[10] A taluk is a town that serves as the local government headquarters - an administrative unit hierarchically above the local city, town, or village, but subordinate to a larger state or province

representative for the Tungabhadra River Basin at large. I intended to do a comparative study of the two distributaries, but before leaving for Bhadravati I fell ill. I then chose to focus on D54 and include some of the knowledge from D22.

D54 is situated in the Raichur district, an administrative district in the Indian state of Karnataka. According the 2001 census of India, the population of the district was 1,669,762. Raichur district has five taluks: Raichur, Devadurga, Sindhanur, Manvi, and Lingsugur. D54 falls under the jurisdiction of Sindhanur, and the 2001 consensus of India estimated that Sindhnur had a population of 61,292.

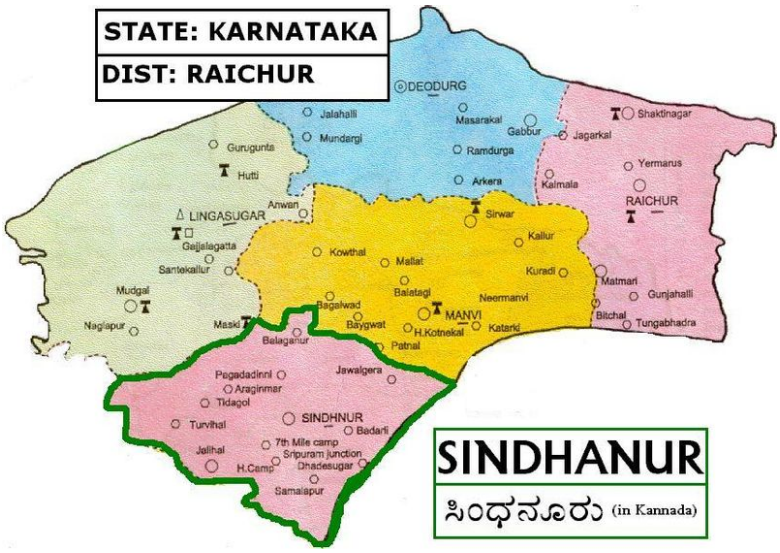


Figure 4. Source : http://en.wikipedia.org/wiki/Image:Sindhanur_Map_2.jpg

The designed command area in D54 is 87,201 acres, but interestingly the actual command area is 108,000 acres, which is far greater than the original design. The actual command area includes areas outside the intended designed command area. In order to control the amount of water available, and in order to have a

[11] This excludes details on the Tunga project and the Bhadra project upfront of the TB dam. Mainly includes details

plan of the intended irrigated areas, the original drawings focused on the most appropriate areas for irrigation, excluding the less attractive areas around the irrigation canal. What became evident was that the excluded areas on the sides of the canal banks were also fertile, and that with the help of some simple pump sets or other ways of withdrawing water these areas could be used as well. Some farmers were quick to realise this and took advantage of the undistributed areas, resulting in huge consequences for the people further down the canals, as they would then not receive the intended water, allocated by the state.

The following map shows how D54 is built. It shows how the water is distributed along through the intricate network of direct pipe outlets and minors. I have highlighted the three selected minors, in order to understand the context.

related to the TBRP's Left Bank Canal.

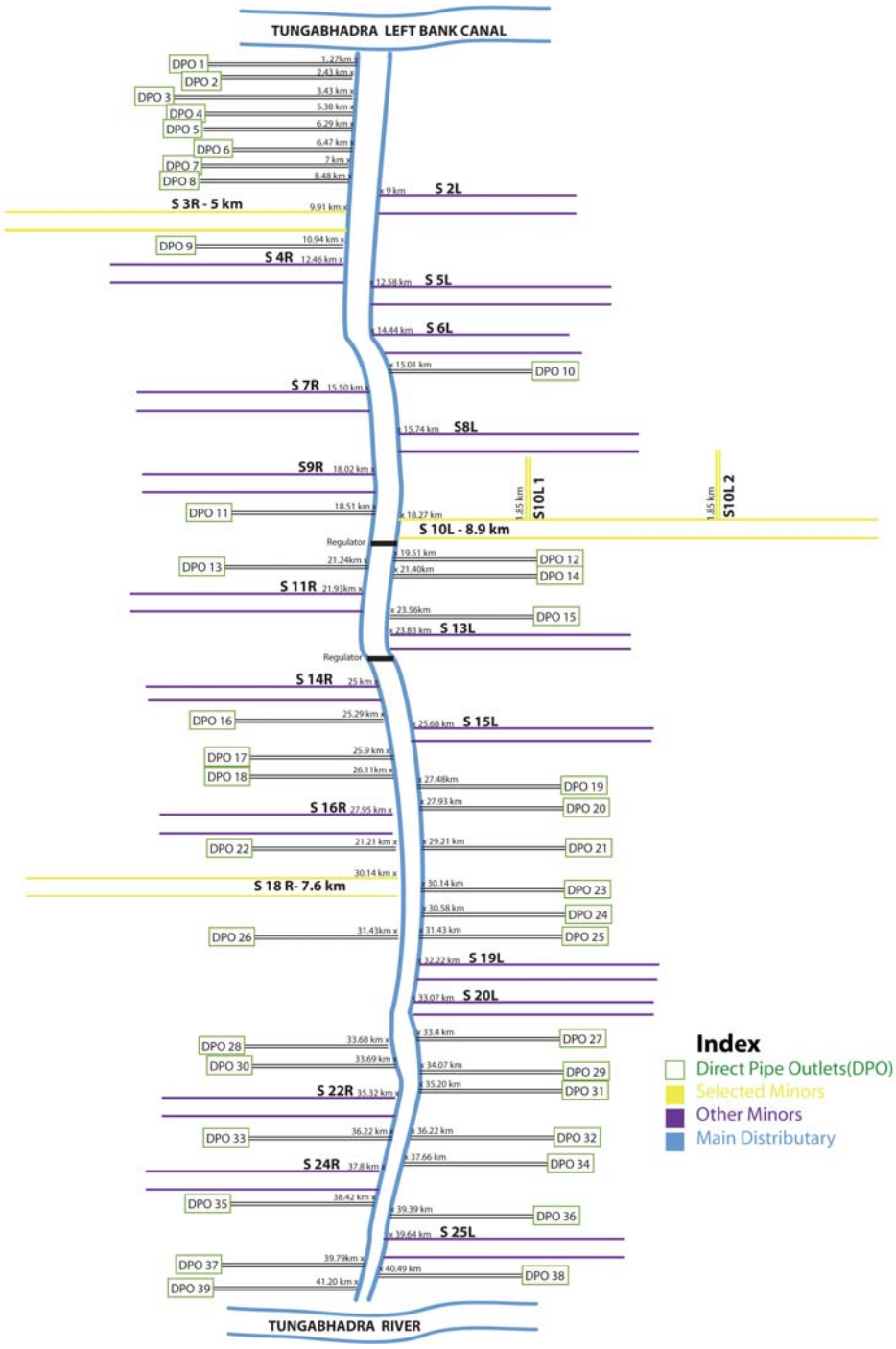


Figure 5. Source: Mai Simonsen (2008)

1.2 Qualitative methods

The wish to understand and interpret the current scenario in D54, and the wish to understand how the farmers were or were not participating collectively in the

IWM process, resulted in the choice of a qualitative approach. Since the aim was to gather an in-depth understanding of farmers' behaviour and actions, and the reasoning behind their behaviour, it became clear that an ethnographic approach would be relevant and useful. An ethnographic approach is a study that seeks to understand the way of life and culture of a specific social group (McNeill, P. and Chapman, 2005). Entering the area of study with qualitative methods such as interviews and participant observation, I wanted to understand the current social structures, institutional issues, and way of life in D54. Knowing that it was hard to predetermine the exact findings of my field work, I let the farmers' guide me to the core areas they thought were relevant, and these areas became my area of research.

The benefits of being part of the STRIVER team were in total three fieldtrips, several focus group discussions, as well as meetings with all the relevant official bodies. STRIVER was using a quantative method, a Choice Experiment Household survey (HHS), gathering information from 432 households in the entire TBRP. The limited sample size resulted in a selection of two distributaries, which best reflected the diversity of the entire Tungabhadra River basin. The STRIVER team picked distributary 22 (D22) in Bhadravati and distributary 54(D54) in Sindhanur within the Tungabhadra area. 216 households were interviewed from D22, as well as 216 households from D54 in Sindhanur.

To befit from this team participation I focused on the same area of study. The data collected from D54 is used extensively in this thesis, to back up some of my own qualitative findings.

1.3 Interdisciplinary framework

This thesis is written using an interdisciplinary approach in order to reach a better understanding of the farmers' role, individually and collectively, in the rather complex IWM process. Rooted in political science, this thesis deals with the

theory and practice of politics and the description and analysis of political institutional systems as well as the political behaviours the institution evokes. Political science is often described as the study of who gets what, where, when, and why, by looking at the balance between the individual, society, and its government. Due to the diversity of the current situation in D54, I have also used aspects from several other disciplines to achieve different points of view, resulting in a more holistic understanding of today's irrigation process in D54.

The economical aspect of irrigation water management became more central than I envisaged. The topic I choose to debate can also be found in the theory related to *Rational Choice Institutionalism* (RCI) (Hall and Taylor, 1996). I found RCI to suit the main observations I encountered in D54, as the actors involved could be seen as rational beings, acting to maximise the attainment of their own preferences, where their own preferences were more likely to produce an individual outcome rather than a collective outcome (Hall and Taylor, 2006). The very idea of the farmer as an individual vs. farmers as a collective group also made the economical theory of rational behaviour highly relevant. When faced with several courses of action, people usually do what they believe is likely to have the best overall outcome for their own wellbeing (Elster, 1989:22). I will explore the farmer as a rational being, assessing whether the benefits as an individual are greater than the collective benefits possible in a WUA. Chapter 4 and 5 will discuss this matter in greater depth, using the statements from the farmers of D54 to understand the present situation.

Since STRIVER's aim was to uncover the "willingness to pay" for irrigation water, I became aware of many factors that are influencing farmers, resulting in actions related to payment. This became a crucial area for me. I believe this is one way to understand how the IWM institution is functioning, and to show if the action of payment actually means active participation with the IWM Institution and its process.

The laws of the Government of Karnataka (GOK) and the Government of India today are created to regulate the IWM system and process in a top-down manner. Since rules are enforced through a set of institutions to ensure the rights of the people (i.e. the farmers), I have tried to focus on the farmers' right to participation in the management process. I have also looked at the rules enforcing the economical aspect related to the IWM process, and additionally at the rules in place to protect the environment. However, this thesis reveals that several aspects of the written laws are unfortunately failing in practice, hence the importance of understanding the laws in theory and in practice. This is another core focus of the thesis – as the rules and laws are the obligations the IWM institution themselves have written, and the rights the farmers have to ensure their participation.

Environmental science is the study of the interactions among the physical, chemical, and biological components of the environment, with a focus on pollution and degradation of the environment related to human activities and the impact on biodiversity and sustainability from local and global development (Wagner, 2007:2). Considering that the TBRP is a human-made irrigation system, it was necessary to grasp the basic natural (or partly natural) concepts like soil conditions, cropping patterns, seeds and fertiliser, environmental flow in a rivers system, and hydrologic conditions, in order to see how the farmers position.

1.4 Case study

In order to narrow a broad field of evaluation research, I chose to conduct this research as a case study: an empirical inquiry that investigates a contemporary phenomenon within a real-life context, especially when the boundaries between phenomenon and context are not evident (Yin, 2003:13).

I want to stress that this case study is conducted with the purpose of reaching some generalizations related to farmer's participation, distinctively in D54 and

not necessarily for India at large. Nevertheless, as the general role of the farmer is changing, it will not surprise me if there are similarities in other distributaries.

As I do not speak Kannada, the native language spoken in Karnataka, it proved difficult to understand how the farmers are viewing the current situation in D54. However, as I was part of an Indian English-speaking research group, the farmers' opinions, situations, and stories where revealed through my colleagues. Although it was sometimes frustrating and very tiring, the outcome after hard digging and several: "What did they just say?" gave me some firsthand data and qualitative insights.

1.5 Field observations

During my stay, I went on three fieldtrips in various parts of the TBRP.

The first fieldtrip[12] *Tungabhadra River basin at a glance*
This trip was to pre-test the STRIVER household survey and revise it to optimise the information. It was my first meeting with the river and its people. I used this trip to collect as much information as I could, simply by observing the different communities along the stretch, formalising the various issues and trying to understand the river at large. I was asking questions in the focus group discussions and interacted with several farmers in the field, as well as with various levels of officials. This trip introduced me to the conditional diversities along the river. The evident variations from the lush head reach of the Shimoga district to the deteriorating landscapes in Raichur, where D54 is located, became a wake-up call which later made it easier to draw conclusions related to what large IWM structures and systems can do to its people. It also made me aware of the general issues across the entire river in Karnataka.

[12] 29 January to 1st of February

The second fieldtrip[13] Distributary 22

D22 is located in the Bhadra reservoir, ahead of the Tungabhadra River and the TBR Dam. It runs through the Shimoga district. Due to severe illness, I had to postpone my own travels to Shimoga, resulting in a less holistic understanding of the current scenario present in D22. I was unable to do my own interviewing, but the six days in field, where I was able to observe and interact with the farmers, some of the officials and some of the WUAs members informally, have complimented my understanding of the situation in D54.

The third fieldtrip[14] Distributary 54

With the aim to understand the D54 and its 43.1 km stretch, the initial drive-through covering the entire distributary became vital. The temperature was well over 40 degrees and we were only allocated two days to cover the area. Starting at the source of D54 the Left Bank Canal (LBC), we travelled by car along the river and down the entire distributary visiting 25 minors in order to choose three for the STRIVER survey. The result was Minor S3R in head reach, S10L in mid reach, and S18R in the tail end of D54. I conducted my own interviews in this distributary, and the main findings are explained in Chapters 4 and 5.

1.6 In-depth interviews

1.6.1 Interviewing the farmers

In D54, I conducted nine semi-structured, in-depth interviews with farmers (The farmers and other interviewees have received fictitious names, as some of the farmers specifically wanted to be anonymous). The reason for choosing semi-structured interviews was that I wanted a combination of both factual and attitudinal data (McNeill, P., and Chapman, 2005). I wanted to hear the farmers'

[13] 27th of February to 2nd of March
[14] 13th to 23rd of March

opinions about their everyday life and the situations they thought were crucial. Hence, the first question asked during the interviews, was: describe your everyday life. If the farmers mentioned specific topics that were more relevant than the ones I had already chosen, then I adjusted the rest of interview accordingly.

My questionnaire consisted of open-ended questions and was followed up by several alternative questions outside the “interview guide.” In order to cover my three hypotheses – collective participation through a WUA, payment for water, and choice of crop – I structured the opening questions to direct the interview. Language barriers made it necessary for me to provide a specific interview guide for my translator, which made the situation for her more comfortable and easier to understand as an external person.

I had made a chart with all the different organisation levels, and wanted the farmers to point out directly whom they had interacted with lately. This exercise was a good, and had some unexpected outcomes. Two of the farmers did not look at the choices, making their answers less viable than those who enjoyed this interaction. (Outcome represented in chapter five, The farmers interaction pattern with the IWM institution)

Sampling Design

For my semi-random sampling design, I selected three farmers in Pagadinni (a village in the mid of head reach), three in Ramathnal village in the mid of mid reach, and three farmers in Yadaladoddi, which is situated in the mid of tail end. (See illustration on page 10 in Basic concept of Irrigation Water Management)

As I was interested in getting an average feel for a large area, these three villages in the middle seemed to reflect the conditions specific to the reaches along the distributary. However, what became evident was that each reach also had huge differences. The tail end of the head reach was worse off than the tail end of the tail end, as they were closer to the Tungabhadra River – and could lift water from

that source. In fact, the differences became so evident that I wanted to understand the predetermined conditions related to the different locations.

1.6.2 Interviewing the Board members of the only Water User Association in D54

There was only one semi-functioning WUA in this D54, located in the head of head reach in the village Busupur in Minor S3R. Due to the fact that I had chosen to focus on the middle reaches in each of the minors, the village I had chosen in head reach did not have a WUA. I therefore had to adjust to the findings, by adding an additional village – Busupur, where I interviewed the board members of the one WUA in the D54. The distance to that particular village proved to be a one-hour drive, meaning to go back and forth was difficult. After convincing the rest of the team (and paying the driver double), I managed to visit there on the very last day. I had in total 3 hours before we had to leave, giving me only one hour per person to conduct my interviews.

I was able to interview the WUA's president Mr Jaballa, the secretary Mr. Sandinoor and the director Mr. Khan, of the association. All three members combined the roles of leaders in the WUA with the task of being farmers. What was interesting about this interview situation was that they were also able to speak on behalf of the farmers. Their opinions on what the WUA is and is not, was of course somewhat related to their positions as board members, but was not in my mind entirely "coloured." They where more interested in explaining the main reasons for why it was not functioning well. They were eager to make me understand the many different aspects of how they saw the WUA could function in the future, and told their point of view in such an honest way that it made me very aware of how deep the difficulties are in their current situation.

1.6.3 Quantitative method, (STRIVER method)

In order to grasp how much the farmers are willing to pay for water, STRIVER chose to use the Contingent Valuation Method (CVM), a sample research method often used when understanding the willingness of respondents to pay for hypothetical projects or programs most often concerning environmental issues on a local community level. The name of the method refers to the fact that the values revealed by respondents are contingent, or arbitrary. It is more a hypothetical exercise where simulated market scenarios are being presented (Portney 1994:383).

In a CVM survey, it is relevant to include a section of several choices, referred to as a Choice Experiment. In a Choice Experiment, individuals are given a hypothetical setting and asked to choose their preferred alternative among several alternatives in a choice set. A number of attributes or characteristics describe each alternative, and the possible outcome can indicate what he or she is willing to pay for the service or good. Although highly debated amongst academics due to its contingent aspect, it is a quantitative way of receiving statistical data. The STRIVER team conducted 432 household surveys (HHS) divided equally amongst D22 and D54. (In chapter three, I use the findings from the 216 HHS from D54.)

1.7 Reflections

Language and Cultural Barrier

The main obstacle during my stay in India was the evident language and culture-related barriers. In Bangalore, most of my colleagues and other people I interacted with spoke excellent English. However, when entering the field, the situation changed dramatically. None of the farmers spoke English properly and even the officials at a local village level did not speak much English.

I had assumed that there would be some English-speaking officials, but again this was limited to a few words. Desperate to understand and grasp my surroundings, I asked my colleagues to interpret, but this became very tiring for both parts. On the third excursion, I managed to get a translator. The translator's English was sufficient, but the vocabulary was limited. I have therefore taken the liberty to alternate certain repeated words with words of the same meaning, to get a variation in some of the answers from the farmers. The original meaning is still intact, but I acknowledge that it is difficult not to distort the meaning, as synonyms have a slightly different balance. The most common situation where I have chosen to reword the sentence is when I received the comment "and that would be very helpful for me."

I was always the outsider receiving attention from large groups of people when trying to understand the individual farmer facing me. I encountered several angry faces and remarks that in some case my colleagues and team reacted to. I was accused of being there to exploit the farmers, asked which company I was from, and what my purpose was. Moreover, the praising and constant fascination from all the varying generations was also hard to get used to.

Not entirely "one to one"

To do in-depth interviews in a village context proved to be difficult. Firstly, because upon arrival the amount of people that approached us to find out what was going on, made it hard to get only one answer. However, the main statements in this thesis are mostly by the individual farmers – even though some of the answers are coloured by the onlookers. My skin colour attracted several rejections when we approached the farmers. As part of the STRIVER team, my interpreter and I did however manage to explain the purpose of my interview in contrast to the STRIVER household survey. Some answers like "is she here to exploit us?" and "how can she possibly understand?" made me aware of my own role in this research, and in some instances made me question my own reason for doing this.

Receiving what I wanted to hear

During some of the interviews, I felt the answers were being tailored to please me – I felt that the answers were what the farmer thought I wanted to hear, rather than the truth. In these cases, I always tried to get some additional questions, which sometimes proved to be useful, as the farmers – when asked differently – answered completely differently. In order to know which of the revealed answers to trust, I asked the interpreter to point this out to me, after the interview sessions.

Reality not as planned

The thought that there would be several WUAs across D54 – like the papers we received from the officials said – proved to be wrong in practice. This meant that planning the study was generally difficult, and that the distributary had several surprises in store for us along the way.

2. Theory

Participation

In 1968, Garret Hardin wrote the influential article named “The Tragedy of the Commons.” In this article, Hardin explains how each individual rational being in a local community uses the available Common Pool Resources to satisfy their own needs and individual demands. Many communities and civilizations fail, according to Hardin, due to bad management of the Common Pool Resources. Elinor Ostrom et al. defines Common Pool Resources (CPRs) to include natural and human-constructed resources in which (1) the exclusion of beneficiaries through physical and institutional means is especially costly, and (2) the exploitation by one user reduces the resource availability for others (Ostrom et. al. 1994, 1999: 276). Continuing, Hardin argued that all these individual demands would cumulate in a tragic overuse and result in the potential destruction of the very source they all depend on. Hence the title of the phenomenon: ‘Tragedy of the Commons‘

Various scholars and policymakers have used Hardin’s article to rationalize central government control over CPRs (Ostrom et al. 1999: 278). With today’s knowledge on CPR, the essence of Hardin’s article could be seen as undermining the natural evolution of humanity. In an historical perspective, the CPRs have been manage very well by common people, often better than when private institutions or centralized governmental institutions have been in charge. It can be said that the degradation of the irrigation management process in D54 is failing to deliver water to all of its designed receivers and therefore is in a way tragic. However, it cannot be seen as the outcome of many maximising individuals, as there are more reasons for the situation as it is today. The issue of irrigation water delivery, which is immensely complex, is described in chapter two. It is therefore difficult to place responsibility for failure on one particular individual (although this is in some instances possible), or on the IWM

institution involved. However, in this case conflict is definitely linked to faulty management of irrigation water and the lack of collective action from the farmers. The aspect of sustainability must also be included in order to highlight the importance of long-term solutions, as opposed to short-term. According to Hickey and Mohan (2004), the recent broadening of the participatory agenda to encompass institutional issues of governance, as well as development policy and practice, requires wider debates concerning the State, in relation to processes of democratization and decentralization (Hickey and Mohan, 2004:5).

Elinor Ostrom and Roy Garner (1993) highlighted how many analysts suggested that the only way to cope with controlling the common-pool resource was to get an external authority such as “the government” to take over the commons (Ibid: 95). A central management process, combined with the latest technology, was for a long time seen to be the ultimate solution. However, as large centralized projects failed miserably, the focus of IWM shifted from technology transfer to decentralized and user-centred approaches, emphasizing participation and local organizational development.

Collective participation

One of the main theories behind the concept of collective participation is described by Mancur Olsons in his” The logic of Collective Action” (1965). Olson highlights the positive side of group activity as he notes that those individuals with common interests would voluntarily act to try to further those interests (Bentley 1949; Truman 1958; Ostrom 1993:5):

> *The idea that groups tend to act in support of their groups interests is supposed to follow logically from this widely accepted premise of rational, self interested behaviour. In other words, if the members of some group have a common interest or object, and if they would all be better off if the objective where achieved, it has been thought to follow logically that the individuals in that group would, if they were rational self interested, act to achieve that objective. (Olson 1965:1, in Ostrom 1999:6)*

Olson proposes that collective action will occur if the collective benefits are sufficient. To further this concept, more participation and local knowledge should be included in the current IWM process and as a result of this the outcome is more likely to be sustainable, because collective benefits will be greater than individual benefits.

Robert Chambers (1983, 1992, 1994a, b, c, and 1997) described this in his Participatory Rural Appraisal (PRA). Chambers highlights the shortcomings of the top-down development approaches. Chambers claims that there is a greater need to involve the beneficiaries. This is because everyday lives are affected by the actions occurring in the institutions, and that the main aim should be to increase social and economical involvement throughout the decision-making process (Guijt 1998). Roberts Chambers (1983) argues that in the process of development, scientists and managers of development projects need to approach local people as the *experts* when it involves where they live and work. While outside technical experts have different values and often-conflicting interests about specific issues, they often lack the holistic knowledge of interrelationships within a given place. Chambers (1983) and others such as Savory (1989) and Allen (1996) argue that local people are better in discovering this information as they have place-based, experiential knowledge. This means that scientists and technical managers need to spend more time working with the insights of local people in development initiatives. Development and resources management – engagement – should therefore be seen as a process of negotiation between local and outside interests regarding objectives, goals, outputs, outcomes, and indicators for evaluation, rather then an agenda set by outsiders (Flora et. Al. 2000 in Andrew and Aslin, 2003:17).

However, both Olson's and Chambers' ideas have been challenged in the academic world during the last decade, in an intense debate related to collective participation in development. The debate arose in 2001, when Cooke and Kothari wrote the book 'Participation: the new Tyranny?' This book questions the very

notion of *what participation is*. In addition, it looks at the extent to which one can ensure genuine participation in development projects (non-biased, including all minority groups, equal representation of women and men, young, etc.) and challenges the current flawless picture of participation. The definition of participation or the ostensible aim of participatory approaches to development was to make 'people' central to development. This was challenged when the new tyrannical approach highlighted that participation in practice had few possibilities of ensuring a proper participation. By enforcing participation as the way forward, local situations could often worsen, as it spread elitism – by giving some of the richer farmers more power and leaving several other less fortunate groups of farmers more vulnerable. The authors contributing to 'Participation: the new Tyranny?' (Cooke and Kothari, 2001) claimed this notion to be an important milestone, where development projects were in fact a tyrannical practice, rather than a way forward.

In 2004, Hickey and Mohan came with an extension of the current discourse in their book "Participation: From Tyranny to Transformations?" The authors believe it is crucial to ensure participation from the locals, since research from the last decades have shown that participatory involvement has resulted in many learning's (both positive and negative), which in turn have brought better ways of ensuring genuine participation and more sustainable development projects (Hickey and Mohan 2004).

I stand between the two critiques, as both sides have important points. I believe that it is crucial to involve locals, as the last decade has resulted in important learning's and better ways of ensuring participation (Hickey and Mohan 2004). As Hickey and Mohan (2004) point out, the failure often lies in the existing structure rather than in the participation from the users:

> *The importance of participation in development can no longer juxtapose the alleged benefits of bottom-up, people-centred, process-oriented and alternative approached with top-down, technocratic, blueprint planning of state-led modernization. (2004:4)*

They continue to argue that:

> *Moreover the recent broadening of the participatory agenda, to encompass institutional issues of governance as well as development policy and practice requires an engagement with wider debates concerning the changing state, in relation to processes of democratization and decentralization. (Ibid:4)*

In this thesis, I am trying to capture this particular element and develop a detailed understanding of the current decentralization in D54. I experienced that the practice of participation from the locals in D54 was not at all ensured, even though all the theoretical documents and laws where in place. Today's' decentralized state has failed on many of the most basic levels. I therefore believe that Cooke and Kothari (2001) are in many ways right when they describe the pitfalls and limitations of participatory development, when put into practice:

> *Local knowledge (such as community needs, interests, priorities and plans) is a construct of the planning context, behind which is concealed a complex micro-politics of knowledge production and use.*

Even though this debate was to cover development projects where external forces were involved, its argumentation is also applicable to the development project the TBRP Board are now facing with their current situation in Karnataka and D54.

Context of Indian IWM Traditions

Peter Mollinga's book *On the Waterfront* (2003) was my first introduction to Karnataka and more specifically the Tungabhadra River - he focuses on the Left Bank canal and its farmers. It reveals the struggles related to large-scale irrigation systems. Mollinga explains the situation using components in a technical, managerial, and socio-political process. This book was a springboard for me relating the technical aspects of the irrigation system and acted as a general introduction to the canal irrigation system.

The main task to understand was India's history of evolving political formation, crossed with the history of changes in irrigation practices, as the farmers role lies

within this dual paradigm. With this base, it was easier to understand today's institutional IWM structure.

The Asian Development Bank (ADB) released an intricate study on "Irrigation Management Transfer – strategies and best practises" (Raju et. al., 2008) in time for me to include the latest research within this thesis. "Irrigation Management Transfer in India – Policies, Processes, and Performance" (Brewer et. al, 1999), also became essential background information in the understanding of today's situation. Both have focus on India, revealing how and why the shifting power relations have developed and how they are received in all levels of society. These studies highlight many issues, which I encountered through my own research, and are relevant in many areas of my study. I do however feel that both of these studies have failed to let the farmers have a say. Hence, in my own research I will literally use the statements of the farmers to argue my own and their own case. Having said that, I found these studies to be truthful and more realistic than many of the older "loyal" literature produced on the topic.

I also relied on the introductory chapters in Nirmal Sengupta's *Managing Common Property, Irrigation in India and the Philippines, (*1991), where Indian history was richly described. Norman Uphoff's article *Local Institutions and participation for Sustainable Development*, (1992), as well as his *Local Institutional Development: an analytic sourcebook with cases* (1986) is relevant to this thesis. Uphoff argues that there is a need for sustainable local institutions, and that this participatory institution represents what Uphoff calls the third middle sector, the participatory sector (1992:4) in addition to the public and private sector already existing in today's society. This is, in my mind, a fantastic way of explaining just how important the farmer's participation is. I have used his terms (1986) and arguments frequently to support my own and some of the farmers' arguments throughout this thesis.

I was privileged to be part of STRIVER's research project, as it gave me access to all their research material and data. This collection of firsthand and secondary

data has been crucial and I have used it extensively to get specific numbers and figures for Karnataka and the Tungabhadra River Project (TBRP). This gives is a broad theoretical understanding of how the irrigation situation has evolved in India.

To understand the IWM institutions, I have studied various acts, laws, and regulations both on a national and state level. This is explained in detail in chapter two.

It is crucial to mention that during the last 30 years there has been a growing consciousness around the fact that water has been overused by humanity. Many reasons, such as growing populations and the demand for more food and commodities, has resulted in a different perception and a new attitude towards the importance of water. Water became acknowledged as a commodity at the International Conference on Water and the Environment held in Dublin, in 1992. Water has an economic value in all its competing uses, and should be recognized as an economic good.[15] The reason for acknowledging water as an economic good was to prevent further depletion, and hold over-users accountable for their actions. However, there are small elites around the world making huge profits, while millions of people do not have access to water. Terms like “Blue gold “(Barlow and Clarke 2002) or “water is the next oil” reflect the fact that water has achieved a different attitudinal status and that there are several complex aspects related to water today. This thesis will not discuss the “Right to Water” as such, as irrigation water is not seen to be part of the “Right to Water” debate, due to its economical aspect and commercial usage.

[15] Principle 4 in the Dublin Principles for Water 1992

3. The Irrigation Water Mangament Institution

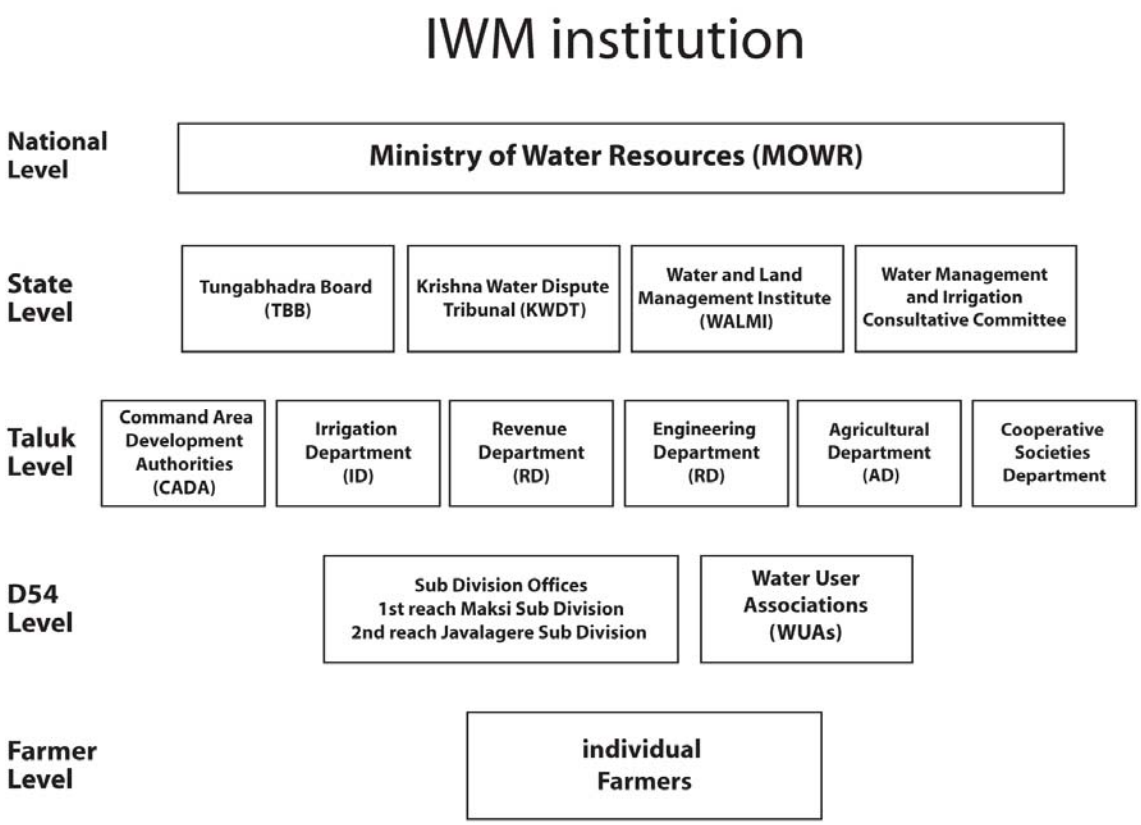


Figure 6. Source: Mai Simonsen 2008

This chapter will give an insight into the various levels and actors involved in the irrigation water management institution (IWM institution) in today's Karnataka and more specifically in D54. It will also identify the different levels and the theoretical tasks of organizational responsibility- and management, thus highlight how the farmers currently fit into the institution. I will outline the key tasks each level represents and how practice differs from theory.

3.1 Organisation levels

The management of India's water resources falls under the jurisdiction of a number of government departments. However, the primary responsibility for the development of water belongs to the individual state governments. The central government oversees the implementation of national policy on resource

development and exploitation as well as inter-state rivers, international rivers and river valleys. The government also provides technical advice to individual states on development, flood control, navigation, coastal erosion, dam safety, navigation, and hydropower, if required.[16]

The Ministry of Water Resources (MOWR) is the principal ministry responsible for water in India. This ministry oversees the planning and development of the resource from policy formulation to infrastructure support. The Ministry of Water Resources is responsible for policy guidelines and programs for the development and regulation of country's water. The MOWR claims that one of its main tasks in conjunction with irrigation water is to be in charge of the:

> *Overall policy formulation, planning, and guidance in respect of minor irrigation and command area development, administration and monitoring of the Centrally Sponsored Schemes and promotion of participatory irrigation management.*

Other central ministries working with water and their designated tasks are as following:

- **Ministry of Agriculture**: watershed development and irrigation
- **Ministry of Power**: hydro-power development
- **Ministry of Environment and Forests**: water quality
- **Ministry of Rural Development**: watershed development and drinking water provision
- **Ministry of Industry**: industrial uses of water
- **Ministry of Urban Development**: urban drinking water provision and sanitation
- **Central Pollution Control Board**: water quality monitoring
- **Indian Council of Agriculture Research**: development of water management techniques

Collaboration between the various ministries results in a holistic coverage of all aspects of water on a national level.

[16] http://www.devalt.org/water/WaterinIndia/characteristics.htm#Water%20Resources

Irrigation Water Management is a state subject. The Government of Karnataka (GOK) is primarily responsibility for use and control of this resource within the state boundaries. The functionality and outcome of what GOI and the departments agree on a national level, influences the general policies on water in the different states across India. Nevertheless, all states have specific water politics, regulations, taxes and to some extent management systems. The following section describes the IWM institution in the state of Karnataka.

3.2 State Level – Government of Karnataka

3.2.1 Tungabhadra Board

The Tungabhadra project was initiated by the states of Madras and Hyderabad during February 1945. With the formation of Andhra State, as per the Andhra State Act 1953, certain areas of the project on the right side of the river belonging to the then Madras State were transferred to the then Mysore State (today known as Karnataka). The project became a joint venture of the States of Mysore, Andhra, and Hyderabad (as they were called at that time). This resulted in more than 55 percent of the irrigation area on the right bank of the river falling in Andhra, where as the Reservoir with the head reaches of the canal system lay in the State of Mysore. This situation warranted constitution of an independent body, the Tungabhadra Board, to complete the approved project, to look after its maintenance and to oversee distribution of benefits to these States (Tungabhadra Board, Manual on Right to Information Act 2005:1). Today the state of Government of Karnataka (GOK) and Andhra Pradesh share this responsibility.

In the Tungabhadra Board Manual on Right to Information Act (2005), it becomes clear that this organisation has little interaction with the farmers. In the manual there is a chapter titled: ‘Particulars of arrangement that exist for consultation with, or representation by the members of public in the relation to formulation of policy or implementation thereof.’ (2005:71) However, the

chapter clearly states that: ‘no such arrangements are felt necessary as Tungabhadra Board has no direct dealing with public in discharge of its function.’ (Ibid.71)

3.2.2 Krishna Water Dispute Tribunal (KWDT)

The Krishna Water Dispute Tribunal (KWDT) allocates the water available in the Tungabhadra reservoir. The norms for such allocation are as below:

Canal system	Allocation considering 230 TMC as availability (TMC)	
Right Bank Low Level Canal	29.50	22.50
Right Bank High Level Canal	32.50	17.50
Left Bank Main Canal	-	102.00
Raya Basava Channel	-	7.00
Vijayanagar channels	-	2.00
R.D.S	6.51	0.49
K.C.Canal	10.00	-

Figure 7. Source Tungabhadra River Basin – An Overview, Draft 26.12.07.

3.2.3 Water and Land Management Institute (WALMI)

The institute is highly interactive at all levels – WALMI is the training facilitator bridging the gap between the GOK and its users and includes governmental staff as well as all others in the IWM institution. WALMI’s objective is to introduce improved techniques in the fields of water and land management. It offers technical assistance to the government and advises the government on legal, policy, organisational and procedural changes. It helps local communities to initiate WUAs, to organize information meetings together with other organizations, as well as to conduct special studies for publication on local community issues and concerns. The WALMI institute has been functioning in Dharwad since 1986. When asking the farmers about WALMI, none of the interviewees knew about this organization, but the board members of the Water User Association in Busupur, had received training from WALMI.

3.2.4 Water Management and Irrigation Consultative Committee (WMICC)

The Government has re-constituted the Irrigation Consultative Committee for both Bhadra Reservoir Project and Tungabhadra Project. It consists of 8 official members, 8 non-official members, 13 official invitees, and 14 representatives from the 2 projects. Officers working with irrigation and co-operation, and agriculture departments are represented in the committee. The committee only meets when necessary, but takes decisions after many discussions related to the specific water issue. (STRIVER, Tungabhadra Basin an Overview 2008: 40)

3.3 Taluk Panchyat Level - Sindhanur

This level is in charge of the day-to-day interactions between the farmers and in the IWM institution.

3.3.1 Command Area Development Authorities (CADA)

The most prominent organisation within the IWM institution is the Command Area Development Authority (CADA), set up in 1979. In 1974-75, the centrally sponsored Command Area Development Authority (CADA) programme was launched. The main objective of this programme became optimising agricultural production through better management of land and water use in the command areas for irrigation projects where there was a considerable gap between the potential created and its realisation. There are five command area development authority (CADA) offices in Karnataka, but only one of these offices - the Tungabhadra Project, Munirabad CADA office - was involved in this study. Here are some of the Command Area Development Authority (CADA) main objectives

- To review and ensure information for agricultural operations and necessary services at appropriate times.

- To improve fertility of soils and regulation of cropping pattern in commensuration with the availability of water.
- To construct field channels and fields drains.
- To prevent and reclaim land affected by water logging, salinity, alkalinity or acidity and erosion.
- To encourage conjunctive use of irrigation water with groundwater.
- To integrate efforts to develop growth centres in command areas.
- To organise co-operative societies and agricultural associations in the command area, to develop and support the existing agricultural co-operative societies in the area, and to ensure that farmers get loans and other services from the societies when needed.

However, one of CADAs most important main objectives is to establish and facilitate Water Users Associations (WUAs) and promote collective participation. CADA's task is to help the WUAs function and become viable in the command area, thus promoting a decentralized and self-regulated management system for efficient water distribution, land/water management, and conservation.

The main observation I made in the field about this part of the institution was that in practice it failed to interact with its self (each other). The communication between the various departments was unquestionably low and the different departments did not strive to know what was happening in the other departments.

3.3.2 Irrigation department (ID)

The Karnataka Irrigation Department is one of the major departments in the Government of Karnataka, headed by the honourable minister for "major and medium" irrigation. This department's main task is to harness surface water for irrigation and drinking water purposes.

3.3.3 Engineering Department (ED)

The ED is in charge of the records of tenancy and crops, and together with the village accountant makes on-site inspections to keep the information updated. (STRIVER, Tungabhadra Basin an Overview 2008: 40)

The ED fills out lists with information, which are then sent to the taluk office in Sindhanur, where the revenue department control that they are collecting the correct fees from the farmers.

3.3.4 Revenue Department (RD)

This authority collects the irrigation water fees. Although this is an important part of the IWM institution, the department does not interact in any other way. The interaction with the farmers is strictly done in a top down manner.

3.3.5 Agricultural Department (AD)

This department is responsible for the cropping design (CD) guidelines, general awareness about agricultural matters i.e. seed distribution, relapsing of the soil texture or water availability

3.3.6 Cooperative Societies Department

The main goal of this department is to take care of co-operatives at village level.

3.4 Distributary 54 Level

3.4.1 Sub Division Offices

However, this distributary is very long it is divided into two reaches. Maksi Sub Division controls the first reach, being the first 16 km in the head reach of D54.

Javalagere Sub Division Office controls second reach – covering the mid reach and tail end. (Their official staff is called Saudis or Gangmen)

3.4.2 Water Users Associations (WUA's)

A WUA is a non-profit organization that the government is promoting in order to decentralize its power to a local level closer to the water resource. Initiated by the CADA officers, the intention is that the local farmers and other water users[17] shall eventually manage the organisation and the local water body. In D54, there is one semi-functional WUA in head reach, responsible for Minor S3R. This means that each farmer is bound by a contract and a set of rules, which entitles him to the collective benefits the WUA achieves in its responsible area. The main idea behind a WUA is to let the water users themselves have responsibility of the local irrigation infrastructure and in most cases the actual management of the water. Currently in D54, the RD collects the water fees. However, one of the main responsibilities of a fully functional WUA is to take collect the water fees. Of the collected revenue 40% is retained, in order to sustain the WUA, as well as pay for the work needed on local water distribution, allocation, and operational/maintenance costs for the local infrastructure. The other 60% is transferred to the RD. The GOI forwarded this in the 80's as a way of decentralizing power and solving common pool resource (CPR's) problems. By establishing a financial incentive, it relieves the government of its responsibilities and gives the farmers the responsibility for the local irrigation system.

The farmers are in theory entitled to the following benefits when joining a WUA;

- Equitable water distribution among farmers
- More reliable water supply
- Water supply becomes more responsive to local crop needs
- Quick dispute resolution at the local level

[17] By water users I am referring to the ordinary cultivators of land, individual members of lease-holding farms, and owners of private farms.

- Well-maintained canals
- Less water theft/ stealing/ Free riding

There are 835 WUAs in Tungabhadra Command Area. 427 of these are registered and 144 WUA's have signed a 'Memorandum of Understanding' with Water Resource Department. Still 408 WUA's have to register. What became evident however was that of the 428 registered WUA's only four are working well, (CADA office, Dr. S. N. Nayanatara, 2006)

As mentioned above in D54 there is only one semi-functioning WUA. In chapter four, I will elaborate further on collective participation, the semi-functional WUA in head reach, and why the situation is not progressing elsewhere in D54 Nevertheless, the title of this thesis highlights that there is little evidence of collective participatory action in D54. It is therefore important to look at hoe the individual farmer fit into this institution.

3.5 Farmer Level

According to the 2001 census, about 3.48 million people or 69% of the state's population live in rural areas. These households are mainly depending on agriculture. (Rural Development and Panchyat Raj Department, 2008). It is not easy to get an exact picture of the farmers – as they vary from region to region and as the following chapter will show, it varies dramatically within the distributary. However, there are some theoretical notions of who "he" is.[18]

3.5.1 Rational Being - generalization

If you use the economic theory of rational being; when faced with several courses of action, people usually do what they believe is likely to have the best overall outcome. (Elster, 1989:22) The idea of the farmer as a rational being can

[18] This thesis is consistently referring to male farmers, as women are more concerned with the domestic choices and drinking water in the Indian context.

more easy be understood when exploring how and why the payment for water relates back to the farmers attitudes, as well as the choice of crop situation.

Elster (1989:27) explains it by using the example of choice of crops. When a farmer has to choose between two crops, crop A and B, then he has to take into consideration external factors; e.g. the weather conditions like rain, sunshine, drought, heavy rainfall or market prices for special crops with popular demand. These unreliable conditions can ultimately jeopardize the farmer's livelihood.

This example shows how the farmer's choices are in theory:

Weather	Crop A (Rupees)[19]	Crop B (Rupees)
Bad	10 000	15 000
Good	30 000	20 000
Average	20 000	17 500

Source: Elster *(1989:27)*

With this example, Elster claims that the farmer is most likely to choose crop B as this crop gives the least risk and possibility of best overall economical outcome. Many rational theorists stop at this point, but I believe that there are also other factors influencing the farmers, not just the rational choice of an economical outcome.

3.5.2 The root of the IWM Institution

I have chosen to see the farmers as part of the IWM institution rather than thinking of the IWM institution above farmers' level. In fact, I claim that the farmers are the very root and base of the IWM institution. Arild Vatn (2007:3) explains this notion particularly well:

> *The literature offers great abundance when it comes to defining the concept of an institution. It is, however, possible to draw a distinction between two quite distinct clusters of characterizations – between those defining institutions as external constraints or "rules of the game" and those seeing institutions as also constituting or forming the individual.*

[19] In Elsters' example he uses dollars – however to make it more relevant to the Indian context I have changed it to Rupees.

The first approach is the old school of institutionalism and the latter is the new institutionalistic way of thinking. Vatn (2007:3) explains this phenomenon:

> *Concerning what institutions are, there is no important difference between representatives of the new and classic schools. Distinctiveness comes first when one considers what they do. Especially the idea that institutions provide meaning, support values, and produce interests is specific to the classical stand. It is therefore socially constructivist at two different levels: a) institutions are themselves seen as social constructs – as a result of social processes; b) they also influence the social construction of man or what it means to be human.*

Vatn concludes that, the new institutionalist integrates the individual as a part of the system, rather than just a passive participant or receiver. I have chosen this new institutionalistic approach, to be the way to view the individual farmers in D54.

3.6 Concluding remarks

As this chapter outlines, the IWM institution is a highly complex and diverse institution. In theory, it is possible to understand who is in charge of the various parts of the IWM process. However, in practice, the IWM institution is far from what theory claims it to be.

The following chapter will look closer at the average farmer we met in the three reaches of D54. By looking at the individual choices (i.e. of cropping pattern and payment for water), it is easier to understand what the farmers' thoughts are on collective participation and on WUAs. Further, I will present some statistical findings and findings on 'who the farmer really is' along D54. The chapter will also look at the laws in place in regards to the three actions mentioned above. This will clarify the difference of what the institution demand of the farmers by law, and how the farmers are acting in practice.

4. The farmers and the rules ensuring their rights

In this chapter, the farmers' characteristics in D54 are explained. These characteristics are connected to the location of land along the distributary. Hence the focus is on the three different reaches of D54; head reach, mid reach and the tail end. Some characteristics are more easily explained through the quantitative data from the STRIVER household survey, while other factors relate to the intangible social relations or aspects and are explained through observations. Interwoven with the three hypotheses from the introduction chapter, on participation through WUAs, payment for water, and choice of crop, the everyday issues and concerns emerge. This chapter will thus act as a base for the following two chapters.

In response to the findings that show how the farmers are participating in the IWM process, the laws are described in order to reveal how the participation is either violating or following the existing rules. In this way the actions is revealed in theory, in order to follow the logic behind the farmers' actions and the situations in practice.

4.1 Determined farmer characteristics, due to the location of land in D54

There are noticeable predetermined natural conditions related to who the farmer is. By dividing D54 into three different reaches – head reach, middle reach, and tail end – the location of the land determines who the farmers is. (See map in Basic Concept of Irrigation Water Management)

The head reach being closest to the Left Bank Canal is, more or less ensured a constant flow of water. This is reflected in the size of the land, which is almost twice as big in head reach as it is in middle and tail end.

Crop Area	Average acres
Head:	16.8*
Middle:	9.9 *
Tail:	7.9 *

Total amount of acres based on two main crops in the three different reaches, in Kharif season. STRIVER HHS Data, March 2008

The educational levels vary greatly in the three reaches. The average farmer in head reach has completed 6 years of education, while over 50 % of the respondents in tail end answered that they have zero years of education.

Education	Average years	
Head:	6 years *	(15 out of 72 respondents answered 0 years of education)
Middle:	4.2 years *	(30 out of 72 respondents answered 0 years of education)
Tail:	2.75 years*	(38 out of 72 respondents answered 0 years of education)

Total amount of years divided by 72 interviewees in each reach, STRIVER HHS Data, March 2008

The average household size is more or less the same across the three reaches, but the tail end has more people per household and therefore smallest space per person. The income is much less as are the general living conditions in the tail end areas.

Household size	Average
Head:	6, 8 people*
Middle:	7, 27 people*
Tail:	7, 29 people*

Total amount of people per household divided by 72 interviewees, STRIVER HHS Data, March 2008

These statistics help to understand the average farmer in each of the three reaches. The variations in land, educational levels, and household sizes say something about the individual farmer and who he is. In order to get an understanding of why and how the farmer participates in the Irrigation Water Management process, the Household survey (HHS) revealed some interesting statistics regarding collective participation through WUAs and individual participation through payment for irrigation water and choice of crop.

4.2 Collective Participation

In head reach, when asked about collective participation, only nine of the seventy-two respondents were members of the semi-functioning WUA. Interestingly, two farmers said they where in a WUA in mid reach, and three respondents in tail end claimed to be part of a WUA. However, in practice, was there was no active WUA in either mid reach or tail end, but I assume that the respondents might have paid a membership fee to another organisation. The reason given for joining a WUA from all the farmers in the three reaches was to receive training. The rest of the respondents, 68% chose the option "I don't know about any WUA,"[20] as a suitable reason for not being part of a WUA. Several others answered that the reason for not being part of a WUA was that there was no WUA present in their village. In the tail end, only a handful of the respondents had heard about the WUA concept. This shows that there is a lack of information on what a WUA is in D54. Despite the claimed effort from GOK and IWM institution, information has not yet reached the farmers.

Nevertheless, I observed a willingness amongst the farmers to consider a WUA if they received information, as well as be part of a WUA. In mid reach, however, 13 out of 72 respondents answered that there was too little water reaching their land. To them, this meant that there was no need for a WUA. Indeed, several of the respondents concluded that too little water was reaching their farm (12 out of 72 answers). This seems like a contradiction, when one of the main reasons to start a WUA is, after all, the wish to ensure better conditions. In the coming chapter, I will use the statements of the farmers to make this contradiction less confusing. However, there are many rules to ensure that the farmers are collective participants in the IWM process.

[20] This reason is directly from the original STRIVER HHS, March 2008

4.2.1 Rules in place for farmer participation through WUAs

As described in my introduction, the GOI has tried to include the farmers in the water management process in several matters on a local level during the last decade. A decentralization process evolved where administrative and political responsibilities were given to lower levels of official instances, closer to the core of occurrence. However, a recognised problem with decentralisation is that the devolution of power does not necessarily improve the performance and accountability of local governments. Indeed, in many cases, decentralisation has simply empowered local elites to capture a larger share of public resources, often at the expense of the poor (Craig Johnson, 2003). Theoretically, the decentralization process was meant to enhance the participation of farmers and local bodies.

This opened up for a new way of dealing with the growing concerns related to irrigation water management. By transferring some of the responsibilities to the local official bodies in the IWM institution, the farmers themselves were to be included in a more responsible way. Two closely related concepts surfaced in the 1980s. Irrigation Management Transfer (IMT) and Participatory Irrigation Management (PIM). IMT is defined by Brewer et. al (1993) as “the transfer of rights and responsibilities for irrigation management activities of an irrigation system from a government agency to a private or local person or organisation.” Participatory Irrigation Management (PIM) is in turn, defined as “the involvement of irrigation users in all aspects and levels of irrigation management” (Vermilion 1997).

Brewer et. al (1993) clarifies that the IMT transfer process does not need to include farmers control of the entire irrigation system, but rather some specific parts of the irrigation system and some specific management responsibilities (Ibid: 12). Most discussions about IMT and PIM are about the assumed transfer of responsibilities from the government to Water User Associations (WUAs). The involvement of farmers in irrigation development and management was seen

to be the key to a sustainable irrigation system. Because of this shift – many new laws was established on both a national and state level.

The National Water Policy of (2002) stipulates the right to be part of WUAs under the heading of Participatory Approach to Water Resources Management:

> ***12.*** *Management of the 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. Necessary legal and institutional changes should be made at various levels for the purpose, duly ensuring appropriate role for women. 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.*

At national level – the rules are meant to act as guides, which should be stregthened by the State Water Policy acts. The Karnataka State Water Policy (KSWP, 2002) states the farmers' rights in a section also entitled Participatory Approach to Water Resources Management:

> ***6.7.*** *The management of water resources shall be done adopting a participatory approach. Necessary legal and institutional changes will be made. The ultimate goal will be to transfer operation, maintenance, management and collection of water taxs to users groups [WUAs].*
>
> ***6.8*** *Minor Irrigation works and sub-systems of Major & Medium Irrigation works will be rehabilitated with participation by the users of these tanks and subsystems and handed over to Users Organization [WUAs] for operation, maintenance and management. Technical assistance will be rendered to Water Users Associations and they will be encouraged to undertake land levelling and also take up cultivation of high value crops requiring less water for efficient use of scarce water.*

The KSWP specifies the law in detail, as well as explaining the functions of WUAs:

> ***6.9*** *To create awareness among citizens on decentralization user participation and involvement in decision-making, implementation and management of water resources projects, campaigns will be undertaken.*

The lack of knowledge and information about the benefits farmers can achieve when being a part of a WUA and of a collective action, is making it hard to blame the farmers in D54. However, the semi-functioning WUA in head reach suggests that it is possible to achieve an association, if proper effort is put into the realization of the WUA. The next chapter will reveal how this WUA is struggling due to the lack of farmers' ability to cooperate collectively between themselves, and more importantly how the lack of consent from the CADA office is holding its authority back.

Another important individual action, where the farmers are interacting with the IWM institution is when the farmers choose to pay or choose not to pay, for their irrigation water.

4.3 Payment for irrigation water

There was an understanding in all the reaches that farmers should pay the water fee.

Reach	Average %	Paid in which year
Head:	83 % (60 out of 72 farmers)	2001 – 2008 (most paid in 2007)
Middle:	84% (61out of 72 farmers)	2000 – 2007 (most paid in 2007)
Tail:	93% (67 out of 72 farmers)	1975 – 2007 (most paid in 2007)

STRIVER HHS Data, March 2008

The fact that most of the farmers have paid fees within the recent years is a good indication for how this particular part of the IWM process is functioning. However, it does not indicate that the farmers are doing this on a regular basis, nor does it reveal the reasons behind why the farmers are paying, or not paying

the water fee. I will follow this up in the next chapter – when the farmers tell me their intentions.

4.4 Rules in place for payment for water

Since the issue of payment is decided on a state level, the KSWP (2002) describes what the rates are "meant" to be used for:

> ***6.15*** *Water rates for various uses will be revised in a phased manner and fixed so as to cover at least the operation and maintenance charges of providing services*

Hence, the water rates are meant to cover the operation and maintenance (O&M) cost in the area where the official body is providing water. These costs vary from state to state – and drastically within the states. Where there is a lack of water and the infrastructure is hard to maintain, the water rates are high. In the semiarid states and regions, like Raichur and D54, the water rates should be much higher than they are today. The reason for low water rates is so that everyone in the system – poor and rich can pay. However, the fees are not enough to ensure proper O&M, resulting in a fast deteriorating irrigation infrastructure.

To understand the procedure the following list illustrates the current irrigation prices in TBRP area:

Water Rates - 2004-05	**Per hectare**	**Per acre**
Crop		
Sugarcane	988,45	400
Paddy	247,1	100
Cotton	148,1	60
Horticulture	148,25	60
Wheat	148,25	60
Groundnut	148,25	60
Sunflower	148,25	60
Jowar, Maize, Navane, Arekushki crops	86,5	35
Grains	86,5	35
Tobacco	86,5	35
Fertilizer crops	37,05	15
Others	86,5	35

Figure 8. Source: STRIVER TB water utilization, ISEC, 2008

This shows how the water fees relate to the specific crops. The water fees are not based on a volumetric pricing facility, but rather on the size of land and the type of crop, which the farmer has chosen. Since sugarcane and paddy are water-intensive crops (paddy needs to stand in water), the price per acre is much higher than for less water-intensive crops such as cotton or maize.

By not paying for water, farmers choose not to contribute to the IWM institution and its development. This, in turn, affects the distributary as a whole. The farmer will be looked upon as an encroacher or a free rider – receiving water but not paying for it. There are rules for those who steal water and chose not paying- this is labelled as illegal water withdrawals. I found that the current KWSP (2002) specifically mentions how to deal with this issue related to non-payment. In the section **'**On Removal & Prevention of Encroachments'

> ***6.17*** *Unauthorised pumping / lifting / siphoning of water from main canals, branch canals distributaries will be prevented.*

During the initial walkthrough along D54, we encountered several unauthorized pump sets, which made me think that there are holes in the monitoring. However, when I asked the gangman Mr. Ramapapy what he would do about it, he just laughed and did not want to talk about it. His duty, according to law, was to remove the pump sets, but that did not seem to his intended plan.

It was brought to my attention that there was a possibility of receiving a bank loan when you had a receipt showing that you had paid for your water. This incentive is one of the reasons why many of the farmers pay the fee. I will return to this matter in chapter six.

Although there are several ways of judging the progress of collective participation, the following section shows how the current individual action of choice of crop is a matter of collective interest with consequences for the rest of the farmers and the IWM process.

4.5 The individual choice of crop - Cropping patterns

The most common types of crops grown in D54 are the following:

Reach	Main crop	Second crop
Head:	Paddy (rice) grown in both seasons	Paddy grown in both seasons
Middle:	Jowar and Paddy (mainly Kharif season)	Sunflower, Jowar and Cotton
Tail:	Sunflower and Jowar (mainly Kharif season)	Sunflower, Jowar and Cotton

STRIVER HHS Data, March 2008

What this proves is that where there is water – i.e. in the head reach – the farmers utilize this potential fully by growing the most water-intensive crop: rice. Head reach farmers also grow rice in both Kharif and Rabi season, which makes the water conditions further down the stream harder in the Rabi season, when the water release is at a minimum. It is also important to acknowledge that the middle reach grows rice in Kharif season, although, there is a greater tendency to grow jowar (millet) which is much less water-intensive. In fact, out of the 72 farmers asked in head reach, 95, 8% of the farmers grow in both Kharif and Rabi season, also referred to as double cropping. In mid reach, only 44% of farmers grow in both seasons. In tail end, 31.9 % of the farmers grow in both seasons. This shows how adaptation to the water availability occurs naturally in the three reaches – and determines the choice of crop.

In tail end you find mainly sunflower, cotton, and jowar – all of which are low water-intensive crops. Little grows in tail end during Rabi season and the farmers here told me that they mainly work as labourers for other farmers during this season. I observed completely dry canals of about 30 km in D54 during my stay – meaning that there must be several areas without a drop of water in the tail end area. There are alternative sources of water. Borewell water, which pumps up groundwater, is one such alternative. Another is a so-called lift irrigation system, which pumps water from a source far away and into the field canals with the help of gasoline power. This was observed to be mainly in use in mid reach and in tail end, but also in the head reach. However, the use of borewell water leaves the farmer restricted, as it is hard to cover large quantities of area with such an

irrigation facility. The borewell water is throughout the distributary used for drinking purposes – meaning that the farmers are using valuable water essential for sustaining their family's livelihood, to grow a couple of acres of crop. In head reach, the farmers are growing almost the same amount of paddy and earning just as much money in both seasons[21]. This shows the differences related to the management of irrigation water as such, and the task the government has in ensuring water to all of the farmers along the distributary.

4.5.1 Rules for ensuring that the Cropping Design is followed

As mentioned above, the different crops represent different water intensities. This, together with the available irrigation water, has to be taken into consideration when the farmers choose their crop. Each year the CADA office in Karnataka prepares the official cropping design for TBRP command area. This is meant to be shown to all the farmers in the designed area and thus followed by the farmer. This guideline is based on water availability and soil conditions within the distributary.

The initial cropping pattern design produced in the 60s is still being used as the starting point for the 'new' CD each year.

Dist.54 1960-70	**Distributary km**	**Distributary Water discharge Cusecs**	**Paddy**	**Areca nut**	**Cotton**	**Kharif**	**Rabi**	**Total Acres**
Dist.54 Head reach *	16.1	381	781	318	3073	6461	7183	17816
Dist.54 Mid reach and tail end *	27.1	-	1490	1008	12995	25347	28428	69385

Figure 9. Source: Irrigation Department meeting 18.03.2008

[21] Based on data from STRIVER household survey, March 2008

What became evident was that neither the farmers nor the officials with land along the stretch follow the guidelines – even though there are several laws on this matter.

One of these laws is the Karnataka Irrigation Act 1965 (amended in 2000), mentioning the following on CD:

> *32. Power to prescribe the kind of crop to be grown under the irrigation area and the period of sowing such crop.-*
>
> *(1) Whenever the State Government is satisfied that for the better cultivation of lands and due preservation of the water-resources of an irrigation work, it is expedient and desirable in public interests to regulate the kind of crop that should be grown on lands under such irrigation work and the period of sowing such kinds of crop, it may, by notification, make a declaration to that effect.*
>
> *(2) On the making of a declaration under sub-section (1), the Irrigation Officer, after consultation with the committee appointed under section 27 and with the approval of the Deputy Commissioner, may specify by notification published in such manner as may be prescribed, the kinds of crop that shall be grown on any land under such irrigation work and the period of sowing and planting such crops.*
>
> *(3) On the publication of a notification under sub-section (2), no person shall grow or allow any crop other than the crops specified in such notification to be grown on any land under such irrigation work and no person shall sow or plant or allow the sowing or planting of crop at any time other than during the period specified in such notification.*
>
> *1[(4) In all cases in which the person who has sown or grown any unauthorised crop or allowed any land to be grown or sown with such unauthorised crop cannot be found the holder of land, in addition to such other person concerned, shall,-*
>
> *(a) be liable for contravening the provisions of this section; and*

> *(b) also be liable to pay such water rate, 2[or water charges as the case may be]2 as may be determined by the Irrigation Officer, not being less than the five times and not exceeding ten times the water rate 2[or water charges as the case may be]2 which he would otherwise have been required to pay: Provided that if no water is utilised either directly or indirectly from the irrigation work for growing any crop, the provisions of sub-sections (3) and (4) shall not be applicable.]1 1. Substituted by Act 12 of 1969 w.e.f. 19.6.1969,2. Inserted by Act 24 of 2000 w.e.f. 14.6.2000.*

The rules for not following the cropping patterns are, in theory, strict. If the CD is not followed and violations occur, the punishment the officials can issue are clearly outlined in the rules above. When I asked the CADA officers why all the farmers are breaking such an elementary part of the IWM process, their reaction was to laugh aloud and tell jokes about how they themselves are not following the CD. Hence, the reason that the present CD still exists – is so the GOK can say that they have done their duty as officials and provided a design based on the water availability and soil conditions in all areas. In doing so, the blame for the current water scarcity scenario is forwarded to the farmers. However, as the following chapter will highlight, none of the interviewed farmers have seen the cropping design, and though many of the farmers are breaking the law, there are no legal enforcements or punishments for those who do not follow the CD.

There have been several attempts to ensure an equitable distribution of water to all the lands under each outlet of the command area. The most successful is the Warabandi system. In this governmental controlled system, each farmer gets water turn by turn for a fixed time, in intervals proportionate to the extent of their land. The NWP (2002) suggests the Warabandi system as a solution to ensure better equality of water sharing, regardless of location.

> ***9.3** Water allocation in an irrigation system should be done with due regard to equity and social justice. Disparities in the availability of water between head-reach and tail-end farms and between large and small farms should be obviated by adoption of a rotational water distribution system and supply of water on a volumetric basis subject to certain ceilings and rational pricing.*

In practice, this system works in head and mid reach in D54, but water scarcity and management issues are still occurring. In the tail end, where the situation is the worse, the system is vaguely present (only 10 out of 72 farmers informed that there was a Warabandi system in their minor).

4.6 Concluding remarks

In head reach, problems and issues were small. Here the education level was high, there were good drinking water facilities, there were large plots with an average of 16.8 acres, and one semi-functioning Water User Association (WUA). With more or less constant flow of water, the farmers grow water-intensive crops such as rice and sugarcane, and choose to grow in both Kharif and Rabi seasons[22]. Another interesting issue was that this area had little interaction with officials at lower levels. My main impression was that there was a wish to be included in the officials' daily business related to irrigation water management.

In the middle reach, issues related to water became more prominent. The latest assessment made by the Irrigation department, shows about 36,470 out of 69,000 acres of localised area in second reach acres are found to be suffering from lack of availability of canal water (Tail-enders and Other Deprived in the Canal Water Distribution, GOI, 2003:9). The farmers in mid reach have less land than in head reach. There was a tendency to grow water-intensive rice in Kharif season and less water intensive crops in Rabi season.

Robert Chambers states that the deprivation of tail end is notorious, (1988:21) and this is confirmed repeatedly in most cases where IWM is studied. The tail end is at the end of main canals, branch canals, distributaries, minors, or field watercourses – tail enders suffer the most. Deprivation can be different issues - sometimes it can be excess water or seepage. Nevertheless, often, deprivation

means to receive too little water, to receive the water too late, or, indeed, to receive no water at all (Ibid: 21). This particular situation is due to the specific location at the tail end of the waterway. In the case of D54 the tail enders are definitely worst off. They have much less land, grow low water-intensive crops, and receive a much smaller income than farmers from the middle reach and head reach. Knowing that the natural conditions are harder in tail end areas, the IWM institution is responsible for ensuring water to this reach.

The following chapter allows the farmers to voice their concerns and thoughts on what they see to be the issues related collective participation, choice of crop and payment for water.

[22] Kharif is the summer season which lasts between April and September. Rabi season goes from October to December. The State of Karnataka also operates with a third season: the summer season from January to March. But very few farmers grow in this season.

5. Collective Participation

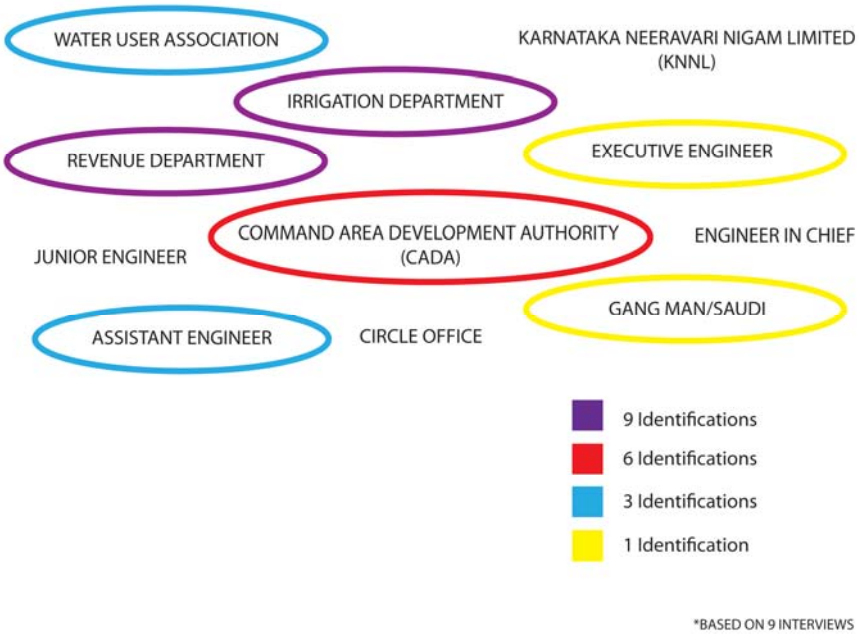
This chapter will reveal how the farmers themselves are experiencing their role within the IWM process. By using the farmers' own statements, their argumentation reveals the status of today's situation in D54.

The first section of this chapter will identify whom the farmers are interacting with, and what these interactions result in. This will make it easier to identify current holes in the IWM institution and give a better understanding of what the farmers feel that they are influencing in addition to being a part of.

This chapter will also relate back to the hypothesis: The farmers do not see Water User Associations (WUAs) as realistic alternatives to better the current irrigation water management process, due to too few benefits for the individual farmers. By confirming or rejecting this, the farmers reveal their thoughts on collective participation through WUAs, as well as how they relate to this concept.

5.1 The farmers interaction pattern with the IWM institution

I asked the farmers to point out to me which officials and organisations they had interacted with in the last years. The following results were uncovered:



The farmers identified that the main sphere of actors who are involved in their everyday lives, were at taluk level. It was not that the farmers where unaware of the existing IWM institution, only that daily interactions were limited to the departments within this level.

Although the study sample size is small, it gives an indication of whom the farmers mostly interact with in the IWM institution. The irrigation department (ID), revenue department (RD), and the CADA officers are the three departments that the interviewees said they had interacted with the most.

What became evident was that there was no identification of the officials at the lower levels. The little interaction with the gangmen and those who in theory should have the most contact with the farmers, proposed a questionable situation. I had assumed that there would have been more interaction between the lower levels and the farmers, but the following revelation was now a challenge to follow up in all the three reaches. My main assumption was that in head reach there would be more interaction and awareness with both officials and the IWM institution. Further, down D54, I presumed there would be less awareness and interaction.

5.1.1 The lack of IWM official staff

In D54, there are two division offices, first reach Maski Sub Division office, which is in charge of head reach (0-16 km). The second division office is Javalagere Sub Division Office. Their responsibility is mid reach and tail end 17-43.2 km. The sub division officers accompanied the STRIVER team during the fieldwork. Ironically, the officers had not visited all the villages we had on our list. This became evident when several farmers revealed that they had never spoken to the lower levels of the IWM institution. Mr. Avinandan Singh in the head reach explained:

> *"Some people [from the official bodies] come in between, maybe twice a year, but there is hardly any interaction with officials."*

Mr. Singh pointed on the chart and said he had interacted with RD, ID and CADA, but no interaction with Saudis or gangmen[23]. Another farmer in head reach Mr. Pradip Yani confirmed this, as he made it clear that there is:

> *"Not much interaction with any of the departments, but I am not concerned. Since the revenue department is getting their money it benefits us all and we are happy with the conditions." Continuing Mr. Yani said, "If we have any problems, we approach them [the officials]. They never come here to speak to us on our issues."*

The assumption by the farmers that as long as the water fees are paid – everything will stay the same as it is - indicates that the conditions are good in the head reach.

The reactions where different in mid reach, where a frustrated Mr. Krishna Babu wanted to know where to go with his different problems and issues. He meant that there was a lack of officials to interact directly with, when wanting to solve his issues.

> *"These people from CADA and their departments or other institutions, should came and talk to us. They should come here more frequently, but our issues are not a matter to them. I have interacted with several institutions, [he points to ID, CADA, Executive Engineer, Saudi/gangmen, and WUA on the chart], but I would not say that it has had any huge impact on my situation."* [24]

Mr Babu wants more interaction, and action related to communication with officials. A frustrated Mr Babu did not know how he could relate the status of the mid reach conditions to get response. Farmers from all the three interviews done in mid reach were of the same mind. In the tail end Mr. Avin Vinjay was of a different opinion:

> *"We [tail-enders] do not approach anyone. They [the officials] tell us to be in an association and that we should cooperate, but this has not happened here yet."*

[23] Interview done on 20.03.08
[24] Interview 21.03.08

A fellow farmer, Mr. Rajeev Khan was the only farmer from those interviewed, who had approached a member of the lower levels of the IWM institution.

> *"When we have a water scarcity issue we go to the gangmen or the canal-supervisor and ask them to increase the gauges. They normally do. […] If a farmer did this [controlling the gauges], they would fight with each other. This is why we are experiencing difficulties in the existing Warabandi system, where some of the farmers are in charge of releasing the gauges. I would prefer the ID should do this job, not the farmers"*

Mr Rajeev questions the ability of the farmers to actively manage the last instance of the IWM process, and is not pleased with the situation as it is today. He expressed that he felt threatened by the current situation, as it leaves him vulnerable and a competitor to the other farmers, rather than an empowered part of a group. Wanting to be part of a functioning IWM institution with clear roles and rules, seem to be Mr. Rajeev's main aim in the tail end.

This reveals that not all of the farmers feel they need to be included or have a prominent voice in the management process, (at least not at the tail end). On the contrary, they prefer that the officials deal with the infrastructure, the allocation, and release of water. Empowerment and participation from the farmers is not necessary their own wish. Their wish is for a working institutional setting where they are the benefiting receivers. Today's rules laid out in chapter three, states that in theory the farmers should be active. In practise however, this is not happening.

When researching in more depth, I realised that there were many hinders outside the IWM institution. These problems were related to the institution, but in a more human way. For example corruption from the official side, free riding where some farmers take the liberty to withdraw water but not pay for it, crop violations and double cropping resulting in less water for the farmers in the tail end in both seasons. These individual actions have individual benefits, but the consequences affect the entire distributary collectively. The most surprising hinder, was the notion of a strong individual farmer, speaking about his fellow farmers as 'we or

us,' but where collective action with the other farmers could not be seen. This lack of collective participation led me to the hypothesis that: *'The farmers do not see Water User Associations (WUAs) as realistic alternatives to better the current irrigation water management process, due to too few benefits for the individual farmers.'* The following section will investigate this thought further.

5.2 Why should the farmers participate collectively?

> *"Through the association we will be strong. It is much better than being just individual farmers"*[25] *Mr. Jabbala, Secretary of WUA Busupur.*

When looking at the IWM institution and today's rules, GOK is putting a great deal of importance on the shift of responsibilities from state to collective WUA's and the farmers. However, the attitudes among the farmers are not necessarily coherent with the laws and rules. The farmers are not yet aware, or convinced that a collective voice will give them benefits. This does not seem to be taken into consideration within today's context.

In the illustration beneath, I have gathered the function and goal of a water user association

	Function	Goal
WUA	**Social** • Mediator • Collective sphere • Collective action **Economical** • 40% of water fees • Less free riding **Technical** • In charge of infrastructure • O&M • Water distribution • Technical training **Political** • Local empowerment • Collective Voice • Local monitoring authority	**Sustainable Irrigation System**

Figure 11. Source: Mai Simonsen (2008)

[25] Interview done 23.03.08

5.2.1 The conditions for setting up a WUA

In Karnataka, the formation of WUA is done in accordance with the Karnataka Irrigation Act, 2000. In order to make the best utilization of available water, the GOK amended the Irrigation Act of 1965 in June 2000. The amendments emphasise that irrigation management responsibility can be given from the Irrigation Department (ID) to WUAs at primary, distributary, project, and State level. Prior to 2000, WUAs could only have responsibility of a minor or a part of a distributary.

To register an association, the farmers have to collect a minimum of Rs.10, 000 for shares and deposit it in the District Cooperative Bank (DCC). The initial contribution per farmer is Rs. 115 (share money- Rs. 100; share fee-Rs.5; entry fee-Rs.10). In the case of Scheduled Caste (SC)/Scheduled Tribes (ST) farmer[26], government pays Rs.115 to enable them to become members of the society. The Board of Directors of WUA's has to contain eight members of who three should be representative from tail end, SC/ST and a women's category. CADA officials register the society once the money is deposited in the Bank. When these criteria are fulfilled, the Irrigation Department will enter into Memorandum of Understanding (MOU) regarding water management prior to the season.

Although this initial process seems straightforward, it is difficult to get the WUA to function. There are 427 registered WUAs in the entire TBRP. Only 144 of the WUAs have signed a MOU, and according to STRIVER,[27] there are only four functioning WUAs under the Tungabhadra CADA office. In D54, there was one semi - functioning WUA in head reach.

[26] The Scheduled Caste (SC) and the Scheduled Tribes (ST) are the lowest cast in the traditional Hindu ranking system. SC and ST used to have almost no rights, but today the Indian Constitution has outlawed any caste based discrimination. However, the Caste System is still very much alive in practice as the traditional perceptions and political relations are incorporated into the everyday lives of millions, especially in rural areas.
[27] Tungabhadra River Basin – An Overview, ISEC, 2008:41

5.2.2 Current semi-functioning WUA in D54

In D54, there was only one WUA in the head reach town Busupur. It was registered in August 2005 when 105 farmers paid the initial fee. However, it is still not operational, as the board have yet to sign the 'Memorandum of Understanding' with ID. The secretary Mr. Jabbala explains why this is the case:

> *"There are many rules which need to be followed. Due to lack of cooperation amongst the members, it hard to follow these rules, and this is used against us. The ID is not willing to give us the full responsibility just yet [i.e. a MOU]. This means that we cannot collect the tax nor can farmers see the visible results of being part of a WUA."* [28]

Here the farmer's lack of cooperation can be seen to be the reason why the ID is not giving them the full responsibility. When I posed this question to a CADA officer, he told me

> *"I go where societies are active. There I guide them. […]Where there is participation from the farmers, activities are possible to achieve. As it stands now I feel that WUAs are on paper – not in practice, as there is very little activity today."* [29]

If the farmers understand the various options they have, but do not take them, then it is legitimate that the CADA officer expresses such a statement. But the CADA officer must be present the inform and initiate the activity he himself is seeking.

The procedure of setting up a WUA outlined above is meant to assure proper participation resulting in proper actions and outcomes. Mr Jabbala, the secretary describes the situation Busupur WUA is facing in detail:

[28] Interview done 23.03.08
[29] Interview done 03.02.08

> *"Firstly the ID has to give us the cusecs (cubic litres per second) for our particular minor and only when we have this information on paper – can both sides has accept the new power switch. When we are in charge of this – we can follow and monitor everything in the minor. Without this information it is very little we can do."*[30]

The CADA officer, who made the comment about WUAs only functioning well on paper, is in my mind a classic example showing lack of genuine effort to want the WUA to operate properly. It takes little effort to point out that the situation is working on paper, but a lot of effort to make it work in reality. This is in fact the CADA officer's job. To illustrate this point Mr Singh the president of the Busupur WUA, said:

> *"Today the WUA has only had two meetings with our members, and it is always related to when a problem arises. Therefore, the members are not sure on how to use the association. But there is not much we can do about it, as we are not able to do more without the full consent from the CADA office."*[31]

At present, few farmers can see how the WUA will benefit them. At the same time the IWM officials demands the farmer's attention and wants insurance that they will collectively and actively, be part of the WUA.

Nevertheless, the IWM institution above farmer's level is not taking the status of the WUA seriously, meaning the WUA has very little empowerment. Mr Singh the president of the WUA explains:

> *"In the future we can deal with the issues amongst ourselves and hire in external help if needed. Then it would be us in charge directly rather than the ID. We have sent ID a letter about our serious problems, but hard to use this WUA when we are lacking the last formal approval"* [32]

Immediately after this statement from the president of the WUA, the secretary enthusiastically continued:

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[30] Interview done 23.03.08
[31] Interview done 23.03.08
[32] Interview done 23.03.08

> *"If the farmers and the GOK are willing to cooperate amongst each other and with each other, then this WUA will work. This unfortunately is not the case today – but it can work in near future. We are only in the beginning of the process, and the change takes a lot of time to get used to."* [33]

Their belief in the WUA will probably with time lead to a well functioning organisation. However, none of the farmers interviewed were members in the current WUA and only six out of the nine farmers knew what a WUA was or had opinions on this matter. In tail end, it was an alien concept, as none of the three farmers I interviewed had heard of a WUA.

5.2.3 Chicken and egg situation

Mr. Arjun Sengupta in mid reach told that:

> *"The reason for no WUA in this area is that there is no cooperation between the farmers. There should definitely be one [WUA], but there is no local will for it."*[34]

The lack of cooperate among the farmers is a major issue and seems to be the toughest challenge for the farmers. The head reach farmers are enjoying and profiting with their situation. The idea of giving up some of their advantages, in order to ensure benefits for the farmers downstream is small, as there are no current incentives. The head reach farmers are rational beings per definition. In the head reach, Mr Avinandan Singh explains: "We did try to form a WUA, but because of lack of corporation between the head and tail, we discontinued" [35] Realizing that there ultimately is a chicken and egg situation present, how and who will have to take the first initiative? The farmers are waiting for action from the Irrigation Water Management institution. The IWM institution is awaiting action from the farmers. The present initiative of a WUA is a top down approach, which GOK is obliged to enforce by law. However, reality shows the practice of

[33] Interview done 23.03.08
[34] Interview done 22.03.08
[35] Interview done 20.06.08

this enforcement lies in the willingness among the officials and farmers to cooperate and to participate.

Hence, the current situation is not ideal. Mr. Arjun Sengupta explained how the farmers in mid reach are currently dealing with their situation:

> *"When we are facing problems, we firstly go to the Irrigation Department. Here we speak to the Executive Engineer and we try to get them to interact with the other institutions in order to better our situation. If this does not result in anything, we secondly go to the MP's [Members of Parliament]. We talk to these people and explain the situation. If this does not work either, our third option is to sneak out at night and divert the water to our field by placing lots of stones in the main canal. It s the only way we can solve the immediate crisis we are facing. […] We have to take the matter into our own hands"* [36]

This shows how the farmers themselves have ways of dealing with their own issues. Due to lack of efficient ways of channelling their issues, their need to be heard has turned into short time solutions, which again has consequences for the farmers further along the minor. This implies that if the official IWM institution is functioning, but the farmers lack a receptive institution, the result is violating actions. A receptive facility with the ability to communicate, would probably lead to more sustainable solutions.

5.2.4 No information about collective benefits of a WUA

Although GOK has tried to make considerable progress in the formation of WUAs in TBRP and other projects, D54 has a long road ahead.

The direct incentive of 40% income from the irrigation water fee collection will sustain WUA's activity, have benefits for the individual farmer, as well as operate and maintain the local infrastructure. The president and the secretary of the WUA in Busupur were both convinced that if they collected the fees rather than the RD, the utilization of water would be much better. They also said that

[36] Interview done 22.03.08

this act alone would show the farmers that they are in control and can influence their livelihood more directly, by being a member.

There seems to be more benefits that the farmers could achieve by being part of a WUA, than not. The most important point would be a more equitable water distribution among farmers. Probably also a more reliable water supply as the water supply becomes more responsive to the local crop needs. The WUA would be able to monitor the current crop need much closer than the few officials do today. The association would also be an arena to deal with the occurring disputes at the local level. Eventually it could result in a better-maintained distributary with less water theft, stealing and free riding.

However, none of these benefits were mentioned, talked about, or found anywhere. On the contrary, the focus was on the lack of willingness to cooperate amongst the farmers. This focus makes it difficult to sustain a positive attitude.

5.2.5 The tail enders are loosing

Mr. Santosh Naik in the tail end said:

> *"I am not aware of what a WUA is. I don't think the head of this village knows what that is. [After explaining the concept of a WUA to Mr. Naik he continued] If we had a WUA all our problems would be solved. However, no one knows about this. Today when we have a problem, we approach the ID as a group and tell about the lack of water. This normally results in one day extra with water."* [37]

This statement reveals the level of impact the actual farmers in tail end are achieving today. All the interviewed farmers are dealing with their immediate needs in an acute manner, rather than focusing on sustainable long-term solutions. This short-term thinking reveals the need for a WUA.

[37] Interview done 21.03.08

Another farmer in the tail end, Mr. Rajeev Khan, asked, “What is WUA?” The fact that the farmers downstream are lacking knowledge of what a WUA is shows the need for more information. The issues are greater downstream tail end and therefore the need is stronger for a collective voice. It also shows how the rest of the IWM institution is failing to incorporate the farmers, in all reaches and especially those who need it most.

To this point Mr. Santosh Naik in tail end explains:

> *“We have gone and approached the head reach farmers as a group, but nothing happened. There is no interest from the official’s side, so hard for us to have a say in anything to do with the management of irrigation water. If the farmers in head reach grew 5 acres with rice and 5 acres with a less water intensive crop, there would be more water for us. But they grow 10 acres of paddy.”* [38]

The most important issue for the people in the downstream of the distributary is that the water comes that far. Although they demand water by visiting the CADA offices, when it reaches a critical point, there seems to be a lack of knowledge and sustainable long-term solutions from the officials. Perhaps the farmers feel like beneficiaries of the system rather than an impacting part. The lack of cooperation between the farmers themselves results in clusters of individual farmers gathering when needed (in a crisis), rather than functioning as a more viable farmer group.

Robert Thörlind (2000) explains that traditional informal networks at village level often are clientelistic, but the clients themselves do not find the situation oppressive. (Ibid: 17) The fact that the there is a vertical trust between the patron (for example the head of the village) and the client (the farmer) and that the farmer actually prefers the head of the village to be involved rather than himself, is in my mind a very interesting aspect of participation. The empowerment of the

[38] Interview done 21.03.08

farmers can often function better in a situation where the head of the village is in control, rather than each individual farmer is forced to participate.

5.3 Concluding remarks

When Mr. Krishna Babu from the mid reach explains what he does to resolve his current water shortage he answered:

> *"I go with the leaders of the village, and we speak to the authority. This often resolves my water shortage."* [39]

This has resulted in an extra day with water at the most - but not any long-term solution to the problem. However, this type of statement shows that the thought of a collective voice is stronger than the individual voice. Thus, the idea of a more permanent organisation like a WUA, should, if the IWM institution really wanted to – be possible to implement. The comments from the official side stating that WUAs are currently only working on paper, and that there is a need for willingness amongst the farmers to be active – shows a hesitant attitude to an effective long lasting organisation. The reason for this hesitance could be related to the fact that a WUA would generate a lot of extra work for the current officials, and it would mean more involvement on a regular basis with the farmers. In the long run, however, a proper working WUA would take current problems with infrastructure and farmers into their own hands, freeing the officials from this work.

A current dilemma in D54 is related to the farmers who see an operative WUA as an unrealistic alternative. It is clear that the individual benefits (for some) are greater than the benefits the farmers will gain from a collective WUA. The fact that there is no properly working WUA is making it hard to convince farmers that this is the way forward. Nevertheless, based on what the farmers have

[39] Interview done 22.03.08

revealed, there are several other important reasons why the WUA is not functioning.

Firstly, it takes time to set up WUA – as the willingness amongst all parts of the IWM institution needs to support and nurture the concept of WUA. Secondly, the fact that the farmers are not cooperating makes it hard to enforce a WUA. However, the lack of interest relates to misconception, or lack of information of how a WUA can improve the current situation. Thirdly, the two sub divisional offices present in D54, (one in charge of head reach and the other in charge of mid and tail end); have to show a greater willingness to want the WUA to be the tool for a better management process. Due to the shortage of staff, it has failed to improve public participation in the IWM process. A good start would be to invest in more staff from the officials' side, to cover an area of 43 km. Their ultimate goal should be to have more than a semi-functioning WUA in the head reach of D54. If this were accomplished then hopefully the WUA would act as the monitoring instance lacking in today's IWM institution.

The current horizontal institutional structure (see the map on page) is not functioning well. Although all the laws are written, it lacks the ability to perform in practice. Hence, the decentralization of power has not been transferred successfully in D54. This has resulted in farmer's moving to a third option of individual self-help – and a legitimization of more desperate actions dealing with the current issues. Together with the institutional structure of WUAs, there is a need for a supportive state agency and policies, a combination of appropriate technology/economic forces including clear property rights and profitability of irrigation enterprises. This is in my mind what is required for achieving a sustainable WUA, as well a sustainable irrigation system.

The next chapter will reveal the farmers' thoughts on individual participation situations, payment for irrigation water and choice of crop. In these situations, the IWM institution is working better.

6. Individual action - collective consequences

This chapter addresses how the following two individual actions, payment for irrigation water and choice of crop, can portray the role of the farmer in the IWM process. In doing so, it situates the farmers within the current hierarchy of the IWM institution. By asking the farmers the reason for their actions, we determine if the somewhat individual actions are done with the collective in mind, or whether the action is solely concerned with individual benefits.

In the first section of this chapter, I look at how payment for irrigation water directly includes the farmer as part of the IWM institution. The individual act of paying is seen as a contractual agreement, as outlined in the initial hypothesis the *individual act of paying for water is done with the intention of participating in the IWM institution, more than paying for the water as such*. The statistics in chapter three clearly revealed that 87% of the responding farmers paid their water fees. However, it was not evident why they paid or what the intention behind this action was.

The second part of this chapter is concerned with the individual act of choosing which crop to grow. Each year, the IWM institution “provides” guidelines called cropping designs, an optimal guide advising what to grow in a specific area, based on soil conditions and water availability. The farmers are obliged to follow these guides. However, the final hypothesis *that the individual choice of crop has consequences for the farmers collectively in each area, and should therefore be a matter of a collective organisation*, will be argued in comparison what influences the farmer’s choice.

6.1 Why pay for irrigation water?

When I asked the farmers why the farmers are paying, many answers varied according to their location along the stretch. In head reach, Mr. Pradip Yani answered: "Since I am using water I will pay the tax."[40] Although most of the reasons the farmers gave me were diverse, six of the nine farmers said that they paid the tax because they received water. These farmers were located along the length of the distributary in head, middle, and tail. The farmers only referred to paying for water, not the maintenance of the water system.

To go back to the initial process: When the building of the water infrastructure in India was debated, everyone had opinions on the management- and pricing issue. Molle and Berkoff (2006) note:

> *The questions of who was to finance the infrastructure (local revenue, the Crown, or private interests), whether and how a water fee should be levied, what its impact on different categories of people would be, whether it should be increased, whether it could influence crop choice or water use behaviour, to cite a few examples, were fiercely debated. Opinions diverged between the British Government, the Government of India and other colonial authorities, local governments, canal engineers, etc. and alternatives such as private investments, bulk volumetric pricing, and crop-based differential rates were all tested*
> *(Bolding et al. 1995, in Molle and Berkoff, 2006)*

None of the interviewees mentioned operation and maintenance (O&M) costs as a reason for paying the fees. On the contrary, when I asked Mr. Sardep Meda in head reach if he thought paying the fees resulted in better management, his answer was: "I have not noticed any changes in better management, but I still pay the tax." This again makes it hard to justify the claim that when you are paying for your water, you are paying for the O&M, which in theory should result in better management and fewer disputes.

[40] Interview done 20.03.08

Perhaps the confusion has to do with the current tariff system, where the crop type and area of land are the indicators of the amount to be paid, rather than the type/size of the irrigation system needing O & M.

If the connection between the water fees and O&M was more apparent, it would be easier for a WUA to explain this benefit to it farmers. This due to 1) if the WUA was a functioning institution, then it is indeed the WUA who would collect the water fees (as opposed to the irrigation department) in its own area and 2) the 40% of fees which is retained within the WUA, could then be used in a way necessary to benefit that specific minor or distributary.

The lack of connection between these two relevant issues, make it hard to see why paying fees can have a collective impact – not just a rational effect. The farmers might feel more obliged to pay on a regular basis if other locals collected the fees and direct results could be seen by paying for better operation and maintenance.

"I pay the tax. If I don't pay, the amount increases."[41] Mr. Santosh Naik in tail end was extremely keen to the point out which rates were for which particular crop. He knew all the different rates. Those in the tail end with less land knew on the dot the current rates per acre for the various different light crops. However, there have been incidences of farmers in the head reach who could not tell exactly how much they pay for water, as they receive plenty for their large fields.

Mr. Arjun Sengupta in mid reach had a more rational answer where he initially revealed that:

> *"The reason for why I paid my water tax in 2000 to was that I applied for a loan that year. You then need a receipt from the government to show that you are a paying farmer, only then will you receive the loan in the bank."* [42]

[41] Interview done 21.03.08
[42] Interview done 22.03.08

The fact that the last time Mr. Sengupta had paid his fees was in 2000, shows that there are irregularities in the current payment system. The statistics revealed by the STRIVER data were thought to be unrealistic by the STRIVER team.[43] Several suggested that the farmers felt that they needed to state that they have just paid the fees, in case we were working for the government. Another farmer in mid reach, Mr. Vinay Kumar said that, "the only reason for why I paid my tax, was to get a loan." [44]

To have such a strong incentive related to the act of payment for irrigation water, does not in my mind act in favour of regular payments. Hence, the farmers pay when they need a loan, rather than when the fees are due.

6.2 Collective consequences related to the non-payment of fees

I mentioned the fact that the individual farmer as a rational being could in many ways act upon what will in the long run benefit them most. The collective consequences of non-payment however relates to the fact that the farmers are breaking the rules if they use irrigation water. So-called free riding where farmers are using water but not paying, means that the farmers who are paying will not receive their intended amount.

6.2.1 Free riding

Free riders are the farmers who are withdrawing water without paying or contributing to the local community – just enjoying the ride free of cost. Free riding is also referred to as illegal withdrawals, and it was visible in many parts of D54. Some of the farmers in both mid and tail end justify this action, although there seemed to be many hard-hitting normative sanctions by the other farmers

[43] In the sessions after field, we had round up sessions where several members laughed and joked that the farmers did not dare to tell that they had not paid the fees, afraid that they would receive penalties.
[44] Interview done 22.03.08

against those who perform illegal withdrawals on regular bases. Mr. Singh in mid reach claimed:

> *"Free riders could only be dealt with by the other farmers surrounding the violator, as he then has to deal with the shame every day. […] When the government is the instance in charge, the illegal pump set would often be removed by night, but no fine or any other sanctions would take place. This would often be repeated several times. If the farmers themselves deal with the problem, the violator would be shamed as well as understanding that his actions have consequences"*[45]

Mr. Sardep Meda in head reach said that he did not dare to do anything as an individual, but would rather organize a group who can tackle the violator together. "People are withdrawing water illegally – but we cannot abolish this problem. We cannot do anything, so we just leave it"

In the mid reach Mr. Krishna Babu voiced,

> *"We can't do anything, I know that one or two farmers are definitely withdrawing water illegally with pump sets. This results in us receiving 30% less water, but there is still nothing we can do. There are no group actions, we just keep quiet. If we raise our voices towards the other farmers, the farmers withdrawing the water illegally would say: You should be able to distribute the available water amongst yourself – you can increase your land and then you expect everything to work out anyway?"* [46]

This farmer had put the guilt back on Mr. Babu. He did not enjoy the encounter at all. This strengthens the need for a better IWM monitoring instance. The farmers feel that it is outside their hands – and it is by law the IWM officials' job to enforce the sanctions when no WUA is present, as it directly jeopardizes the water availability for the farmers further down the minor.

There was also a comment made by a tail ender saying there are no illegal withdrawals in this area, "as there is no water there in the first place." When being interrogated further, he explained that although there are no illegal

[45] Interview done 20.03.08
[46] Interview done 20.03.08

withdrawals, some of the farmers would go further up the distributary or minor during night and put big rocks to stop the natural water flow, which channelled more water into their fields instead. There were also farmers who during daytime let their herd of buffalos rest in the channels. The bathing herd would increase the water level drastically, meaning it would flow into their field channels. This shows how the farmers take the matter into their own hands, and use the tools and knowledge they have, in order to deal with the scarcity problem.

6.2.2 The lack of monitoring

Mr. Sengupta in mid reach explained that the officials were not counted on to solve the matter of free riding:

> *"The engineers and officials are aware of the illegal withdrawals, but if they try to do anything about it, all the farmers in the neighbourhood become angry. They therefore do nothing. These people withdrawing water illegally are resulting in 25% less water for me. It is not fair, but it is reality"*[47]

Mr. Sengupta felt that the officials where not to trust on handling the free riders. Mr. Sengupta also said he paid the water fees in 2000 to apply for a loan. When I asked if the revenue collector had come in more recent years, Mr Sengupta answered: "If the revenue collector comes now, the farmers will beat him, so he is not coming to them, but rather waiting for us to come to him when we have the money." This was not an easy answer to follow up - but my initial thought was, who the controlling party is in this case? Although the IWM institution is a top-down hierarchal structure, this shows that in practice the numbers of farmers are a bigger threat to the officials than the numbers of staff working on monitoring, and the fine or other punishments are not a big enough threat, resulting in farmers choosing not to pay for their water.

It also reflects that the officials lack respect and stature amongst the farmers who are in some cases taking the law into their own hands. The laws and regulations

currently in place in D54 are obviously not followed in practice. The interesting part about this situation is that the farmers are in on this together, as they have understood that the collective force is greater than the individual member of the revenue department. In fact, this is the farmers' collective ace up their sleeve.

In theory, this old way to fight for your rights should not be necessary in a country that has so many rules in place. This type of impact on the management of irrigation water is beyond the powers of simplicity. In fact, it does in my mind show an attitude that was born in desperation and has become accepted. This was related from the middle reach but the same attitude was also visible in the tail end of D54. Another farmer from further down the reach also explained what he would do if someone from the ID tried to punish him because he has not paid his fees - he too would raise his fists.

Corruption was evident when the topic of monitoring (or lack of it), was discussed in two of my interviews. Mr. Sengupta in mid reach made me aware the following, which according to him, happens all the time:

> *"I pay the collector 2000 rupees, but the receipt says 1500 rupees. Once I asked why that was the case, so I received a penalty of 10 000 rupees. I just pay and accept the receipt these days"*[48]

Not many others were claiming this type of interaction with the RD. Fellow STRIVER members told me that this was something the farmer must have made up. I am allowing this statement to come forward as it shows the easiness of corruption – and indicates that there is not enough monitoring within the official offices. In fact, it probably benefits the officials dramatically to be corrupt – as their pay is not very high. This shows how control quickly changes between the

[47] Interview done 22.03.08
[48] Interview done 22.03.08

farmer and the official. This has become the revenue collectors' ace up the sleeve.

6.3 Why follow the cropping designs?

The choice of crop is essential in understanding the physical impacts the farmers have within the IWM process and system. Over the years, the violation and unauthorised irrigation in the head reach has caused deprivation on a large scale in the tail end. There is an increasing trend in paddy cultivation, in areas where other crops are more suitable for the conditions. If this trend continues, it can result in a concentration of water in only a few distributaries and minors, causing a greater amount of deprivation for the tail enders (Tail-enders and Other Deprived in the Canal Water Distribution, GOI, 2003:18).
An official in the ID explained:

> *"Due to introduction of paddy, the soil has adjusted to this crop. You cannot grow anything else, as the soil will not manage. The conditions for growing rice are not suitable for any other crop."*[49]

This has proven to be a repeated fact amongst the farmers. However, in the other distributary visited in Bhadravati, D22, the farmers had collectively agreed on growing a different crop, the much less water intensive arecanut. Although the first six years had been tough, the situation in all three reaches today was

According to a study done by GOI on Tail-enders and Other Deprived in the Canal Water Distribution (2003), there is overall 50% deprivation of irrigation water in D54 and the main reason relates to cropping violations in the head reach. The observations in the study encountered that farmers in the head reach cut the canal banks even on the other side of the command area, filled the water into an open well, and with the help of pumps irrigated their own lands. Although the departments are aware of this, the departments seem to be unable to control these farmers. The proposed reason I was given related to the fact that head reach farmers are socially, economically, and politically influential farmers.

[49] Interview done 18.03.08

6.3.1 Water scarcity, a direct result of cropping violation

The Cropping Design proposed by the CADA office in Munirabad had the some alarming figures in their annual report 2005-2006 related to the Raichur District:

AGRICLUTURE PRODUCTION IN TUNGABHADRA PROJECT AREA DURING KHARIFF 2005-06

SL No	CROPS	RAICHUR DISTRICT					
		AREA SOWN		PRODUCTION		PRODUCTIVE	
		Target	Achie vement	Target	Achie vement	Target	Achie vement
I	**CEREALS**						
1	Paddy	65000	87229	286000	348916	4.40	4.00
2	Hy.Jower	500	598	1500	1674	3.00	2.80
3	Maiz	600	870	2400	3654	4.00	4.20
4	Bajra	7000	8178	14000	16356	2.00	2.00
	Total	**73100**	**96875**	-	-	-	-
II	**PULSES**						
1	Tur	-	-	-	-	-	-
3	Alasandi	-	-	-	-	-	-
	Total	-	-	-	-	-	-
III	**OIL SEEDS**						
1	Ground nut	8000	5338	20000	11744	2.50	2.20
2	Sun Flower	22000	29516	44000	59032	2.00	2.00
3	Yellu	-	35	-	25	0.90	0.70
3	Oudala	-	25	-	30	1.00	1.20
	Total	**30000**	**34914**	**-**	**-**	**-**	**-**
	Grand Total	**103100**	**131789**	**-**	**-**	**-**	**-**

Figure 12. Source : CADA, Tungabhadra rapport, Annual Report 2005-2006, p.23

The table above shows that in Kharif season, the ACHIEVEMENT in the AREA SOWN exceeds the TARGET on almost all crops. It also shows that the cropping violations are mainly happening with water-intensive crops like paddy (rice), jowar, maize, and bajra. Whilst the oil seeds – which are less water-intensive – are under either, target or just above it. As I pointed out in chapter three, 95.8% of the farmers in head reach grows paddy in both Kharif and Rabi season,

referred to as double cropping. This means that 95.8% of the head reach farmers are currently violating the indented CD.

Interestingly, the CADA design in Rabi season has specifically refrained from including the water intensive paddy cultivation, as there is much less water available in this season. However, as this illustration shows, the design is not followed.

AGRICULTURE PRODUCTION IN TUNGABHADRA PROJECT AREA DURING RABI/SUMMER 2005-06

SL No	CROPS	RAICHUR					
		AREA SOWN		PRODUCTION		PRODUCTIVE	
		Target	Achievement	Target	Achievement	Target	Achievement
I	**CERELS**						
1.	Paddy	-	69478	-	312651	-	4.50
2.	HY.Jowar	8000	1638	28000	4914	3.50	3.00
3.	Hy.Maiz	8000	203	34000	812	4.25	4.00
4.	Hy.Bajra	-	19	-	28.0	-	1.50
	Total	**16000**	**71338**	-	-	-	-
II	**PULSES**						
1.	Alasandi	500	107	350	544	0.70	0.50
2.	Bengalgram	-	55	-	28	-	0.50
3.	Uddu	50	6	380	5	0.75	0.80
	Total	**550**	**168**	-	-	-	-
III	**OIL SEEDS**						
1.	Ground Nut	25000	32146	55000	80365	2.20	2.50
2.	Sun Flower	15000	10163	30000	18293	2.00	1.80
	Total	**40000**	**42309**	-	-	-	-
	Grand Total:	**56550**	**113815**	-	-	-	-

Figure 13. Source : CADA, Tungabhadra rapport, Annual Report 2005-2006, p.24

This proves that there is very little monitoring or incentives to follow the initial design. Unfortunately, it seems to be a reoccurring trend, making it harder to return to other crops.

When investigating how the scarcity scenario is escalating, I found that the main problem lies in a violation of the cropping patterns. There is a good understanding among the farmers for the difference between water-intensive crops and less water-intensive crops. This means that there is a clear understanding of the amount of water needed to grow specific crops. It is not, in other words, done in an oblivious state of mind. On the contrary, the farmers choose to grow the crop that gives most profit per acre, and give little priority to the consequences for the distributary as a whole.

The original designs for cropping patterns in this area are not followed, although they are meant to be optimal for the particular command area. Therefore, three possible scarcity scenarios arise – all of which add up to the emerging water crisis that the farmers are experiencing. The first became evident when Mr. Krishna Babu in mid reach told me the following:

> *"I grow jowar and cotton, as I follow the water availability in this minor. I cannot grow paddy because of lack of water. If I were to change to for example sunflower or areca nut the soil is not sufficient, lacking the minerals, and quality to grow such crops. The best option for this soil and water availability is cotton."* [50]

This shows that the current farmers take into consideration the surroundings and the natural conditions when they decide on their crop. If nevertheless, the farmers choose to grow a different crop, which gives more personal profit, then the scarcity issue is the farmer's own fault. This scenario – self-inflicted water scarcity due to choice of crop – is definitely a visible self-made deprivation in D54. Although ID has "provided"[51] the cropping Design (CD) regarding the availability of water and the crops to be grown, this cropping design is not

[50] Interview done 22.03.08
[51] I put it brackets as the situation is that this CD has not been seen by any farmer

followed. Farmers take a chance and grow paddy in Rabi crop and as the table on above shows, paddy is not advised in Rabi season. Paddy is none the less grown on a large scale.

The paddy cultivation trend is affecting those who are further down the stretch, resulting in very few possibilities for the mid and tail end farmers to improve their conditions. Mr. Santosh Naik in the tail end explains:

> *"If the farmers in head reach grew 5 acres with rice and 5 acres with a less water intensive crop, there would be more water for us. But they grow 10 acres of paddy."*[52]

Thus the second scenario is - scarcity due to others' crop violation - a situation the individual farmer cannot be in control of. This issue, due to others' choices of crop and crop violations, results in huge consequences for fellow farmers.

The third scenario relates to the farmers' physical location in D54. The chance of receiving the intended water in the tail end is less likely in comparison with a head reach farmer. The two other scenarios influence this scenario, as the water scarcity relates to its location. The scarcity issue is due to the natural location of your farm. The Water Resource Department (WRD) is in theory accountable for this situation, as the farmers in tail end should receive water independently of the location. However, the releasing of water due to canal dams, cropping violations, and illegal withdrawals is resulting in an uneven allocation along the distributary.

As the first scenario outlines, the choice of crop is having a direct physical impact of IWM. However, it is not so easily justified.

6.4 Collective consequences related to cropping pattern violations

During a meeting with several CADA officials, it was said: "The farmers in this area are aware of the design, but it is not followed. Paddy is the main crop along

the entire stretch." The initial design during Kharif season was coconut, Mango and Sugarcane, and in Rabi season, low water intensive crops (see list above). When I asked the CADA officials why they thought the cropping patterns are not followed, **t**hey claimed that low water-intensive crops require a lot of labour and have a low market price. One of my own observations in the field was that paddy was the best option for the farmers in head reach, due to excessive water availability, low labour-intensity and a steady market price. Mr. Pradip Yani in head reach expressed: "No one insisted on me growing paddy. If I don't grow paddy I will lose money"[53]

6.4.1 Rational farmers

It is relevant to look at the farmers as rational beings in this context. The farmer will choose a crop, which a) will give him the most profit and b) is less labour-intensive. However, when I asked the farmers what influenced their choice of crop, many other aspects were revealed. Mr. Krishna Babu in the mid reach explained to me that this knowledge is passed down through tradition:

> *"I have not seen any cropping design, but I believe that such designs would not be helpful. I just follow the tradition. Since other farmers are growing paddy, I am growing paddy too. I cannot grow anything else"* [54]

When I asked if he had seen the cropping design, he told me that he had never seen it:

> *"I have not seen any cropping design, but it would be interesting to see it. Maybe if such a design was followed it would mean better water availability along the entire distributary"*[55]

[52] Interview done 21.03.08
[53] Interview done 20.03.08
[54] Interview done 20.03.08
[55] Interview done 20.03.08

In head reach, I got the same answers from Mr.Pradip Yani: “I have not seen the guidelines,”[56] and in the tail end Mr. Avin Vinjay looked puzzled when we asked if he had seen the CD. In fact, none of the nine farmers I interviewed had seen CD guidelines. This was contradictory to what the CADA officer had told us.

Despite not having seen the CD, Mr. Avinandan Singh in head reach explained that some of the other farmers had received advice from the agricultural department on what to grow in this particular area.

> *“Other farmers have tried to grow other yields than paddy, based on the advice they were given, but they did not succeed. They then shifted back to paddy due to the soil condition and failure in yield”*[57]

Mr. Arjun Sengupta in mid reach also told me about a similar situation:

> *“I have not seen any cropping design, but last year we had a visit from the officials who gave the village advice on what was good to grow in this area. There were farmers who followed these advices, but unfortunately, they lost their crops. So now we grow the one crop [cotton] which is less water intense and we know for sure will pay off.”*

Unfortunately, the advice from the CD, or help from the IWW institution, has for some of the farmers failed miserably. The job the IWM officials have done in conjunction with providing viable suggestions have so far had very unreliable results. The farmers are wary to trust this advice, which is not always in line with the current soil and irrigation water scenario for D54.

One of the CADA officers told me that he was a farmer himself with land in head reach – and consequently he got the inevitable question of what he was growing. “Paddy[58], of course,” he answered with a smile.

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[56] Interview done 20.03.08
[57] Interview done 20.03.08
[58] Rice

6.5 Concluding remarks

The two actions payment for water and choice of crop are currently signs of a rational farmer, whose intention is to maximise and achieve his own benefits and profits.

Although the STRIVER data shows a high percentage of paying, and many of the interviewees said they paid for the water rather than O&M, some farmers acknowledge that there are other reasons behind paying, such as getting a bank loan. The data does not show regularity of payment, i.e. if the farmers are paying the fee each year, but rather confirms that the farmers have paid. The fact that someone in tail end answered he paid the fee in 1975 confirms why it is important to have this in mind. However, the individual need for a loan stimulates to instant participation, as this incentive has a strong direct benefit to the farmer. In my interviews, two of nine said that this was the reason behind their last payment. Hence, my hypothesis that *the individual act of paying for water is done with the intention of participating in the IWM institution, more than paying for the water as such*, is not confirmed. However, the social stigma related to free riders, show that the farmers are interested in participating and being part of the institution. Nevertheless, as this interest arises from the negative consequences free riding has for the farmer's own water availability, then the action is solely concerned with individual benefits and deprived of a broader collective attitude.

The individual act of choosing which crop to grow is not in anyway related to the IWM institutions cropping design, as the CD is not commonly distributed among the farmers. The action of cropping violations has serious consequences for fellow farmers, as the equal distribution of water from the IWM institutions side becomes irrelevant. Hence, the hypothesis *that the individual choice of crop has consequences for the farmers collectively in each area, and should therefore be a matter of a collective organisation,* becomes a priority of the IWM institution. The current lack of institutional presence, either as a monitoring instance of

cropping violations or double cropping (in both seasons), or even as an advisory body with agricultural advices and guidelines, is a making all the farmers losers, with tail end farmers the worse off. The law is clear about the responsibility local authorities have, but this is not being enforced. The farmers can therefore not be held responsible, as the conditions, traditions and current knowledge can be seen because of a weak IWM institution – with too few staff to follow up on violations or ensure the ‘right’ crops are in place.

Nevertheless, this weakness has been used as one of the main reasons for promoting WUAs. The more responsibility taken at farmer level, should in theory function better and enforce a more sustainable resource distribution. In my mind, I found it questionable to expect this of a WUA, as the traditions in farming are clearly based on individual rational choices, rather than on collective actions with collective benefits. As it stands, the option is either to strengthen various levels and departments within current IWM institution, where the farmers are beneficiaries of a working irrigations system, or actively promote and spread the benefits of collective participation and empowerment.

I will continue this line of thought in the next chapter, by looking at why the situation is at a stand still today. A summary of the findings from the three hypotheses outline in this chapter and the previous one, with the intention of considering what the farmers think is the way forward.

7. Why the current scenario is not progressing

This chapter will look at why the current situation in D54 is not progressing, based on information from my interviews with the farmers.

There are several comments from the farmers and from the officials underlining that the current form of the IWM institution is failing from both sides. The farmers have expressed that they know little about water user associations (WUAs) and its possible benefits. Therefore, collective participation through a WUA at present is not realistic, due to the lack of basic information from the IWM institution.

Many farmers withdrawing water violate the system by not paying water fees, which in turn has immense consequences for those farmers who are paying further down the stretch. Some farmers asked for an enforcing institution to monitor and deal with illegal water withdrawals and free riding among other farmers. Some farmers expressed that they can deal with this themselves, while others expected this to be done by the IWM institution. The farmers, through their action of paying or not paying for water take a deliberate stand to whether they are a part of the collective institution or not. Nevertheless, based on my information there is no clear majority in favour of one or the other direction.

This status quo situation in D54 can also be seen when judging the current provision of the cropping design (CD), which is unknown to many of the farmers. This tool indicates the success of the current IWM institution, as it reveals how communication functions down the different organisational levels within the IWM institution. However, as the officials kept commenting – no one follows the optimal guide and when the farmers have, the crops have failed.

7.1.1 No information leads to a slow progress with WUAs

The most common answer from 68% of the respondents in the household survey (HHS) was that they did not know what a Water User Association was. In tail end, not all three interviewed farmers had ever heard of it. Benefits of collective participation through a WUA was a completely alien concept, therefore progress in this area relies on information and a willingness from the IWM institutions to want to include the tail end in such development.

Nevertheless, the focus of a collective spirit arises among the farmers when 'fighting' for short-term solutions such as immediate release of more water, broken infrastructure, "threats" from the authorities or disputes between themselves. The farmers used the term 'we and us' frequently throughout the interviews. Although the formalization of collective action (Olson, 1965) and WUAs are promoted by GOK as the way forward to ensure the farmers the right to collective participation, the understanding of this is not rooted in minds of the farmers in D54.

Lack of cooperation due to few known collective benefits

The farmers who knew about WUAs stated repeatedly that the reason for no WUA activity in their villages was due to the farmers' lack of ability to cooperate amongst themselves and the different reaches. The 'classic' issue between head reach and tail end, where the head reach farmers would have to give up some of their irrigation water, so that it could benefit the tail enders, is logically not a popular choice in head reach. This alone makes it hard to achieve progress, as the three reaches within the minor must cooperate to better the situation, also those that already are enjoying the benefits of plentiful water. However, are the benefits for the head reach farmers acceptable in today's proposed WUA? The tail enders are the losers of today's situation – will this change so the head reach farmers are the losers if WUAs are established? By

reflecting on what the farmers have answered, many have this way of comprehending the situation.

The board members of the current WUA did not mention the benefits of collective participation. They too lacked focus on the positive outcomes of a functioning WUA. They mention responsibility for the maintenance of the infrastructure, the local decisions regarding the infrastructure and the responsibility of collecting water fees, all administrative tasks, but little to do with the farmers.

The 40% of the water fees managed by the WUA might not directly relate to the farmers either, but would indirectly create a more effective system, as the available money would make it easier to hire external help to maintain the water supply – fixing the broken infrastructure means more water to each of the farmers' fields. However, the WUA can also choose to use this money on the training of farmers in agricultural issues with help from WALMI. These farmers in turn can give advice to others and benefit the crop situation in the local minor.

The WUA currently present in head reach encountered the interest to cooperate as the most difficult obstacle. The president, director, and secretary agreed that the hardest part was to make the head reach farmers understand that there are benefits exceeding that of giving up some of their irrigation water. After the association was formed and the membership fee paid, the farmers lost interested in participation as there were no benefits, and four years later, there are still no big differences. Ironically, as the WUA has not been given the full official consent, progress is even harder to achieve.

No mention of benefits in a sustainable irrigation system

Frustration over the lack of cooperation between the farmers was at the foreground of the interview with the WUAs board members. However, the illustration below shows an additional list of functions, not just the technical and economical functions mentioned by the present members of the WUA.

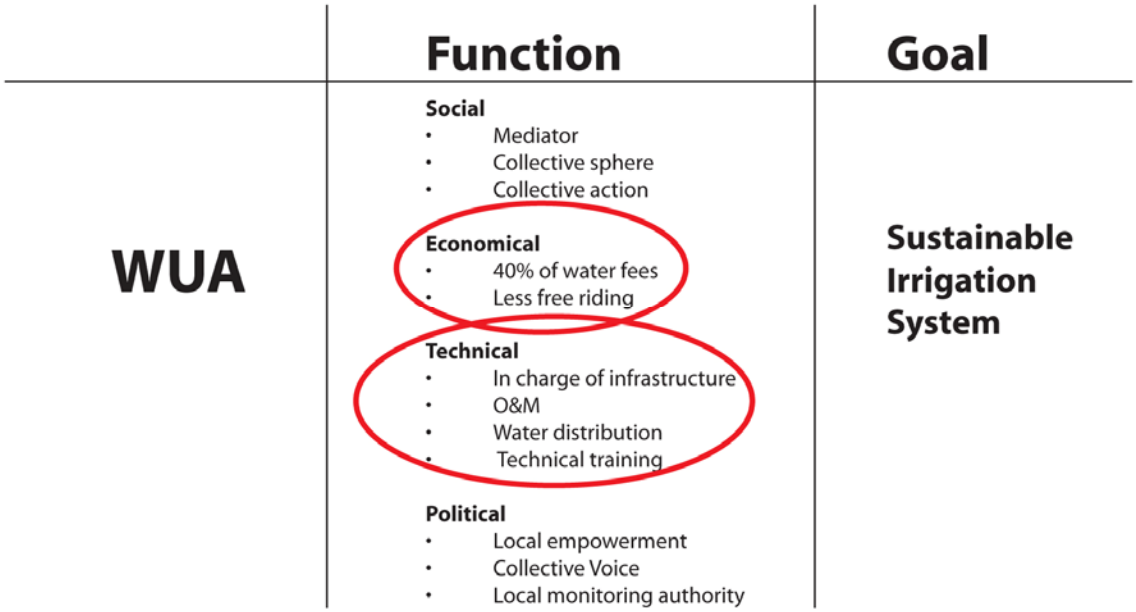

Figure 14. Source: Mai Simonsen (2008)

The result of these functions is a sustainable irrigation system. Hence, there is great importance of balancing the functions – social, economical, technical, and political - to make the farmers aware of all of these benefits.

7.1.2 Payment for irrigation water – lack of proper monitoring

What are they paying for

At present, most of the farmers think the water fees are payment for the actual water. That the money is intended to cover operation and maintenance (O&M) fees is not reaching the farmer. When asked if they have seen a difference in the irrigation system – there was no immediate link between those two points. If this were clearer, then perhaps the idea of a WUA where 40% of the water fees go directly to the villages along the minor would be easier to communicate and act as a strong collective incentive for the WUA. A well functioning and maintained minor would benefit everyone, no matter location. Today's situation, where the farmers point out how the canals keep degrading, shows that the maintenance work done by the ID, is short term and is not sustainable. This could be because the current water fees are extremely low. The low fee was intended to make sure

that all farmers had the ability to pay. As a result, there is not enough money to cover the O&M costs, which again leads to a degrading system. In addition to this, there are still many farmers who are not paying their fees.

This may also be seen as one reason why the IWM institution is promoting the WUA. Not only will it mean less work for the officials and less responsibility for the reoccurring degradation of minors and smaller distributaries, but the Water User Association will with a local board collect the fees from farmers, and in doing so identify the those who do not pay. Hence, the likelihood of more farmers paying their fees and the sum of money available for maintenance will increase benefiting all the members. The collective spirit surfaced when the interviewees talked about free riding. The act of stealing water has direct consequences for farmers further down the minor – as it means less water for those farmers who pay. Such an action would be harder for a single farmer when the rest of the village is in the WUA. Similarly, the collective spirit was very much alive when the authorities (revenue collector) tried to claim payments. Unfortunately, the use of violence was seen as a way for the farmers to stand together against the authority. The idea of collective participation with collective benefits would be easier when the reason for paying is clear and the money will be used for a sustainable irrigation system.

7.1.3 Hard to achieve progress when the cropping design is unknown

The current scenario where either farmers are violating by double cropping, or not growing according to the cropping designs, shows that the individual benefits hidden within these individual actions, are “more profitable” alternatives than those laid out by the cropping design (CD). The sanctions and rules laid down by GOK and the IWM institution are not strong enough to hindering these violations, therefore they continue.

However, as the nine interviewees had never seen the CD, the point of such a tool is useless to the farmers. If the intention of the CD is to help the farmers then

action is needed to make the CD known. This can be seen as a failing of the IWM institution as this essential information can better the livelihoods of the farmers. But the cropping design information as it stands today is not realistic – either due to the lack of professional technical insight on quality of land in relation to availability of water or to do with laziness. The fact that the CD is not followed is a known fact among all the official bodies, but still the IWM institution is promoting it. Advice and information provided by several departments within the IWM institution has had fatal consequences and has not helped to achieve a trustful relationship between the institution and the farmers. The CD was intended to ensure a sustainable irrigation system, a very much-needed tool, but this is not available today.

7.2 The way forward according to the farmer

The idea of collective participation was mentioned as a way forward by several of the farmers after it was explain what a WUA was. Mr Krishna Babu in mid reach explicitly expressed that if a WUA had been present it would have been easier to deal with free riders:

> *"If we had a WUA, they as a group could take over this situation [illegal withdrawals], but as here is no union, it is hard for me as one farmer to stand up against the farmers withdrawing water illegally"*[59]

Mr. Santosh Naik in tail end is made it clear that today there is no forum for the farmers to voice their opinions on the current management process:

> *"There is no interest from the official side, so hard for us to have a say in anything to do with management of irrigation water"*[60]

A WUA would make it easier to participate actively, but the farmer's lack of knowledge, made it hard for him to see how it could be easier in the future. In

[59] 22.03.08
[60] 23.03.08

head reach, Mr. Sardep Medha made it clear that the whole village would have to want a WUA,

> *"I am not in a WUA. I don't know much about it. The whole village need to be part of the WUA, not just a few. Our problems would reduce with a WUA, but I feel helpless the elders of the town should take the initiative. We, [the younger farmers] cannot do it [form a WUA] on our own."* [61]

The lack of confidence in what collective participation through a WUA would mean, has strong links to the level of knowledge in all three reaches. However, with more knowledge, the willingness and the understanding that a collective body would be beneficial is possible to achieve in D54.

7.2.1 Include the farmers more actively

In order to hear what the farmers themselves meant as the way forward, I asked the farmers if they wanted to be included in various governmental actions. I specifically asked if they wanted to be involved in the process of setting new water tariffs, so as to understand if they where interested in participating in such a change. Mr. Krishna Babu in mid reach told me that

> *"I believe that it would be good to have a dialogue with the ID when new [irrigation water] tariffs are being planned. However, if all our [all farmers] opinions are taken into consideration, I don't think the increase will be sufficient. Better if they set a high price, and we just have to follow."* [62]

When I asked if Mr. Santosh Naik in tail end wanted to be included in the setting of new tariffs, this tail-end farmer answered that he thought "…it is best if the farmers are not involved in this process." This was because it would take away the focus of the discussion. The many problems in the tail end are related to deeper issues than the actual fee, and listening to the farmers in the tail end might not help this particular decision. Mr. Naik thought (as the mid-reach farmer also

[61] 20.03.08
[62] 22.03.08

pointed out), that the GOK should set the new tariffs. He also pointed out that the farmers upstream would probably want to have a say in this, but he himself in his reach did not feel the need to be included. Mr. Naik's presumption was correct as in head reach Mr. Pradip Yani was to the point:

> *"If the GOI would include me in the process when setting the new tariffs – it would off course benefit me as a farmer as if they don't will have huge consequences for me, and I will not have any say at all afterwards. If you set the prices according to the water being sold, it will affect us, as we are not involved in such a scheme today.*[63]

Mr. Yani was very interested in being part of the decision making, as the consequences would mean a lot to him. I believe this shows that the different reaches have different demands. However the general lack of trust that your opinion is of value predominates – only in head reach is there a strong wish for inclusion.

7.2.2 More technical knowledge

The issue that three head reach farmers proposed as a way forward, was to know more about growing conditions. Interestingly, in retrospect I found that the farmers were in fact seeking a working CD. They wanted more facts and advice based on local needs, professional help using the latest technology/ equipment and helps to increase their yields. Mr. Pradip Yani elaborates:

> *"There has been no one here to test the soils form any of the government's departments, only our own experience results in us continuing to grow our crops. No benefits from the government, and I have not received any information on the pesticides we are using. Would be good to get information on pesticides from the government. First, I would like to know which pesticide to use on which land. The government should take this initiative, they will benefit from us growing and using the land in the right way"* [64]

[63] 20.03.08
[64] Interview done 20.03.08

More information on soil conditions and possibilities to change crop were in the mind of Mr Sardep Meda:

> *"Proper testing from the government's side would be able to tell us the likelihood of the soils condition, and help us receive better cropping yields. If I was given incentives from the government like free fertilizer then I might consider changing [crop]. It would be very helpful."* [65]

The possibility to change crop was out of the question unless it was proved profitable and possible by the government that the conditions were appropriate. Given this advice, he could change crop to something less water intensive in head reach, which in turn would better the conditions for the entire minor and distributary. What became evident was that the willingness relates to technological expertise and an assurance that the new crop would be profitable.

7.3 Concluding remarks

In my mind, the current situation in D54 is degrading rather than progressing. The farmers are seeking more activity from the IWM institution to improve conditions. However, progress in D54 area relies on information and willingness from the IWM institution to develop the area. This requires willingness for the farmers and the rest of the institution to collaborate as well as between the farmers themselves. It also relies on promoting the common goal – the idea of a sustainable irrigation system.

The lack of basic knowledge on what collective action and participation can achieve holds the situation at a standstill. The fact that the farmers are showing an interest in the concept of a WUA when given information is a promising factor improving the chances for success of such an organization in the future.

If the government and the rest of the IWM institution wanted WUAs in D54, then I mean it is possible to set this up. To have this outlined on paper, benefits

neither the farmers nor the rest of the IWM institution. In fact, the semi-functioning WUA is a sign of progress. If the Busupur WUA received consent in near future, it would be interesting to see the effect it would have in head reach. If in turn the WUA proved to be successful then it would be easier for the farmers close to head reach to learn by seeing how it functioned. I hope that this could spark off similar organisations and evoke a shift of attitude in favour of the collective participation. However, it would also mean a serious investment from the IWM institution with staff, time and effort on various levels, in order secure this development long term.

As the farmers have pointed out, the two actions of paying for water and choice of crop are rooted in the rational logic of the individual farmer. The fact that only the head reach farmers wanted to be included in the process of setting new water rates, shows that the rest of the farmers probably could adapt better if the IWM institution took the initiative by spreading information, and then leave it to the various villages to continue. The fact that head reach farmers see a way forward lies in incentives such as free fertilizers, external help, and guidance. Perhaps this is the missing incentive for the head reach farmers, to see make it profitable for them to establish more WUAs.

[65] Interview done 20.03.08

8. Final concluding remarks

When asking *why collective participation from farmers in Irrigation Water Management processes is not progressing in India today?* I developed three hypotheses. These became the research areas for this thesis, so I could understand why collective participation from farmers was not progressing.

The first hypothesis was confirmed. There are few collective benefits present in the farmer' everyday. Hence, *the farmers do not see Water User Associations (WUAs) as a realistic alternative to better the current irrigation water management process, due to too few benefits for the individual farmer.* This is the reality in D54. There was little information and few staff from the IWM institution to promote the WUA. Farmers seemed to lack an active collective attitude. When they did stand together, it was in a crisis i.e. when there was little water in the minor or other farmers where violating water distribution.

The fact that there was little collective participation, made me look at areas where the farmers were participating. The act of paying or not paying the water irrigation fee can be seen as more than just an individual purpose. The second hypothesis was both confirmed and declined as *the individual act of paying for water is done with the intention of participating in a system (IWM institution) more than paying for water as such.* 68 % of the interviewed farmers were paying the actual fee and the reason for doing so was that they were using the water. However, the incentive of a bank loan, corruption and the social stigmatization of the farmers who are not paying make me question if the farmers are seeking to play by the rules and be part of system that can give them benefits.

Another area where collective participation could be of benefit was the cropping design (CD). Realizing the importance of the crop and the consequences wrong crops have in water scarce areas, made this action easier to see and measure. If the farmers follow the design, it can be seen as successful communication with

the IWM institution. Hence, the third hypothesis *the individual choice of crop has collective consequences for the farmers in an area, and should therefore be a matter of a collective organisation*, became confirmed as an ultimate option for the farmers. However, few of the farmers knew about the CD. The authorities lacked staff to follow up the violations. The CD guidelines promoted had little to do with the existing situation. When farmers in the head reach were informed of what the CD was they were very positive to receive technical help from higher levels. The farmers in mid reach and tail end were more concerned with the cropping violations occurring in head reach, and the lack of water – but still claimed that if the CD was followed the this should in theory not occur. However, the attitude of the officials' (laughing attitude) together with the very high cropping violations makes it hard to see that the CD will be enforced in near future.

8.1 Possible roads ahead

I believe there are two more tangible and immediate ways to encourage more collective participation in relation to the D54.

8.1.1 Holistic WUA promotion

The farmers were eager to have a collective channel working for them and with them. Although it is hard to get an agreement between head reach, and tail end users – WUAs are a viable tool promoted by the government to empower the people at a local level. This ensures resource mobilization (40% of the water fees) and a sustainable irrigation system.

I believe a way forward could be an active information campaign along the entire distributary. Local authorities with teams of professional experts could give information on seeding and new agricultural technology based on traditional methods, and promote the collective benefits of the WUAs. Only when the

farmers understand that there are benefits, a WUA will work. The focus has been on technical and economical aspects, as these are easier to communicate than social and political functions. Such functions must be experienced over time before giving results.

Farmers and officials also gave several other comments. The lack of communication between the various departments and the farmers and among the farmers themselves, seemed to be the most common reason for why they thought it was little collective progress as well as physical progress to further the development of a more sustainable IWM system.

8.1.2 Strengthen the IWM institution, then give responsibility based on trust and respect

Due to the many leap holes and violations, the farmers now benefit from not following the rules. There is a need for strong penalties to be enforced and positive cooperation with professional officials. Corruption was present in D54. The lack of staff leaves no one to monitor the farmers or the officials. They too are rational beings. The system should have better alternatives to offer than at present. Decentralization was indented to abolish these issues. As reality shows, 40 years down the line – it takes time

8.2 The goal is a sustainable irrigation system

The degrading system cannot be fixed by short time solutions using fists and shouts. However, the thought of long-term solutions, becomes irrelevant when your immediate concerns are on the current yields and possible disastrous outcomes. Hence, it is the institutions mission to work for a sustainable solution. Neither the farmers on their own in WUA, nor the IWM institution without the farmers can function alone, as both are highly relevant parts of the institution.

The mid reach and the tail end farmers want higher fees for the water as this would cost the excessive users in head reach, hopefully enough to make them change. The fact that only head reach farmers want to participate in the setting of new tariffs, shows that there is a need for collaboration to deal with unequal distribution. To achieve progress, the WUA needs to be rejuvenated and this relies on the entire IWM institution to actively want a collective and effective local management body. Nevertheless, as Sardep Meda in head reach pointed out “When it rains the water is distributed equally to everyone.” Hence, the importance of working with a common goal ensuring a balance within the IWM system will eventually result in irrigation water in D54 for the next centuries too.

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