Sustainable Water Management in Semi-Arid India:

Learning from the *Gond* and *Kohli* Indigenous Communities

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Part Two

Chapter 5. Decentralised water management in India

Introduction

The successful engagement of Indigenous communities in water management is greatly determined by the provisions made in the nation's institutional, legislative and policy structures (Meppen, Bellamy, and Ross 2005). It is also important that these strategies need to be developed by each country to address its own specific context (Franks and Cleaver 2007; Belaidi and Renaud-Hellier 2006). In this regard, this chapter closely examines how Indigenous participation is framed within various Indian National and Maharashtra State Government water policies and institutional organisations. The critique is also supported by the discourse of other experts in the field who have examined Indian context. After looking at the current policies, the chapter moves to study the historical institutional structure during the *Gond* rule to understand the traditional water harvesting and management system. This is necessary to historically frame the water management system and the changes made to it over time. The final section discusses the changes made to the historical system during subsequent rulers leading to the present context.

5.1 Critique of National policies on water management

India faces a dire water future. The current water development and management system is not sustainable (Briscoe and Malik 2006). India's development of water infrastructure has not been accompanied by an improvement in the governance of water resources and water services (Briscoe and Malik 2006; Iyer 2003; Agarwal and Narain 1997). Examining how participation of Indigenous people in water management programs currently operates in India and how it can be further improved is crucial for this research. To understand trends influencing participation and Indigenous communities' perspectives towards the approaches of government agencies to manage water resources, a brief overview of water management institutions and initiatives for sustainable development by various government agencies in India is extremely useful. In practice, the government policies, legislations and the institutional structures which together form the governance model are important for implementing the government agendas into practice.

An understanding of sustainable management of water and how this broad concept can be interpreted in a specific context requires analysis and critique of the various policy initiatives in that context. Such an interpretation is based upon the proposed sustainability framework derived in Chapter 3 from theoretical scholarship. This is based on assumptions

about what is desirable and also what is possible to bring about sustainable management of water in this context. This section examines various policies, legislations, and administrative structures at National and Maharashtra State levels for the level of integration achieved across them.

5.1.1 Federal set-up

India does not have an exclusive and comprehensive water law defining ownership and rights over access to and use of water resources. The rights are based on a wide range of legislations, irrigation laws, central and state laws, constitutional provisions and court decisions. The *Constitution of India* guarantees every citizen fundamental rights to equality, life and personal liberty. Article 15(2) of the *Indian Constitution* further states that "no citizen shall be subjected to any restriction with regard to the use of wells, tanks, bathing *ghats*" (GoI. Ministry of Water Resources). Various courts have upheld this right to clean and safe water as being an essential right to life in India (Iyer 2003). However, as yet, no laws or policies asserting that water is a fundamental and inviolable right enjoyed by every citizen have been formulated (DHMJ Drought Forum n.d.; Briscoe and Malik 2006).

India also has a wide range of water management institutions which have evolved over the years to manage its resources to meet its ever-increasing domestic, irrigation, industrial and socio-cultural water demands. The *Indian Constitution* through Entry 17 of List II rests the power to manage water resources in State Government institutions to manage natural resources.[1] The National government is responsible for a national policy on water resource development, as well as for technical assistance to its constituent state governments on irrigation projects, groundwater exploration, command area development, dam construction, river valley development, regulation of inter-state rivers and for providing funding for these various projects (Iyer 2007, 2003; Briscoe and Malik 2006; GoI. Ministry of Water Resources). However, most of the rivers in India are inter-state, and this has given rise to many disputes due to the fragmentation of river basins by state boundaries, lack of co-

1 The *Constitution of India* lays down the legislative and functional jurisdiction of the Union, State and local Governments regarding 'Water'. Under the scheme of the Constitution, 'Water' is basically a State subject and the Union comes in only in the case of inter-state river waters. List II of the Seventh Schedule, dealing with subjects regarding which States have jurisdiction, has the following as Entry 17 :

> Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to the provisions of Entry 56 of List I.
>
> (GoI. Ministry of Water Resources)

operation among states, and political interests. The *River Boards Act, 1956* and the *Inter State Water Disputes Act*, *1956*, which resulted from constitutional privilege, have not proved to be effective due to a lack of clarity in their objectives (Iyer 2007, 2003; Ananda, Crase, and Pagan 2006; Briscoe and Mallik 2006). Further, the State and National Governments continue to emphasise their constitutional rights over water, which has led to further confusion over the management of this resource (Lahiri-Dutt 2008). The various attempts by the Indian National Government for effective water management are discussed below to provide a context for evaluating current national measures.

Water policies and legislations

The Indian National Government since Independence has taken various measures through its policies to improve its water resource management. Between 1950 and 1975 early attempts to formulate water management policies were undertaken by the National Government, under the first four *Five Year Development Plans*. The emphasis of these development plans was primarily on water resource development for irrigation and hydro-electric power to accelerate economic growth following Independence. This focus was a project-based approach resulting in the development of large-scale water resource development projects like the Bhakra-Nangal, Damodar, and Hirakand Reservoirs. The projects resulted in so-called 'Green Revolution' which has been greatly driven by unsustainable use of river water and groundwater extraction. In fact, they have fallen short of expectations in the long run because of various factors like the lack of adequate dependable data, lengthy administrative procedures, political interests, inadequate feasibility studies, and financial constraints (Iyer 2007, 2003; Singh 1983). Further, these projects caused ecological devastation, displacement and land degradation (Iyer 2008; Shiva 2002; Singh 1997; Agarwal and Narain 1997). Later in 1973, stress was placed on the formation of Water and Land Management Institutions in selected regions to provide command area development and management guidelines. However, these have not grown beyond the first initiated regions and have mainly remained as unproductive research centres (Iyer 2007, 2003; Joy and Paranjape 2004).

Another attempt to decentralise the power over local water resources was made through the *73rd and 74th Constitutional Amendments Act* and development of the *Panchayati Raj* Institution (PRI) in 1992. The PRI constituted a three-tier structure, namely: *Zilla Parishad* at the district level, *Panchayat Samiti* at the *Taluka* Block Office level, and the *Gram Panchayat* at the village level (refer Figure 5.2). It was aimed to allocate the rights to manage local minor water resources to the *Gram Panchayat*, the lowest-level unit of the three-tiered

PRI. This is an elected village council for a group of villages and is the representative body of its constituent *villages* to the upper two tiers of the *PRI*. Although the three-tiers are constituted in most of the states, in practice the decisions regarding the resources are taken by the upper tiers and only implementation is left to be done by the *Gram Panchayat* (Iyer 2008, 2007, 2003; World Bank 2000). Furthermore, the fourth tier of the PRI, the *Gram Sabha*, which is a village council for a single village, has not been recognised in the PRI system and, therefore, there are currently no clear guidelines about its power and role in the overall system, and in regards to its village (refer section 4.2.2 for a detailed discussion on the PRI system in Maharashtra State).

In September, 1985, the recognition of the need for planning for the development of the country's water resources in a co-ordinated manner resulted in the formation of the Ministry of Water Resources (MoWR), and in subsequent water policies of 1987 and 2002 (GoI. Ministry of Water Resources 2002). During the commencement of the *National Water Policy* in 2002, the then Prime Minister Atal Bihari Vajpaye commented: "The Policy should recognise that the community is the rightful custodian of water. Exclusive control by the government machinery cannot help us to make the paradigm shift to participation, essentially local water management of water resources" (Das 2005 cited in Lahiri-Dutt 2008, xxvii). However, the resulting policy does not reflect his views and does not acknowledge local water management institutions (Lahiri-Dutt 2008; Iyer 2007). In addition, the national government has created a number of other government administrative agencies along with the Ministry of Water Resources which are now responsible for managing water resources at the National level. Thus, this multiplicity of agencies has further contested the claims over water and resulted in conflicts.

Policy	Initiatives
1973: Command Area Development Program	Established WALMI's (Water and Land Management Institutions) across the country, and in 1985 initiated the formation of Water User's Associations (WUAs) on an experimental basis in different states by providing guidelines for its formation and by providing management subsidies to the WUA's.
1987: *National Water Policy*	Recognised water as a prime natural resource, a basic human need, and called for its optimal, economic, and equitable use. The policy stated that efforts should be made to involve farmers progressively in various aspects of water management, particularly in water distribution and collection of rates. The role of Non-government organisations (NGOs) in educating the farmers was also emphasised.
1992: *The Model Groundwater Bill*	Made specifications for well permits, water metering, water limits and so on ensuring the economic use of groundwater.
1992: *73rd and 74th Constitutional Amendment Act*	Paved the way for decentralisation in the country. Minor irrigation, water management, watershed and fisheries development are some of the functions assigned to *Gram Panchayat*.
1994,1995, 1997, and 1999: National Conferences on Participatory Irrigation Management (PIM) by the Ministry of Water Resources	Ensured participation of representatives from state governments, NGOs, experts, and central government agencies.
2001: 2nd generation Watershed projects by National Watershed Development Project for rainfed areas	Institutionalised participatory approach in watershed programs.
2002: *National Water Policy*	Emphasised the role of WUAs and *Panchayati Raj* Institutions (PRI) in the operation, maintenance, and management of water resource infrastructures and facilities. It gives direct impetus to community participation in all facets of water management.
2003: 2nd generation Watershed projects by National Watershed Development Project for rainfed areas: *Hariyali* guidelines	Democratisation process implicitly discourages NGO involvement. Direct involvement of *Panchayat's* and some co-ordination attempted across ministries.

Table 5.1: Indian National policy initiatives on water resources

In more recent years, there has been a growing perception of a looming water scarcity and the need for sustainable management of water resources in India. In 1996 realisation of the importance of the issue led to the establishment of the National Commission for Integrated Water Resources Department Plan (NCIWRDP). The report, submitted in 1999, analogous to previous development plans, focused on the development of large reservoirs for water storage to be used during scarcity, and long distance water transfers from 'surplus' areas to water 'scarce' areas. As this planning process was confined to the National and State-level institutions, a need for initiative and involvement at the local level has been evident. Furthermore, although a chapter on local water harvesting and watershed development was incorporated in this report, it has not been widely disseminated (Iyer 2007; Saleth 2004). Then in 2002, the *National Water Policy* (NWP) reinstated the principles of decentralisation and participation in water management. However, this policy discusses management at a very broad level and again fails to address issues relating to equity, local water harvesting, and co-ordination with local communities, and most important of all, how these will be integrated into departmental plans (Mishra et al. 2008; Iyer 2007, 2003).

Consequently, in the last decade Integrated Water Resource Management (IWRM) has been advocated at the National level as a response to sustainable development and the need for decentralised and participatory governance of water resources. In this National-level proposal a community-based watershed management program has been proposed as significant for achieving integration across various dimensions. An 'integrated' approach means the incorporation of socio-human, ecological and economic factors with a multi-disciplinary focus (Jakeman et al. 2006; Agarwal et al. 2000). It needs reliable and accurate data on the available water resources (hydrology, meteorology, and geology), on the ecological system, the social overloads (water requirements for various users), and on the development potential of the area under consideration. The IWRM project was aimed at strengthening water governance to facilitate good decision-making in response to changing contexts (GWP 2004). However, in India, owing to the lack of accurate data and the continued dominance of the National Government and engineering agencies, the result has still been no more than planning a cluster of projects (Iyer 2007, 2003; Saleth 2004). Furthermore, as a decentralised management institution, the IWRM failed to incorporate local community-led management and Indigenous knowledge (Iyer 2003; Matonda 2002; Datta 1994). Historically, following the NWPs and IWRM approach, State departments were charged to develop respective policies and integrated management plans, but responses by various states have been varied and have not resolved the issues.

In 2003 the watershed development programs were further commenced through revised guidelines. The *Hariyali* (meaning Greenery) guidelines re-issued the watershed programs under *Gram Panchayat* supervision. This ensured the formal process of democratisation, however, it restricted NGO participation to training and initiating community organisations (Sen 2008). The *Hariyali,* instead of recommending a Water Committee formation, reorganised the PRI as the implementing authority, which made it possible to integrate diverse concerns.

It is evident, then, that legislations, regulations, and policies have developed a complex network which constantly modifies water management processes in India. Thus, institutional structures are crucial for management of water resources and it is evident that multiple policies are negotiated and implemented through multiple institutions dealing with water management (Meinzen-Dick and Pradhan 2002).

Water administration structure

The previous discussion shows the fragmented approach taken in various Indian Water policies and reveals how the administrative structures in the country dealing with water resources are also fragmented across National and State levels (refer Figure 5.1). The various ministries charged with water resource management have their own, diverse development and research policies. Interestingly, the Ministry of Water Resources remains only as an organisation for consultation and monitoring that provides general guidelines for the regulation of the country's water resources, and other ministries and their state agencies play an additional regulatory role with delegated structures. Furthermore, the Ministry of Water Resources has no institutional structures at the State level to implement its guidelines in the form of policies.

As guided by the *Indian Constitution*, State agencies have a major role in the management of water resources. However, due to the diverse nature of agencies with varied interests in water, there have been contrasting policies for the resource with focuses upon specific departmental concerns. Thus, the approach to water management across these State agencies remains fragmented (Saravanan 2008; World Bank 2001). Most of the States until recently had a respective Public Works Department (PWD) which looked after water infrastructure along with the construction of roads, and government buildings. Thus, the sectoral interests of each department and lack of adequate institutional structure specifically for water has resulted in poor handling of water issues. Absence of comprehensive planning

and isolated water resource management by various departments has also resulted in an exploitation of surface and groundwater resources, pollution and ecological stress.

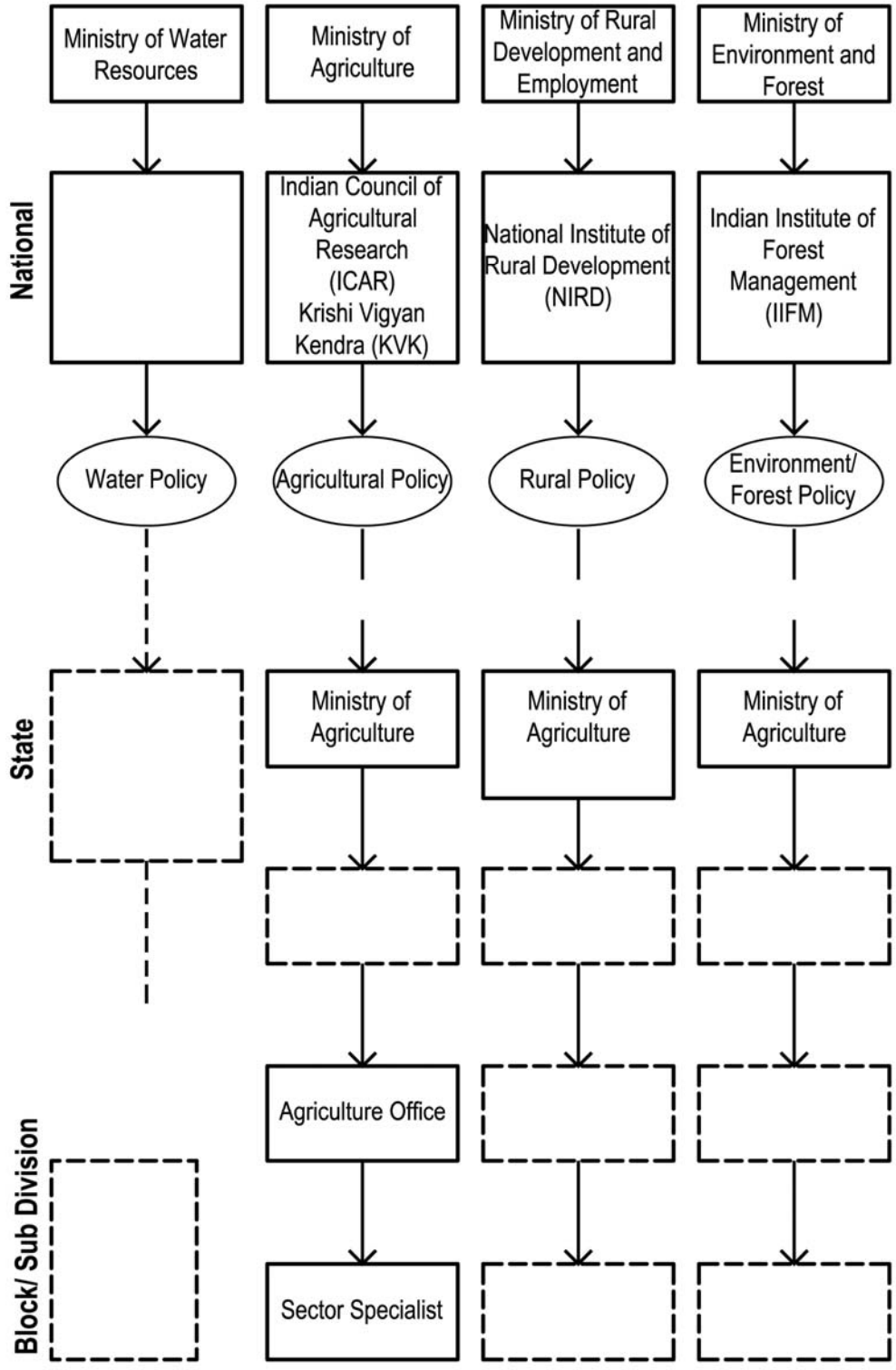

Figure 5.1: Administrative structure of major ministries concerned with water resources (Saravanan 2008, 234)

The different policies proposed over time further complicates the issue of multiple agencies dealing with water management as each of these stresses a different form of decentralised institutional structure. The policy recommendations of the Hanumantha Rao Committee in 1994 significantly emphasised participatory and decentralised decision-making and allocation of government funds (Kerr et al. 2000). Since the Ministry of Water Resources serves only as a monitoring ministry it has no authorised institutional structure to implement IWRM at various levels (Iyer 2003). The major reason for the failure of IWRM projects at the State level is also the absence of an authorised organisation for the project (Narain 2000). Until 1997, the IWRM approach was carried out by various State departments using different guidelines, but without any community participation (Saravanan 2008; Iyer 2003; Narain 2000). In addition to various government agencies, other actors like the NGOs, community institutions, and individuals were also given a role through community-based watershed management (CBWM). The revisions to these guidelines further enhanced the role of the PRI in the management of its resources. However, the Watershed committees at the *Gram Panchayat* level remained as implementing agencies rather than as decision-making bodies due to the "fairly rigid" policies of the program (Saravanan 2008, 237; Baumann and Farrington 2003). This demonstrates a collaborative approach between two unequal parties re-emphasising the control of the State over resource management.

Further, revisions were made to *Hariyali* guidelines in 2006 as *Neeranchal* guidelines. The Technical Committee Report – *From Harayali to Neeranchal* (GoI. Ministry of Rural Development 2006) report on the progress in implementing these guidelines exposes the failure of PRI to consider and implement watershed objectives. This report further highlights the need for developing a series of institutional structures from the National to State and to District level to function autonomously and to promote an integrated approach. However, in practice, there is no change in the way in which these agencies perform and in their interaction with other parallel agencies (Saravanan 2008). Furthermore, these administrative structures need to perform within the complex local social structures based on religion, caste, and gender, which have a significant influence on the interaction. Thus, complexity in the water administrative structure, diversity in functions and jurisdictions of each, and lack of co-ordination across them impedes the implementation of sustainable water management processes in India.

This research focuses on integration that co-ordinates decision-making among these myraid organisations associated with water resource management. The need for this has been a recurrent theme in most of the recent Indian literature on water management reform (Narain and Chugh 2008; Briscoe and Malik 2006; Narain 2000). Recognising the importance

of the biological diversity across India, another attempt by the Indian National Government to decentralise management was done through the *Biological Diversity Act, 2002*. The next section discusses the opportunities it provides for effective decentralisation and challenges in its successful implementation.

5.1.2 People's Biodiversity Register

The *Biological Diversity Act, 2002*, was introduced in order to conserve and protect biological diversity, associated knowledge and secure equitable share in benefits arising out of the use of biological resources (GoI. National Biodiversity Authority 2002b). The *Act,* along with documenting all the biological resources in a village, aimed at developing a resource management plan for the village by that village community with some expert support. It mandated a program entitled the People's Biodiversity Register (PBR) which was initiated in 1995 as an attempt by the Foundation for Revitalization of Local Health Traditions, Bangalore, to record the rapidly eroding folk knowledge of medicinal uses of plants (Gadgil 2006; Gadgil et al. 2000). This research has been further expanded by the Centre of Ecological Sciences (CES) in Bangalore. Currently this process is in its formative stage and community members and many *Gram Panchayat's* including those of the selected case studies, are not aware of this document. There have been some attempts to prepare PBRs in localities in different States, but this has been limited to documentation and not yet escalated to management.

The *Biological Diversity Act, 2002,* supports a Biodiversity Management Committee for every local governing body – *Gram Panchayat* or *Gram Sabha*. The Biodiversity Management Committee are provided with guidance and technical support by the National Biodiversity Authority and the State Biodiversity Boards. The *Biological Diversity Act* stipulates that:

> Every local body shall constitute a BMC within its area for the purpose of promoting conservation, sustainable use and documentation of biological diversity including preservation of habitats, conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals and micro-organisms and chronicling of knowledge relating to biological diversity.
>
> (GoI. National Biodiversity Authority 2002b)

This clause expresses an important step towards involving people at the grass roots level. While there are many other significant initiatives towards the decentralisation of ecosystem and resource management, such as the *Joint Forest Management* and *Watershed Development*, none of these have legislative backing (Gadgil 2006; Iyer 2003; Kothari 2001). In the present Indian context it is evident that it is not realistic to establish self-governing

structural systems (Gadgil et al. 2000; Gokhale, Velankar, and Gadgil 1998). However, the PBRs and Biodiversity Management Committees have statutory support and should therefore be able to function as collaborative instruments, to provide significant support to community-based institutions from the organised sector, that is, from government agencies, educational institutions and NGOs (Gadgil et al. 2000; Rao and Gadgil 1995). Most significantly the PBR is an attempt to promote the continued practice and development of local ecological knowledge in the changing contexts (Gadgil et al. 2000; Gadgil, Berkes, and Folke 1993).

As prepared by a Biodiversity Management Committee, the PBR seeks to document the availability and associated knowledge, occurrence, related sustainable practices, uses, and conservation, as well as the economic value, of local biological resources. There are two main steps in preparing a PBR. The first is documentation of all the available information on the biological resources and identification of issues related to them. Such information then forms the basis of the second step of developing a strategy for the conservation and sustainable management of these resources.

In regards to water resources the first step in the process of preparing a PBR involves the listing of water bodies through discussion with local people. This is followed by the mapping of these water bodies by using survey techniques. This step again involves local people, who have a more detailed understanding of their own setting. A sketch map can serve as a basis for further investigation. This map can also be used to highlight elements surrounding water bodies, all of which provide an integral system of various elements constituting the ecosystem. The next step involves documenting the status and dynamics of the water bodies (Gadgil 2006, 109) (refer Appendix A). Apart from documenting these physical characteristics, this assessment also makes an effort to document the trends in change of the water bodies and also to identify any causes of these changes. This demonstrates that the PBR is a continuous process over time, as it also documents activities related to the water bodies, user groups benefiting or affected by it, changes in flora and fauna, and the quality of water resources.

The second step involves the preparation of a management plan by a specific community to articulate and promote conservation, sustainable use and equitable sharing of resources (Gadgil 2006). This information is mainly based upon the perceptions of people from all segments of the society. It is gathered through in-depth interviews. The information relates to current management practices, experiences from these practices, and from groups that have benefited or lost from such practices. The plan document also records information

on what the various user groups would like to be included in the management plan. This information relates to but is not limited to:

1. Rights to access and use of the resource;
2. Roles of different government agencies, landowners, community groups, private industry;
3. Local versus outside actors;
4. Technologies to be used; and
5. Access to capital or markets.

(Gadgil 2006, 115)

Data from both steps, when combined together, can help a community to devise innovative solutions which could be context specific. Such a management plan can then be implemented after consensus is gained from the local *Gram Sabha* or *Gram Panchayat*. Hopefully, this people-centred approach to planning and management of local resources, can serve as a significant tool in coming years. Its methodology and context have been evolving simultaneously with the preparation of a PBR in different villages. In addition, at present only the first step of documenting the local knowledge and resources is under way. Local communities have been engaged to document their own knowledge, but the detailed nature of documentation in written format is not greatly appreciated due to its lengthy nature (Gadgil 2006). The impact of the second phase is yet to be seen as to date there has been no development of a management plan by any village in India. However, the PBR is a very significant step towards the decentralisation of natural resource management and the participation of communities in realising these plans.

It is evident that there are various policy initiatives at National level that provide opportunities for Indigenous or local community engagement in water resource management. However, the implementation of these policies at the grass-roots level has been a crucial challenge. The next section discusses some of these challenges of grass-roots organisational efforts to manage their own resources under this overarching framework provided by the Indian National Government.

5.1.3 Grass-roots developments for water management

The failure of the early watershed approaches initiated by the Indian National Government has led to the development of a 'bottom-up' approach. These have been mostly initiated by the NGOs, where they are working with local communities to organise themselves and manage their own natural resources. At the grass-roots level, as opposed to a 'top-down', bureaucratic, market-driven approach, is the concept that water is 'commons' or a 'common

property resource' which needs to be managed by the community (Blaikie et al. 1997). Watershed management needs robust community groups to harvest, divert, properly use, and manage the disposal of the flowing water from the moment it falls on the earth's surface in the form of rain (Kothari 2007; Gawande 2001). The participatory watershed management practice empowers a society, strengthens community governance and offers the potential to resolve most of the conflicts within the community (Borrini-Feyerabend and Tarnowski 2005; Dube and Swatuk 2002).

However, empowerment is not the primary objective of effective community participation (Probst et al. 2003). Rather, participation should result in community acceptance for better decision-making, 'accountability and ownership' of decisions, and finally it should contribute to social learning (Mostert 2006). There have been a few successful examples of community participation in watershed management in recent decades: in Maharashtra State, the Ralegaon Siddhi, the Hiwre Bazar, and the *Pani Panchayats* in Pune; the Sukh Majri in Haryana State; examples in South India; and the Alwar in Rajasthan State. However, these are examples of grass-roots developments initiated by key people and NGOs aided by respective State funding to address specific local water problems and lack of recognition by government policy on water management.[2] Furthermore, the replication of these successful examples in other contexts has not been very effective either because of changes in the local context and the attitudes of the local people to adopt the practices (Kerr 2007; Menon et al. 2006; Saleth and Dinar 2004).

A comparative assessment is now needed of the participatory management institution and the centralised 'top-down' approach in terms of their success in the long term of realising quality and sustainable water management outcomes in India. Preliminary comparative assessments of selected water institutions in India by Bourna, Soest, and Bulte (2007), Ananda, Crase, and Pagan (2006), and Kerr et al. (2000) have demonstrated that the participatory approach is more effective than the centralised approach, mainly due to its flexibility, equity, commitment, and trust. However, these studies conclude that certain issues are still left unresolved, which may affect the success of participatory institutions in the long

2 These cases are the result of efforts of key people like Anna Hazare, Popatraw Pawar and Vilasrao Salunkhe, and NGOs like Tarun Bharat Sangh. These cases have not been chosen as case-study examples because the intention of this research was to study an Indigenous community management system in a semi-arid region where a traditional water harvesting and management system existed historically. These examples, by contrast, have been based on the watershed planning approach, using techniques of watershed conservation by a heterogeneous community (a combination of people belonging to various non-Indigenous groups, Indigenous groups, castes, and religions).

term. For example, a conflict between 'upstream' and 'downstream' communities and the land ownership patterns that determine water distribution certainly require further research.[3]

The second issue concerns economic investments in these kinds of projects. These are likely to increase where the effectiveness of the community participation and governance for the aspiration of economic benefits occurs. However, in the long term the impact of these investments does not ensure sustainable development for the community (Kerr et al. 2000; Ananda, Craise, and Pagan 2006).

The third issue deals with the role of Non-Government Organisations (NGOs), or the alternative of a single facilitator, which are the driving factors in most self-governance cases. Various NGOs and social activists have been critical in the revival of traditional community-based water harvesting systems and developing alternative feasible institutional systems for their efficient management. For example, work by Anupam Mishra and his NGO Tarun Bharat Sangh with the community and traditional systems in Alwar District in Rajasthan followed by his book titled *"Aaj bhi khare hai talab"* (The Radiant raindrops of Rajasthan); also work by URMUL Trust, a brainchild of Mr. Sanjay Ghosh, in Phaludi, Pokhram and Majuli villages of Rajasthan have been an inspiration for the water conservation movement. Another significant publication, *"Dying Wisdom"* by the Centre for Science and Environment in 1997, was a pioneering step in raising awareness about the various traditional Indigenous water management systems located all around India. These movements changed the dominant paradigm of water as product given by nature to water as a product of nature plus culture. It needs to be understood that the continuity of this kind of support to a local community is essential for the success of their community-based management approach. This support structure is greatly dependent upon funding, individual agendas, time, and priorities of respective NGOs (RCR1; Bebbington, Hickey, and Mitlin 2008; Iyer 2007).

Other important aspects which affect community participation are historically-defined power and social customs. These include the importance of caste, gender and social customs (Bourna, Soest, and Bulte 2007; Kurian and Dietz 2004). One important issue that results in inequitable participation is not recognizing the existence of a local or Indigenous institution that might have governed the water management in the past. Unless these issues are addressed within a wider context, participatory management systems cannot be expected to lead towards the sustainable management and development of water resources.

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3 In India conflict between 'upstream' and ''downstream' communities is available in Krishna dam project, in Alwar village in Rajasthan (project by Tarun Bharat Sangh) and many others. During the researcher's stay in Adelaide, a similar conflict was found in regard to the Murray-Darling basin that is heightened by prolonged drought. This is currently the main focus of research debate by the Water Research Cluster at the University of Adelaide.

This section provided a broader picture of decentralisation in India at the national level. Since each state in India responds to the national policies in different ways, it is crucial to understand the policies in the Maharashtra State in which the three selected case studies are located. The next section continues the analysis of various policy reforms proposed by the Maharashtra Water Ministry and the respective Water Resource Department.

5.2 Decentralisation in Maharashtra State

5.2.1 Policy and institutional reforms

Based on the various national policies, the Water Resource Department of Maharashtra (WRDM) introduced several water sector reforms. These reforms aimed at involving local communities in the decision-making process leading towards their empowerment. This section provides a broad overview of the water sector in this State in terms of resource development and the various amendments to management and governance systems. Since the formation of the State in 1960, irrigation and drinking water sectors have been dealt with separately, and little effort has been made to link the two under existing watershed development programs (Joy and Paranjape 2004; DHMJ Drought Forum n.d.). Therefore, in this section, these two sectors are discussed separately in terms of the policies proposed for each of them.

In line with the Federal policy, in the second half of the 19th century, the State placed emphasis on large dam projects following major famines and crop failures in the early part of the century. The objective was to enhance irrigation systems to ensure food security. However, these irrigation systems did not achieve the objectives they were intended to, nor meet the water demands of a crisis situation (Joy and Paranjape 2004; GoM 1999; Lele and Patil 1994).[4] In 1972, the National Government's Command Area Management program stressed the necessity of involving farmers in the management of irrigation systems. Unfortunately, no such water *Panchayat* committee was formed in Maharashtra until 1985 (Joy and Kulkarni n.d.). As there was a general understanding about it, some Water Users Associations were formed in various canal-irrigated villages by 1985, that were entrusted with the maintenance and distribution of water to the irrigators. Again this demonstrates that the policies acknowledged the role of local communities but left farmers only with the maintenance and distribution process with no involvement in any prior stages of consultation and decision-

4 Most of the areas in which these irrigation systems were proposed and developed had black cotton soil, which already had a good water holding capacity wherein farmers mostly grew crops which required minimal water. Therefore, there was already an availability of water and a demand arose only when rainfall declined. People were not supplied with water unless they had applied for this resource in advance and also paid for this service. This was not a very useful system for the farmers (Joy and Paranjape 2004).

making. Furthermore, the recent State Water Policy exempts the tanks of ex-*Malguzari system*[5] of Vidarbha region from mandatory WUA water allocation entitlements and allows them to continue with their own water allocations and water quotas.

Following the implementation of the *Panchayati Raj* Institution (PRI) in 1992, water users at village-level were supposed to form Water *Panchayat* Committees under the *Zilla Parishad*.[6] These were entities responsible for the estimation of water requirements, the supervision of water distribution, for resolving conflicts and complaints, and for providing suggestions for the economic and equitable use of water (GoI 1992). These committees have been working at the *Zilla Parishad* level, either partially functioning or totally absent in the *Gram Panchayat*. This system completely challenged the main purpose of the *Gram Panchayat* of management at the local level. Even at the *Zilla Parishad* level, the decisions are taken by the chairperson of the water committee being accountable to the relevant State authority rather than to the local people (Joy and Paranjape 2004; World Bank 2000). Similarly, the Water Supply and Sanitation Department (WSSD) set up in 1996, was responsible for providing drinking water to rural areas working with the local *Gram Panchayat*. Thus, it can be seen that the *Gram Panchayat's* and *Gram Sabha's,* instead of being local decision-making bodies (as projected by *73rd and 74th Constitution Amendment*) became structures to operationalise the State's mandates.

This attitude is also reflected in other policy initiatives by the Maharashtra State. In 1999, the second Water and Irrigation Commission (also known as the Chitale Commission) devised a detailed list of recommendations grouped under the following themes:

1. Maharashtra and water resources
2. Basin-wide planning and management of water
3. Agriculture and irrigation
4. Project planning and implementation
5. Financial aspects
6. Non-irrigation use of water
7. Watershed development
8. Groundwater development
9. Restructuring of Irrigation Department

(Joy and Kulkarni n.d.)

The Commission recommended that sub-watershed basins be used as units for the planning and management of water resources in Maharashtra State. It also recommended a three-tier

5 *Malguzari* system was developed by British colonial administration for the management of the tank system developed by *Gond* and *Kohli* communities.
6 Refer Section 4.2.2 for detailed discussion on the *Panchayati Raj* Institution.

structure for water management planning and implementation: watershed committee, sub-basin level committee, and Maharashtra Water Commission. However, not all of these recommendations have been transferred into acts or policies and implemented. Moreover, they do not integrate the existing three-tier structure of the PRI with this proposed water management structure (Joy and Paranjape 2004; Planning Commission 2001a).

In 2003, after the NWP in 2002, Maharashtra State was one of the first states in India to propose a *State Water Policy* (MWP). This policy acknowledged that the economic, equitable, and sustainable use of the water resource is a matter of utmost urgency (GoM. Water Resource Department 2003). The MWP, similar to the NWP, expressed the necessity of community participation for domestic as well as all other purposes. It also advocated for private sector participation, water use pricing, water use priorities, water use entitlements, rights, and water pricing. In its changes to water use prioritisation, the industrial and commercial uses were given second priority to domestic use. However, it is evident that water allocations for industry will receive priority over agricultural and environmental requirements. Another new idea introduced at this time, derived from the NWP and reflecting World Bank thinking was the concept of water rights and entitlements. The MWP, 2003 acknowledged that there was "considerable economic and social value in water user entitlements" (GoM. Water Resource Department 2003). The MWP recommended that the transfer of water entitlements should be permitted, thus enabling trade in the water sector. However, the Policy failed to provide any guidance on how these entitlements are to be defined, and it can be seen from earlier discussion that in India there is no law defining rights to water for any user (Joy and Paranjape 2004; DHMJ Drought Forum n.d.). The policy made a definite commitment to propose legislation to make participatory irrigation mandatory through legally recognised organisations like the Water Users' Associations. However, it has exempted the ex-*Malguzari* tanks (which are located in the selected case studies) from these allocations. Also it does not make clear the role of local communities in managing the water needed for drinking, domestic use, and sanitation.

The MWP was further flawed by advocating that the authority to decide on the criteria and quantity for the transfer or trading of water entitlements would be determined by the State water authority. Thus, it challenged its own objective to develop a participatory approach to water management, as the position of the community remains unclear in the whole process. The Policy further placed priority upon recovering water charges from all user groups to meet the cost of providing water services, despite recognising that not all users will be able to pay these charges. Hence, it recognises the need for providing government grants

and subsidies to meet this requirement, but there is no clear account as to how this is going to be implemented and by whom.

IWRM in Maharashtra

As stated earlier, the approach to water management in Maharashtra State has historically and conventionally been fragmented across several government departments. The attempt to integrate relevant organisations in recent years is evident through the formation of the Maharashtra Water Resources Regulatory Authority which seeks to regulate the utilisation of surface and ground water and to establish tariffs. In contrast, the draft bill for the Maharashtra *Integrated Water Resources Management Act, 2004,* aims at developing an institutional framework targeting integration. However, efforts across these two attempts have not been integrated, thus creating a structural or institutional gap. In addition, there is a lack of link across the functions of various State government organisations which seem to overlap. For example, the Irrigation Department is dominant in the management of water resources and the presence of other agencies seems to be inconspicuous.

In 2005, the implementation of the MWP and the IWRM commenced with the proposal of the *Maharashtra Water Resources Regulatory Authority Act*, (MWRRAA) and the *Maharashtra Management of Irrigation Systems by Farmers Act* (MMISFA). The main objective of MWRRAA was to establish an institutional framework to:

1. Regulate water resources with the state;
2. Facilitate and ensure judicious, equitable and sustainable management, allocation and utilisation of water resources; and
3. Fix the rates for use of water for agriculture, industry, drinking, and other purposes.

(GoM. Water Resource Department 2005a)

Within this framework the MWRRAA has embraced a progressive idea of the use of the river basin as a planning unit, and the management of the water resource has been decentralised to the lowest practicable level on the basis of the hydrological unit (GoM. Water Resource Department 2005a). However, the MWRRAA does not address the role of the *Gram Panchayat* and *Gram Sabha* which constitute the lowest unit of the decentralised institution. In addition it only attempts to address the river basin issue and does not comment upon traditional water harvesting systems which are functioning in various villages. Further, the Authority's effort has been limited to the development of the Water Users Association (WUA). The WUAs mostly focus upon the use of canals or public lift irrigation systems. In addition, the

WUAs lack integration with other existing social and institutional organisations and with other larger processes of agricultural change (Narain and Chugh 2008). Various critics have argued that the processes of WUAs have not been participatory (Mollinga 1998 as cited in Narain and Chugh 2008); there has not been enough devolution of power (Narain 2000; Mollinga 1998); the efforts have been geographically limited (Shashidharan 2000); and that they have been greatly guided by funding agencies (Narain and Chugh 2008). WUAs have been considered as instrumental agencies of various Government Organisations to improve irrigation systems without any link to the mainstream system. This disintegrated approach has resulted in a lack of accountability between the state agencies and user groups.

The MWRRAA imposes a heavily bureaucratic market-oriented framework that does not include community or any other user group in the decision-making process (Joy and Paranjape 2004; DHMJ Drought Forum n.d.). The *MWRRA Act* envisages the idea of water quotas based upon landholdings in the command area. This idea contradicts its own objective of water access equity, as the landless will have no or limited access to water. The second act, the *Maharashtra Management of Irrigation Systems by Farmers Act*, *2005*, as the name suggests, is limited to the irrigation of lands by canals or public lift irrigation schemes. Under this *Act*, the WUAs are given the authority for water distribution and maintenance of the sources. However, all decisions are made by an engineer appointed by the State government, and WUAs only act on the decisions made by these appointees.

From the above discussion it is evident that the management of water in a democratic set-up is a complex affair and in Maharashtra State it is being performed in a piecemeal approach across various government departments and organisations. The Maharashtra State government has created different initiatives to manage its water resources, but, the various policies and acts do not present a clear picture of an integrated participatory approach to water management at the lowest village level due to the absence of structural and functional links across various agencies. Nevertheless, the State has made an attempt to provide an overarching framework, a platform to enable involvement of all stakeholders. However, the decentralisation and integration efforts at the local level pose important questions. The next section discusses some of these grass-roots organisational efforts to manage their own resources under the framework provided by the Maharashtra State Government.

5.2.2 Panchayati Raj Institution

In 1992, the National government introduced the *73rd and 74th Constitutional Amendment Act* (CAA), which emphasises people's participation in the process of development and decision-making. The *Amendment Act* mandates a three-tier organisational structure at the district, block and village levels, thereby bringing decision-making and management close to the people. Another positive recommendation is that the *Amendment Act* also ensures the participation of marginalised groups of Scheduled Castes and Scheduled Tribes (including Indigenous communities) and also women from the community. The most significant follow-up law relating predominantly to the tribal areas and Indigenous communities is the *Panchayat Extension to Scheduled Areas Act*, *2006*, which has several positive elements of decision-making. This *Act* gives substantial ownership rights, and decision-making powers to tribal, village level institutions. For example, it confers the ownership rights of non-timber forest produce to the tribal communities. However, it is unclear in the *Act* whether these ownership rights and other matters of jurisdiction extend to water resources (Iyer 2007) because under the same Constitution water is still declared to be a State property.

The State of Maharashtra is considered by the World Bank to be a pioneering state in introducing the PRI; in fact it is believed that the CAA amendments were based on Maharashtra's *Panchayati Acts* (World Bank 2000). Before the amendments, Maharashtra already had the *Bombay Village Panchayat Act, 1958*, and the *Panchayat Samiti Act, 1961*. Minimal amendments to the existing acts were made in accordance with the requisites of the CAA. The three-tiered structure of a *Zilla Parishad* at the district level, *Panchayat Samiti* at the block level, and *Gram Panchayats* at the village level, had already been in place in this State before the CAA was passed (refer Figure 4.2). *Gram Sabha* is defined as the body constituting persons registered in the electoral rolls relating to a village within the area of the *Gram Panchayat*. *Gram Sabha* can be considered as the fourth-tier of the PRI structure acting at the lowest unit of a village. There has been an attempt to craft bridges between the three-tiers of the structure by giving representation to the members of the lower-level in the higher-level bodies. For example, the village heads or *Sarpanch* of *Gram Sabha* or *Gram Panchayat* are represented in the *Panchayat Samiti* and the head of the *Panchayat Samiti* is given representation on the *Zilla Parishad* committee. However, this attempt gives rise to upward representation, accountability, and transparency, rather than downward accountability, which would be the factual approach to achieve devolution of power.

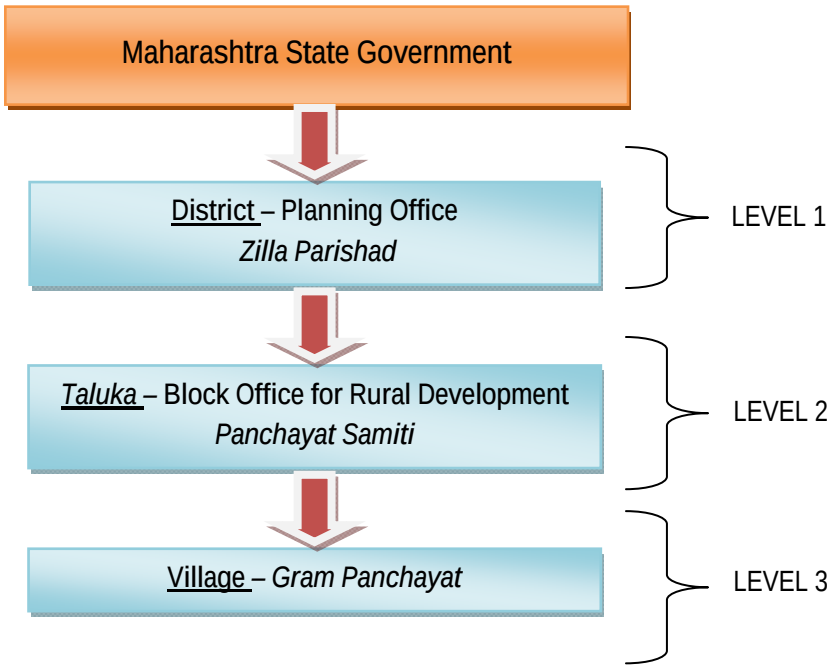

Figure 5.2: Three-tier structure of the *Panchayati Raj* Institution

As per the CAA, the *Panchayati Raj* Institutions have been endowed with such powers and authority as may be necessary to function as institutions of self-government including the devolution of powers and responsibilities upon *Panchayat's* at the appropriate level with reference to:

1. The preparation of plans for economic development and social justice; and
2. The implementation of such schemes for economic development and social justice as may be entrusted to them.

It was expected that after the decentralisation of power to PRIs, resources for various programs under the National and State Governments would be directly allocated to the respective PRI. However, in Maharashtra it can be observed that no concrete steps have been taken to integrate PRI structure in the State's planning and implementation of various programs (Planning Commission 2001a). Recently it can be observed that with the formation of the MWRRA in 2005, there is no clear mention as to how this Authority is going to work with the existing PRI structure for the management of water resources falling within their jurisdiction.

According to the Article 243(G) of the CAA, state governments are expected to place the functional, and financial autonomy dealing with minor irrigation, water management and

watershed development under the control of the *Panchayats*.[7] However, in Maharashtra State, devolution of function, functionaries and funds, which is labelled as the three F's, has not occurred beyond the District level (Planning Commission 2001a; World Bank 2000). There are subject committees formed at the district-level headed by the chairperson of the *Zilla Parishad*, but, these subject committees do not have any representation from the lower tiers of the *Panchayat Samiti* and *Gram Panchayat*. The decisions are thus taken directly by a respective committee without any participation from the community and in the absence of community representation at the committee level.

Another example of the lack of integration of PRIs within the Maharashtra State system can be observed in the on-going centrally-sponsored scheme, the Command Area Development (CAD) program, initiated in 1975. Under this scheme, the State government is supposed to promote farmers' participation through the formation of WUAs in irrigation management, and also provide subsidies under criteria established by the National Government. The sequence of activities seeks to motivate farmers to help them to form associations, by drawing up Command Area Development plans, arranging inputs, and by management of the command including the distribution of water to farmer members. This clearly indicates that the planned allocation of water will be done by officers appointed by the State and will be merely handed over to WUAs for maintenance and operationalising. Funds are released to the Irrigation Departments which then allocate them to approved WUAs. The WUAs and the entire program operate independently of the PRI system. This results in a curtailed devolution of the three F's to the PRIs.

The local level institution, the *Gram Panchayat* or elected village committee, is responsible for the grass-roots level implementation of water management policies made at higher levels. The *Gram Panchayat* could be the most powerful institution for management of water resources as it is linked to the direct users of resources (Iyer 2007; Bauman and Farrington 2003; Shiva 2002; Narain 2000; Kothari 2000). However, the water committee functioning at the *Zilla Parishad* level is either partially functioning or totally absent in the *Gram Panchayat*. At *Gram Panchayat* level the *Panchayat* members are responsible to assess water quality, purchase chlorine-based cleaning powder and so on. All decisions pertaining to water management are taken by the chairperson of the water committee at the *Zilla Parishad* level. The criteria of accountability and transparency work downward in the case of the *Gram Panchayat*, with the elected representatives themselves being accountable to the village

7 The eleventh schedule of the 73rd CAA has assigned the responsibility for preparation of plans for economic and social justice and their implementation in relation to 29 subjects. The List of 29 subjects is given at Annexure III of the Act. It is also the responsibility of the State Government to identify what the three different tiers of a PRI would do.

community, especially if they have to contest the elections repeatedly. This mechanism, however, does not work with officials being accountable to elected representatives of *Gram Panchayat*'s (Pillai 2006; World Bank 2000). However, as a result of political lobbying, personal interests, and a lack of integration during the planning process to date, the *Gram Panchayat* have not been able to deliver results to the extent envisaged (Iyer 2007; Pillai 2006; Ballabh 2003). Moreover, the lack of co-ordination and clarity between the National, State and Local level institutions still remains a difficult task. The *Gram Panchayat's* and *Gram Sabha's* which could have been models of self-governance have become merely operationalising and implementing agencies for State policies.

The argument in the above sections has highlighted the lack of co-ordination between various water departments and organisations created by the State Government in response to its various policies. In addition, dependency on quantitative and technological data results in a fragmented approach to water management (Iyer 2007, 2003; Briscoe and Malik 2006). These institutions have succeeded in increasing the irrigated areas but are unable to ensure an equitable water distribution for a longer duration (Ananda, Craise, and Pagan 2006; Saleth 2004). As the earlier discussions have stated, WUA is the primary institution at the village level that deals with functions of water allocations, collection of charges and dispute resolution at the micro-level. However, the ultimate authority and decision-making powers still rest with the MWRRA thus discouraging a true form of community participation. Furthermore, WUA is concerned only with the irrigation water, thus leaving other uses to be looked after by either *Gram Panchayat* or the PWD without any co-ordination between the two.

The various policies and engineering structures (dams, canals, and tube wells), developed over the last two decades, have contributed to an increase in the total irrigated areas in Maharashtra. Similar to National policies, attempts to decentralise water management have been made by the Maharashtra Water Department. However, the implementation of these attempts has been limited due to unorganised governance structures, multiple organisations and the lack of co-ordination between them. With the failure of modern approaches, many scholars have highlighted the need for understanding the traditional management systems and that drawing lessons from such knowledge would have far-reaching implications for society and current practices (Iyer 2008, 2007, 2003; Barah 2003; Sharma 2003; Shah and Raju 2001; Berkes, Colding and Folke 2000; Agarwal and Narain 1997; Sen 1992; Brokensha, Warren, and Werner 1980). The next section attempts to understand one such historical decentralised community-based water management system.

5.3 Historical overview of decentralised management during the Gond rule

Decentralised management of water resources has existed in Maharashtra since the pre-Colonial period. The most significant systems that are still functioning today, are the *Phad* system of Northern Maharashtra and *Malguzari talavs* of *Gond* and *Kohli* in the Vidarbha region (where the case studies are located).[8] These systems were sources of minor irrigation, which were suitably located and constructed with ingenious engineering skills. Successful management of water resources was made possible due to the combined efforts of royal patronage, community participation and collective action. It is critical to understand the Indigenous knowledge-base of these precedents for the management of the traditional water harvesting systems to derive appropriate lessons for current management approaches.

This research focuses on the *Malguzari talav* system, jointly developed by *Gond* and *Kohli* communities, which skilfully conserved scarce rainwater in the eastern part of Maharashtra (central India). The following discussion gives a brief historical overview of the *Gond* rulers and their administrative system. This is followed by a detailed discussion of the water harvesting system and its operational and management system. The final sub-section highlights the various changes made to the management system under various rulers. This argument will help situate the three case studies in their historical context and provide lessons for their present practices.

All the factual information in the following section has been taken from various archival sources (refer to Appendix B for a complete list of these documents) and also based on information given by some informants from the case studies. The preliminary sources for the historical background of the *Gonds* have been the various settlement reports, gazetteers published during the Colonial period, and various anthropological studies of the same period. Some post-Independence studies, undertaken by Indian scholars, have also informed this section.

5.3.1 History of Gonds

The *Gond* constitutes the principal tribe of the *Dravidian* family and were perhaps the most important non-*Aryan* tribe of India. Whereas most other Indian tribes have rarely achieved what contemporary historians label ‘civilization’, the *Gonds* were empire builders. By the 9th century A.D. the whole of the eastern section of the Central Province (as it was known during British colonial rule) constituting eastern Maharashtra, south Madhya Pradesh,

8 *Phad* system is based on river systems, where water from the river is diverted using *bandharas* (low weirs) and various types of distribution channels to different blocks of land. For a detailed description of the system refer toAgarwal and Narain (1997).

Chhattisgarh, and a considerable area of Orissa (current Indian states) came under the influence of the *Gond* and the whole region assumed the name of *'Gondwana'* (refer Figure 5.3). This empire remained isolated until 1743 due to the natural physical barrier of the Satpura Ranges to the north. The history of the tribe was not documented until the 16th century until the rise of the 48th Raja of the *Gond*.

The *Gonds* can be divided into various groups. The *Madia Gonds* inhabit mainly the remote hilly forested areas of the region; the *Raja Gonds* have historically been the ruling class and the *Gaita Gonds* are believed to have settled on the plains commencing agricultural practices (Wills 1923). Each *Gond* group had its own totem system that is today slightly forgotten. A family with a particular totemic animal would never kill or eat that particular animal but would worship it. This demonstrates the importance given by traditional people to the ecological habitat of which they considered themselves a component. Marriages within these groups were also not allowed. The highest god of the *Gond*s is *Persa Pen*, represented by an iron nail and chain embedded in bamboo (MLS 1; Fürer-Haimendorf 1979). The *Gonds* have been described by the famous anthropologist Verier Elvin in the *Settlement Report of Chanda District* (1869) by Mr. C.B. Smith as "people who want little beyond what the jungle and the compound around their home will provide: salt, liquor, some grain, tobacco, minimum clothing, iron for his axe, gaudy beads and 'run of the jungle'" (as quoted in Smith 1869, 37).

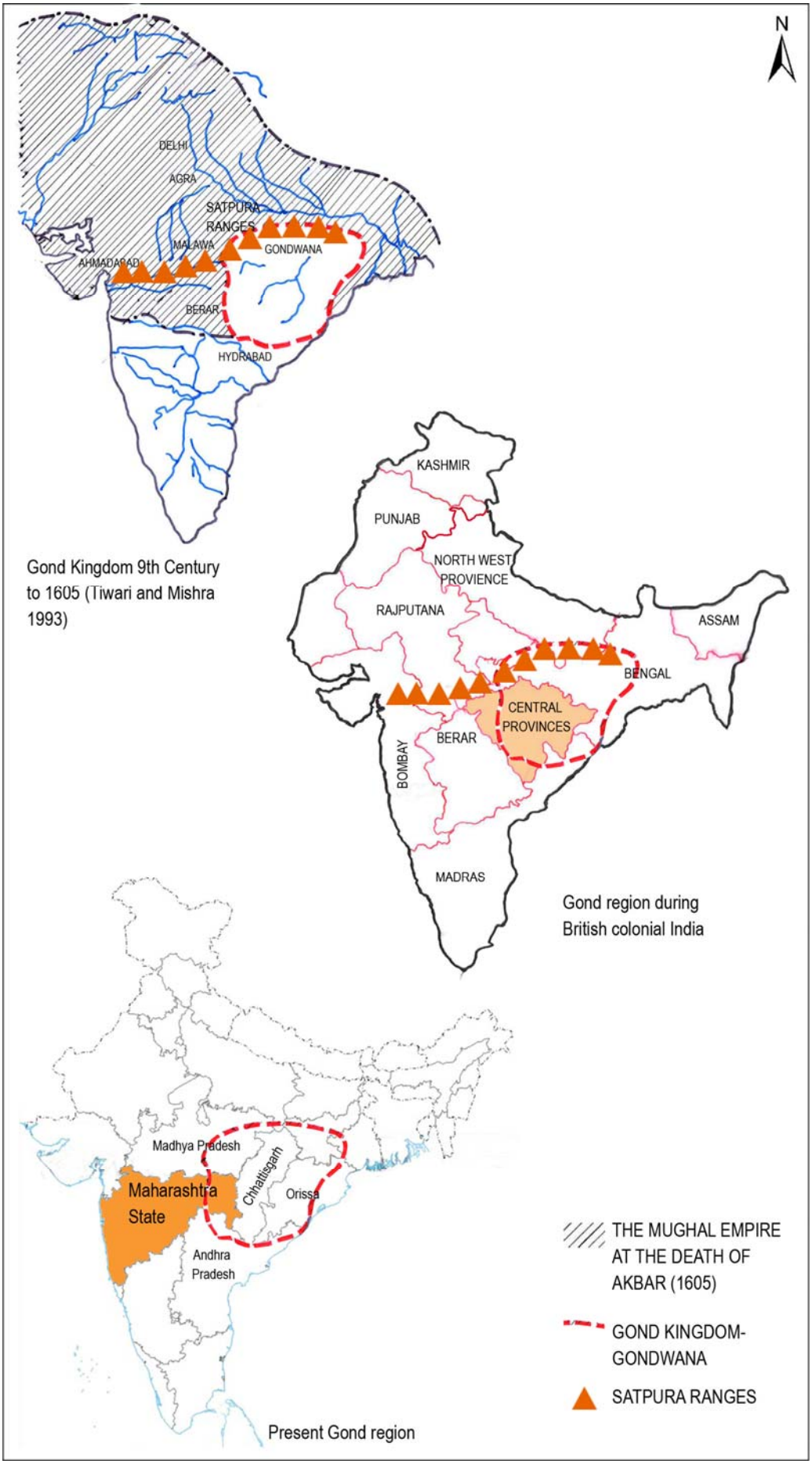

Figure 5.3: *Gond* Kingdom from 9th century until present

The administration of *Gonds* seemed to be a very simplified decentralised system. The main feature of this system was the distribution of country among local chiefs who were given powers to exercise complete authority in their own estate. The *Gond* Kingdom was divided into five main dynasties, namely *Mandla, Garha, Kherla, Deogarh and Chanda*. Each of these was further divided into *parganahs* (small estates or cluster of villages). A feudal chief, called the *Raja* or *Thakur,* was appointed to be responsible for collecting specific revenues from his *parganah* and was bound to attend to the *Gond* King with a stipulated number of troops (horsemen and foot soldiers) whenever their services were asked for (Rajankar and Dholke 2006; Wills 1923; Russell 1916). In addition, these *Gond* chiefs had to pay some annual tribute in the form of food like grains, honey, nuts, ghee (clarified butter) and so on. Despite these services and tributes, the *Gond* chiefs held wide powers and were given a free-hand in the internal administration of their *parganah.* Thus, it can be established that decentralisation of power was significantly effective during the *Gond* rule even with a loosely arranged feudal system. The King retained the authority to call on the *Gond* chief to complete his demands, but the Chief was given liberty of operation in his own estate.

Under this kind of semi-feudal decentralised system, the *Gond* chiefs developed their *paraganah's* into well irrigated and productive settlements. The striking feature of *Gond* settlements is that the fields were carefully terraced and irrigated and the land was well cultivated. The reservoirs built displayed their engineering skill. In order to increase people's interest in building tanks, it was also a practice of *Gond* rulers to grant revenue or free land to anyone who built an irrigation project. The *Gond* king *Hirshah* (16th century) released a *farman* (declaration) which said:

> A person who clears a patch of forest for settlement will become the *Zamindar* of that area. A person who builds a tank will be awarded the land irrigated by such tank as a reward.
>
> (as quoted in Rajankar and Dholke 2006, 137)

The village headman was legally bound to build reservoirs and repair the old ones. Enterprising village headmen were granted protected status. Rent free service land was given to skilled workers for the maintenance of reservoirs. The *'Lakhbata*' system in the *Gond* areas entailed the communal ownership and management of land and water resources. This system created an ideal situation for the better utilization of natural resources. People from different families and castes – *Brahmin's, Rajput's, Kunbi's* and *Kohli's* settled in the region and were the principal cultivators of rice and sugarcane. The *Gonds* were more industrious and took to physical labour with pleasure. All these factors contributed to a better utilisation of natural

resources. Even the Deputy Commissioner of the Central Provinces during 1860s, Major Lucie Smith, remarked on the prosperity of the *Gonds* stating:

> They left a well-governed and contented kingdom, adorned with admirable works of engineering skill, and prosperous to a point which no after-time has reached. They have left their mark behind them in royal tombs, lakes, and palaces.
>
> (Grant 1870, lxxxiv)

The *Kohli* tribe is given the credit for the construction of a large number of irrigation reservoirs or tanks. Their place of origin is considered to have been at Benaras (LS1; Rajankar and Dholke 2006; Lawrence 1867). There is an oral history passed down among the tribe that they were invited by the *Gond* king of *Chanda* when he had made a pilgrimage to *Kashi*. After seeing their water management and resultant good agricultural production, he had invited them to his kingdom to construct similar tanks under his authority. The *Kohli* tribe came to the region and not only built tanks under the *Gond* management but also prepared an elaborate distribution system of canals and structures. The most important of these tanks are Nawegaon *Bandh* (area of 12.95 sq km) and Seoni *talav* (area of 5.18 sq km) (refer Figure 5.4). Mr. E. Danks, an officer in colonial administration, has acknowledged these great works by stating that "Working without instruments, unable even to take a level, finding out their mistakes by the destruction of the works they had built, ever repairing, reconstructing, altering, they have raised in every village a testimony to their wisdom, their industry and their perseverance" (Russell 1908a, 94). These tanks, which were built without conventional technical engineering knowledge, form an enduring monument to the native ability and industry of these enterprising cultivators. As stated earlier, under the *Gond* kings, a man who built a tank was granted the fields lying below it, either free of revenue or with minimal assessment. These kinds of grants were a considerable incentive to build tanks. Furthermore, sugarcane was the favourite crop of the *Kohli's* and these extravagant irrigation tanks helped in its irrigation during the long, hot summer months. Besides agricultural cultivation, the *Kohli's* secondary source of livelihood was manufacturing *gud* and even today some of the villages still practice these methods.[9]

9 *Gud* or jaggery is a specific type of sweetener, popular in India and some other Asian countries. It is normally manufactured by boiling raw sugar cane and is an unrefined product.

Figure 5.4: *Photograph of Seoni talav (Author 2008)*

5.3.2 Development of water harvesting structures and management systems

The *Kohli* approach sought to collect the maximum amount of water before it drained from the village boundaries. Tanks were built on various levels and were interconnected in a chain with an overflow system (refer Figure 5.5). In case of excess water flow, a tank was constructed downstream in which the water coming from the *pharas* or *pohar,* a waste weir, was trapped to optimize the utilization of the available water. Though these tanks were located below each other, the water was dispersed in different directions with the help of *pat* (irrigation or distribution channels) to maximize the area of land under cultivation. The *bund* was raised in stages using *kankar mati* (black cotton soil) which is a hard soil type that has a remarkable water-holding capacity. The height of the *bund* was based on years of observation. The water collected in the small *bund* not only hardened the *bund* but also strengthened it. In subsequent years the height was raised. At some places, where water pressure on the *bund* was high, the foundation was constructed from stones and a mixture of soil, small stones, lime, and *gud*.

Another type of harvesting structure constructed just beneath the bigger and higher level tanks was called *kutan.* Parallel to the *talav bund* another *bund* of 0.6-0.9 metre in height was constructed at a distance of about 15-18 metres (refer Figure 5.6). This area or *kutan* was used to spread the excess water from the tank before being released into the pat. This kind of system protected the *pat* from getting damaged due to the force of water as they were normally made from mud.

Different mechanisms were employed for water distribution depending upon the size and capacity of the tank. The mechanism used for drawing water into the *pat* from a tank for irrigation was called *tudum* (refer Figure 5.7). For large tanks or *talavs*, a straight tunnel was constructed across the base of the *bund* using stones over which a step-like structure called *tudum chi payari* (step) was constructed on the inner side of the tank. Every step had a hole called a *daccha*. Depending upon the level of water the respective hole in the step was opened and water was released in the *pat* (canal). The holes on lower steps were closed with the help of wooden logs called *dila* or stone slabs. In another method, a hollow tree trunk was placed across the base of the tank, connected by a vertically planted hollow tree trunk having holes at regular distance. These holes were plugged using wooden logs which were removed when water was needed to be drawn from the tank. This method required frequent repairs as the trunk soon decayed. Therefore, in later constructions, the traditional tree trunk was replaced with a brick or stone structure with similar holes in it (the binding agent was *chuna;* that is lime mortar mixed with *gud* for water proofing) (refer Figure 5.8). For a *bodi* (small farm pond), a straight tunnel across the base of the *bund* was constructed using stones. A log was placed at the mouth of this tunnel and plastered with clay. It was removed whenever water was required.

Figure 5.5: *Aerial photograph of connected tanks (Author 2008)*

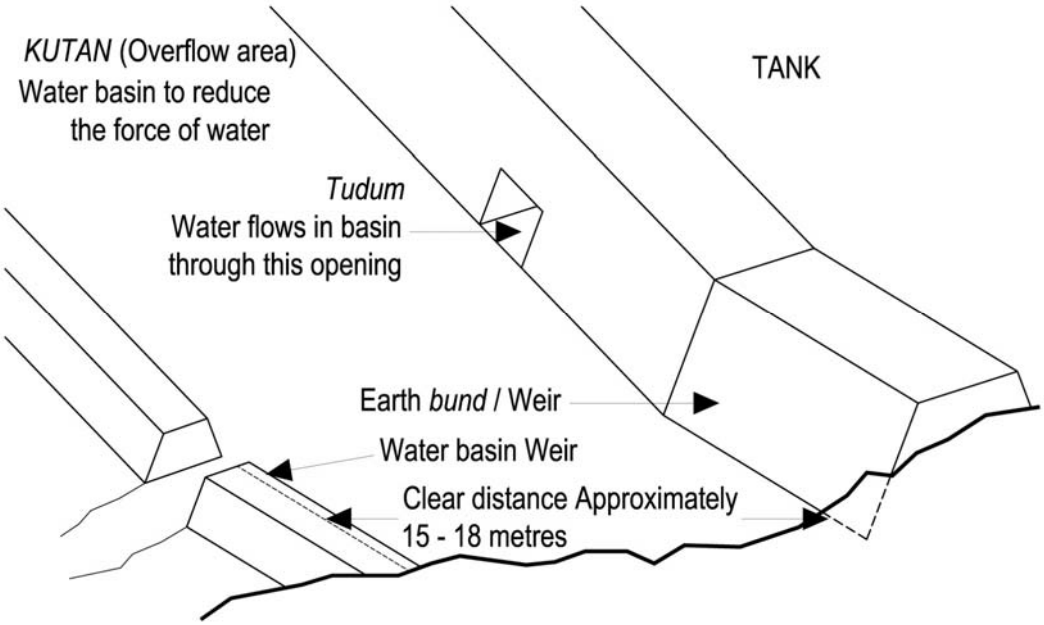

Figure 5.6: Sketch showing *kutan* below the tank *bund*

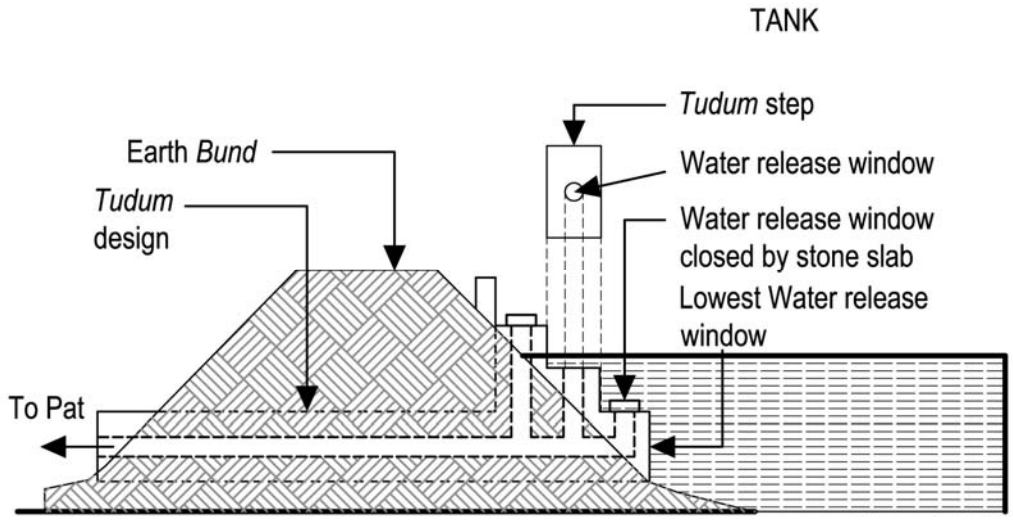

Figure 5.7: *Tudum* - water distribution mechanism

Figure 5.8: *Photographs of an overflow system using stone structure (Author 2008)*

System of operation and maintenance

Collective action and efficient village leadership managed this meticulously designed harvesting system, embedded in traditional ingenuity. It is imperative to understand this ancient institutional system to be able to draw lessons for present policies and institutions and management of this tank system in the present context. As stated earlier, a *Gond* chief was appointed by the *Gond* King to collect revenue and to oversee the administration of an area. He had to deposit a fixed amount (decided by the King himself) with the King every year. In the case of surplus revenue, the *Gond* chief would make a profit. During poor seasons, however, he had to bear a loss. The *Gond* chief was responsible for the maintenance of the tank system and his incentive was the monies that were derived from agricultural production arising from the supply of water from these tanks (Rajankar and Dholke 2006; Paranjpye n.d.; Lawrence 1867). Applied nationally, this system would sound ineffectively hierarchical but it functioned efficiently because the *Gond* chief wanted to maximize his chances of making a profit, thereby ensuring that he personally supervised the construction, maintenance, and operational activities associated with the tanks. This management system minimized the failure of crops due to water shortage, and helped sustain a reliable source of water to residents and farmers (ALS 1, 3; RLS G; MLS G1).

All villagers dependent on these tanks would collectively work towards the maintenance of the *pat*, cleaning catchment areas, de-silting the tanks, and maintaining the

bund under the supervision of the *Gond* chief. The efforts of cultivators who laboured were compensated by the allocation of land in the command area and free water access for their crops (Rajankar and Dholke 2006; Grant 1984; Russell 1908a; Lawrence 1867). The distribution of water was handled by a committee of elders in the village and the *Gond* chief whom decided on the distribution of water according to its availability. A person called a *Pankar* was appointed to implement the distribution of water (Rajankar and Dholke 2006; Grant 1984; Russell 1908a; Lawrence 1867). He was generally a landless labourer having no interest in using water for his own benefit. Every cultivator had to give a share of the crop from their cultivation to the *Pankar* for his duties (Rajankar and Dholke 2006; Grant 1984; Russell 1908a; Lawrence 1867). Anybody found guilty of damaging a canal or a tank was denied their share of water for that year and fined in cash or kind. On failing to pay the fine, they were further denied a share of water for the next year as well. The *pakan* or silt dug out of the tank bed was used as fertilizer in the fields. The *Gond* chief decided the de-silting task which would take place once in 3-4 years (Rajankar and Dholke 2006; Grant 1984; Russell 1908a; Lawrence 1867).

At a local-level, *Gond* chiefs' land-controlling peasants often organised the construction of tanks, channels, and *bunds* to create irrigation systems. Such works were organised through community contribution to labour which was organised by the landlord. This labour was either *shramadan* (voluntary-labour) or sometimes even *majdoori* (forced-labour). Sometimes people of a special caste who were trained in this work were employed to conduct the construction. To pay for these constructions the local village chief, as a representative of the King, was responsible for the collection of taxes from local peasants or landlords. This limited the wider power of the landlords, who had to ensure good crops to pay the taxes and, hence, guarantee adequate water supply. It is therefore evident that water distribution was dependent upon the political power of different groups within local communities of users (Hardiman 2008).

Thus, all segments of the village community were involved in this management system. There was a clear division of the work, and the roles and responsibilities of all the beneficiaries in the maintenance and operation of the system were clearly defined. The water resources were considered community property. Therefore, the entire approach to the operation, maintenance and management of the system was decentralised, participatory and closer to the people and the land. This is particularly to be noted as, in the post-Independence context in India this seems to have been being completely overlooked by the Indian Government and planning authorities (Iyer 2007, 2003; Rajankar and Dholke 2006; Parajpye n.d.; Agarwal and Narain 1997). Lack of local community participation in the complete

management system at the various levels is an important cause of the overall problem of water scarcity and low productivity in India.

5.3.3 Shift from decentralised to centralised management

The previous section discussed the *Gond* water resource administration at the local level. Across the privileged level a similar but loosely arranged organisation is evident. The *Gond Rajas* had divided their kingdom amongst several feudatory *Gond* chiefs, who were responsible for the development of their region. These were the people responsible for the administration of their regions and in return had to provide military support to the *Gond* King when needed. No record of monetary transaction is found in this regard. In fact, one of the members of the Asiatic Society during his travels in 1798-99 mentioned that the whole merit of the undoubted prosperity of the *Gond* kingdom went to the good administration (Grant 1984). This clearly indicates that the region had a prosperous history during the reign of *Gond* rulers and it highlights the good administrative skills of the *Gond*.

These feudal chiefs would rent their lands to other families of *Brahmin, Kohli, and Rajput* in the region for cultivation purposes. In return they would pay the rent in terms of a few *manis* [10] of grains and a few pots of *ghee* a year (Sleeman and Jenkins 1818 as quoted in Grant 1984). These people were actually responsible for constructing tanks, cultivating lands, developing new agricultural practices and other developmental activities in the region. From this discussion it is evident that the *Gond* encouraged settlement of other class and caste people in their region and this amongst other things led to their prosperity. They oversaw the advancement of the region, and controlled its growth, and this was the main reason for their success. However, a deeper examination of history reveals that, although the *Gond* rulers prospered, the body of people (the common *Gond* people themselves) were unable to advance (Fürer-Haimendorf 1979, 1948; Grant 1984). The rulers were unable to develop the social capacities of their people and make farmers or craftsmen of them. They remained warriors with a high military reputation. However, due to loosely tied tribal systems under a military monarchy, they were soon defeated and subjugated by the *Bhosale Maratha* ruler of Nagpur.[11]

The *Maratha* rulers adopted the established forms and institutions of the *Gond* tribe. But the *Raja Gond* was now to support the *Maratha* ruler with an army and supply grains for

10 *Manis* is a form of measurement of weight similar to Kilograms. The conversion of *manis* to kilograms has not been able to be located.

11 The *Bhosale* family was appointed by the *Peshwa* ruler in Pune to look after his territory in eastern Maharashtra. Their centre was located in Nagpur and they ruled the adjoining areas, currently known as the *Vidarbha* region.

its own army (Grant 1984; Smith 1869; Lawrence 1867). To be able to meet these requirements, the *Gond Raja* had to depend on his chiefs for its supply. The chiefs continued their administrative practices, only with the extra burden of supplying the *Marathas* with food. It is interesting to note, however, that during the reign of both rulers, the resources of land and water were considered common property resources and were managed by the community under the *Gond* chief. The rulers were only concerned to get some amount of profit from these resources but not to take control of them. This establishes that the past rulers acknowledged the Indigenous knowledge and their systems and also that the concept that Indigenous or local people were better custodians of the resources than themselves. This is something the present policy-makers and implementing government agencies need to learn from the past.

This situation was radically changed under British colonial rule in 1854 once the region was amalgamated into the state of the Central Provinces. At this point there was a major change in the administration system. The rulers appointed village heads for each village, usually an individual with major landholdings or someone under the favour of the British, who came to be known as the *Malguzar*. He was entrusted with the ownership of the cluster of tanks in the village. Depending on the size and number of tanks, sometimes there would be two or more *Malguzars* in a village. They were given authority to collect tax from the landholders who depended on the tanks for the use of water for cultivation. Hence the tanks came to be known as *Malguzari talav* (tank) and their administrative system as the *Malguzari* system. The *Malguzars* had to deposit certain taxes levied by their officers into the government treasury and the surplus could be kept by them. Although the tax system still remained the same, this was the first time that the ownership of water bodies was given to a single person and this put an end to the ancient tradition of community-ownership of resources and concomitant notions of responsibility and accountability, and therefore, participation in the process of effective water resource management. It was also the beginning of the centralised 'top-down' administration system, in which the community had no role to play in resource management. In addition the tax was to be paid in revenue which replaced the earlier system of grains and *ghee*. Land and water were managed by the *Malguzar's* but were under the ownership of the British rulers (GoM 1994). Although the status of water and other resources in individual villages is not clear in any historical document or from researcher's discussions with the villagers, it appeared that the *Malguzari* system continued to exist in all the selected villages namely Aashti, Mendha, and Rajapur until the 1950s.

Thus, the Indigenous traditional systems collapsed during the initial colonial period of conquest and conflicts, during which British rulers failed to provide funds towards the maintenance of the system. The conquest of the entire region during the 1830s by the British,

led to the break-down of old systems because they believed the traditional systems to be backward and limiting the development of the villages. Colonial rule introduced sophisticated engineering techniques of canal building to supply water to the peasants (Barah 2003; Agrawal and Narain 1997). By the 1870s, the Central Province Public Works Department, an administrative body, controlled the construction, maintenance and distribution of water, which further neglected these traditional systems and the Indian peasants followed suit.

The colonial period not only replaced traditional *Gond* water management systems but also redefined ownership systems over natural resources, land, water, forests, and minerals. After Independence, colonial policies continued to be followed, and the earlier system of community-ownership was transferred to individual or State or the National Government ownership, and any use of resources was taxed. This laid the foundation for a disintegrated approach to resource management. The State government decided not to tax the use of water from wells on private land which led to a boom in well construction in the richer agricultural zones of the region thus encouraging ground water resource exploitation (Hardiman 2008).

The *Malguzari* system was abolished in the region in 1955 with the introduction of the *Zamindari Abolition Act, 1948*, and there upon all resources were transferred to the possession of the Maharashtra State Government. The State Government continued the colonial policy of undertaking the management of resources including water in their jurisdiction and ensuring that the community would be supplied with water by the Government. Thus, a strong system of community management and use of water was abruptly put to an end by not acknowledging the customary rights over common property resources. Apparently it is evident that upon losing their ownership rights, communities became dependent on the different government agencies for the adequate water supply for domestic, irrigation and other purposes. Due to lack of traditional knowledge about the management and maintenance of the tanks and the associated infrastructure, the agencies abandoned these practices and introduced new techniques of canal irrigation, and tube wells for water supply (Rajankar and Dholke 2006; Barah 2003; Paranjape n.d.; Agarwal and Narain 1997). Thus, alienation from their knowledge base for a long duration made communities lose their interest in their traditional systems becoming heavily dependent on government agencies for the supply of water to meet their requirements.

Conclusion

To summarise, in the mid-nineteenth century the British colonial system and knowledge replaced traditional systems with new industrial engineering solutions for a commercial approach to agriculture which significantly distanced the people from their water management process and their traditional knowledge base. British policies created economic differentiation in the society as it developed a class of rich and poor peasants. This centralised system continued to be adhered to by successive Indian governments in the post-Independence period. These policies and administrative structures exist today, although more elaborate, and still follow the colonial principles of maintaining the superiority of official administration and nurturing industrial engineering development. Local authorities were vested with exclusive powers over these hydraulic systems and deemed the managers over communities for this resource management. These initiatives led to the demolition of community organisational systems and people losing interest in the management and maintenance of their own systems further resulting in the degradation of traditional systems.

This study, about one of the traditional systems developed by *Gond* has suggested some important lessons for current approaches. This system has been developed over a period of time adapting to changes in the context in terms of population, climate, geography and so on. The importance of community in the overall management of water resources, use of context-specific techniques and materials, cost effectiveness, and environmental adaptability are highlighted through this study. It further demonstrates a co-ordinated effort of the community, the village chief and the royal authority which served as an integrated regulatory mechanism.

The analysis of Indian and Maharashtra policies and institutional structures highlighted the absence of this kind of co-ordination and co-operation between organisations. Further, they are more focused on imported technology solutions, do not aim to understand local traditional systems, and fail to satisfactorily engage Indigenous or local communities in the process, and as a result are unable to satisfy local needs making the overall process unsustainable. Adapting the best traits of Indigenous systems in terms of technique and management practices, could potentially make the current process more effective and sustainable.

Chapter 6. Case studies discussion

Introduction

This is first of the two Chapters that present the findings, discussion, and analysis of the three case studies. This chapter describes the three case studies individually and the community efforts to manage water. It develops an argument for the next Chapter to make a comparative analysis between the three case studies using the analytical framework devised in Chapter 3.

As outlined in Chapter 4, the case studies were selected after a preliminary study conducted in the region. A basic description of the places, their location, and an outline of the type of participation is shown in Table 6.1 below. All the three case studies are located in the Vidarbha region of Maharashtra State (refer Figure 6.1). Two of the case studies, Aashti and Rajapur, are located in the District of Bhandara whereas Mendha is located in Gadchiroli District. Mendha demonstrates self-initiated, externally supported, entire community participation for the development of a new institutional structure, and highly motivated and skilled participants are emerging. Rajapur is characterised by a representative type institutional structure with coordination by community members. Aashti, on the other hand, reveals a self-initiated approach to water management under a single leader, which was quickly altered after a change in leadership which subsequently resulted in the community losing interest. These case studies are discussed with reference to the evidence offered from the interview transcripts[1], and personal observations during fieldworks. Wherever appropriate, the discussion is supported with relevant evidence from archival literature of historical information and in some cases by current studies by other scholars. As discussed in Chapter 4, the interviewees were categorised into four main groups, and nine sub-groups and coded to maintain the anonymity of the respondents.

Case study	Location	Area	Population	Type
Mendha	Gadchiroli District	1929.07 Hectares	435	Community-initiated with external support
Rajapur	Bhandara District	204 Hectares	1826	Community-initiated
Aashti	Bhandara District	987 Hectares	2556	Leader initiated and decline

Table 6.1: Overview of the case studies

1 The transcripts are attached to this document in a CD. All the interviews were conducted in Marathi, the researcher's native language.

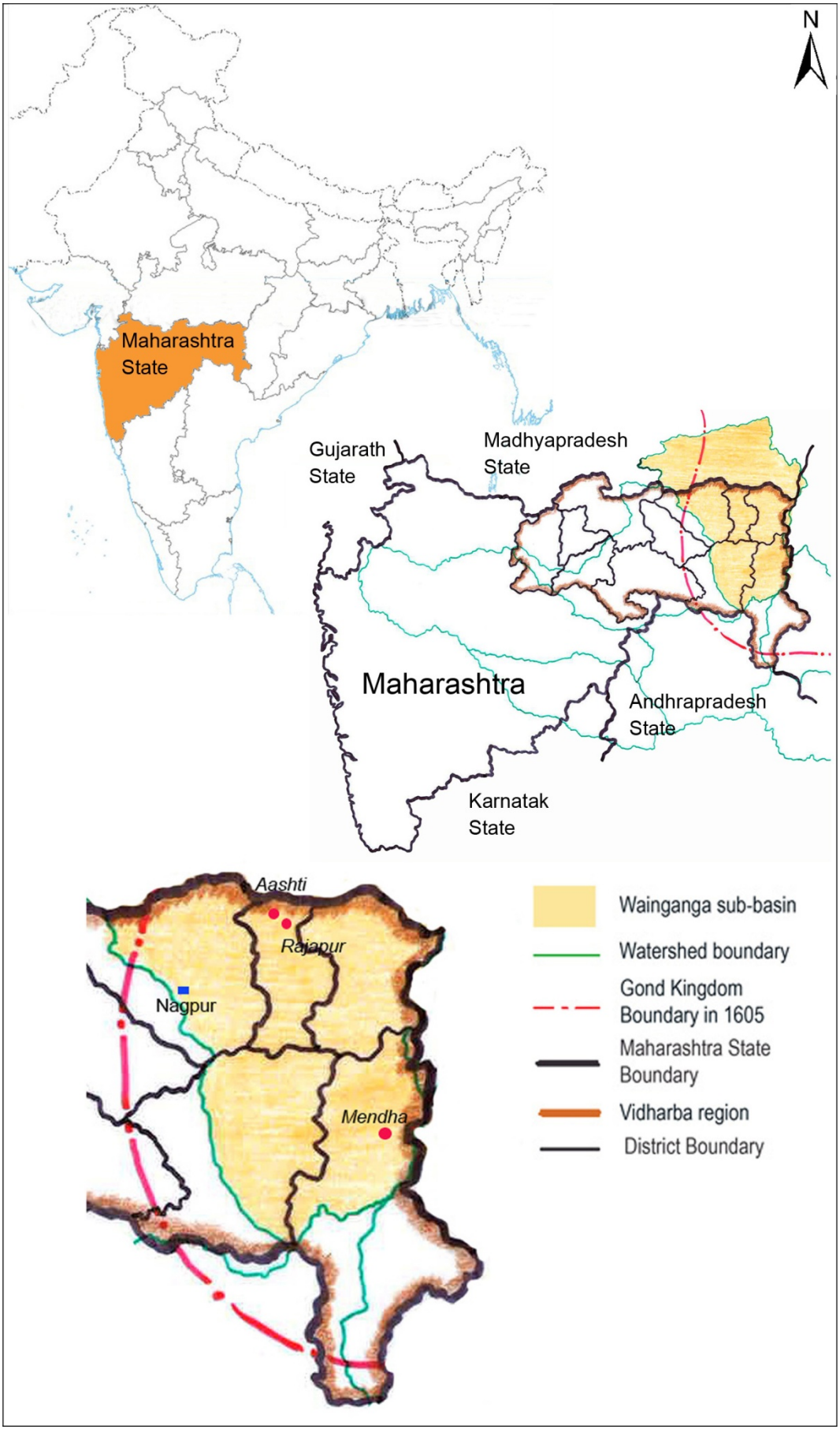

Figure 6.1: Location map of selected case studies (Map not to scale)

6.1 Case study 1: Mendha village

Several scholars have considered Mendha as a model, to provide lessons to other villages, not only in India but in the world, as a possible ideal self-reliant, informed and empowered community (Gupte and Bartlett 2007; Kothari 2006, 2001; Godbole 2002; Pathak and Gour-Broome 2001; Tofa and Hiralal n.d.). Mendha is considered an exceptional case by researchers and certain government officials for its community-based initiatives and self-determination in leading to self-governance (PFO 4; PFO 5; MCR 1; MGR 1[2]; Pathak and Gour-Broome 2001). With the incorporation of the field study, this section evaluates the planning and management efforts of Mendha, the first of the three case studies, in achieving sustainable management of their water resources. It describes Mendha's process of managing its water resources and its achievements and challenges through their community-based initiative process.

The section is organised into four sub-sections. The first sub-section discusses the contextual setting of the village in terms of its landscape and socio-cultural background. The second sub-section reviews the historical and current administrative structures, and the path taken by Mendha through its community-based initiative to achieve sustainable water management outcomes. The following sub-section discusses the various achievements and challenges Mendha has faced over the last two decades. The final sub-section provides information on the government and civil society support structures that have impacted on its process of sustainable water management. This section also summarises the findings regarding the sustainable practices and institutional structure in Mendha.

6.1.1 Setting

Natural features

This sub-section presents background information on Mendha's geographical location and landscape attributes. It is followed by a description of the socio-cultural fabric. Mendha presents a unique case of an Indigenous, community-based resource management in a semi-arid region of India. It is therefore necessary to understand its geographical, socio-cultural, and political background that has played a decisive role in developing it into an empowered society (Pathak and Gour-Broome 2001; Tofa and Hiralal n.d.).

2 PFO stands for Personal Fieldtrip Observation; MCR: Mendha Civil-society Representative; MGR: Mendha Government Official Representative; MLS: Mendha Local Stakeholder (Refer Chapter 4 for detailed description).

Mendha village is situated in Dhanora *Taluka*[3] of Gadchiroli District, Maharashtra State in Central India. It is situated between the latitudes of 20°11' 55" to 20°14' 48" N and longitudes 80°15' 55" to 80°19' 26" E (Google 2009; Survey of India 1935). Dhanora is the nearest town. The village can be reached by road from Nagpur [4] via Gadchiroli (refer Figure 6.2).

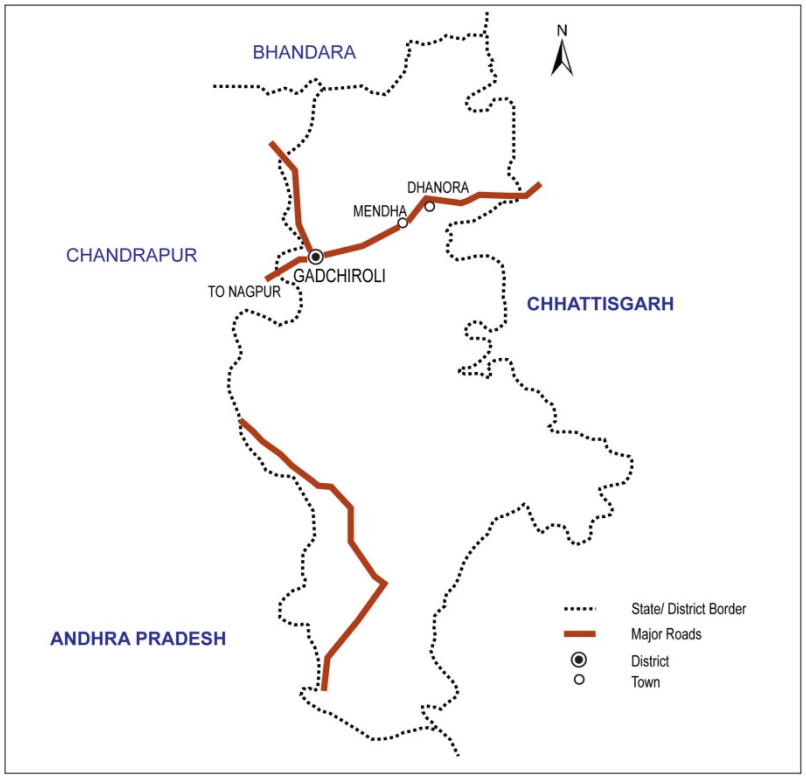

Figure 6.2: Mendha location map

The village is spread over a total area of 1929.07 hectares of which 80% is tropical deciduous forest. The physical landscape in and around the village varies from flat to undulating with occasional rocky outcrops (refer Figure 6.3). The highest point is at 450 metres above MSL (*Saheb Dongar*), situated in the dense forest area, and the average elevation of the village is about 200 metres above MSL (Topographical Sheet No. 64 D/8, 1982) (refer Figure 6.3). The flat land around the village is mostly used for cultivation. The forest possesses patches dominated by teak and bamboo (Government of Maharashtra 1994; Champion and Seth 1968). In addition to basic livelihood needs such as fuel wood, fodder, and bamboo, the forest also serves as a major source of local income.

3 *Taluka* or *Tehsil* is the lowest administrative unit formed by a cluster of *Gram Panchayats*, which have the Block Office under its structure, responsible for all aspects of rural development (refer Figure 1.5).
4 Nagpur is the second capital of Maharashtra State, located approximately 230km from the village. It is the closest city to the village. It is also the home town of the researcher, which proved convenient for return travel.

The River Kathani, a tributary of the River Wainganga, flows about one kilometre north of the village. It is the main source of potable water for domestic use in the village. It is interesting to note that the village women have to travel every day to the River to fetch water, sometimes twice a day. The River is seasonal and dries up 4-5 months after the monsoon, with water being left in small pockets or pools, locally known as *pokhars*. These *pokhars* are an important source of water and fish for local people during water scarcity periods in summer. However, during the field trip in March 2009, it was observed that due to an extreme summer in this year, the River had dried up almost completely with very few *pokhars* which made it difficult for the villagers to obtain water for domestic use. Other sources of water include numerous small farm ponds in the agricultural fields, two community tanks (seasonal water) constructed by *shramadan*[5] *and* a community well (refer Aerial map 1). These tanks receive water from the small hills situated to the south of the village having maximum forest cover. The natural drains bring the water down to the tanks and further down to the River. Village drinking water is provided by four community wells and some personal wells, which still had substantial water reserves during the March 2009 field visit to the village. These reserves were attributed to the community effort to construct tanks at the upper levels, which assisted ground water recharge and the maintenance of the water table. In addition, there are numerous seasonal streams and some perennial pools in the forest.

5 *Shramadan* means contribution by the community in the form of labour.

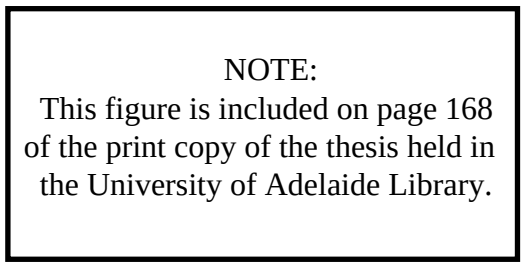

Figure 6.3: Slope and Landuse maps of Mendha village (GoM. Maharashtra Remote Sensing Centre 2006-2007)

Aerial map 1: Mendha tanks (Google 2009)

Socio-cultural setting

As mentioned in Chapter Two, the idea of sustainable water management requires an understanding across five main characteristics: social, cultural, economic, environmental, and institutional. This sub-section discusses the socio-cultural context of Mendha that has had a significant role in its approach to sustainable water management.

The village is historically known to be a part of the *Dandakaranya*[6] Kingdom ruled by King *Danda*, and the region was traditionally inhabited by the *Gond* tribe. Over different

6 *Dandakaranya* is a type of forest which, according to the descriptions in the *Vedas*, means the forest for punishment. Mythically, it was said to be a region ruled by demons and was also mentioned in the great epic *Ramayana*. Its location, mentioned in the epic, is considered to be the forest area of central India, known as the 'Central Provinces' during the Colonial period (Encyclopedia Britannica 2009).

periods in history the region was invaded and ruled by the *Maratha*, *Mughal* and British rulers (GoM 1996; Tiwari and Mishra 1993; Grant 1870). The broader region thus experienced an increase in non-tribal populations through migration in the late 19th and early 20th centuries. Mendha is, however, a homogenous village and community of only, uniquely, the *Gond* tribe. The village has 70 households with a population of approximately 435 citizens (Village Census 2007). The village is inhabited in two *tolas* (hamlets) situated a few metres apart.

Over many centuries, the Hindu religion had substantially influenced the tribal customs of the Indian sub-continent, as well as of Mendha. However, in recent years, there has been an awakening amongst the tribes of Mendha and some adjoining villages of the need to revive their Indigenous cultural identity (PFO 5; Pathak and Taraporewala 2008). This consciousness has been a significant factor in the village movement towards self-governance.

Economic setting and livelihood

In Mendha there is little variation among the economic status of the villagers. This is because the majority of landholdings are on average about 1.5-2 hectares. Some of the villagers do have larger tracts of land but this does not reflect upon the current institutional structure nor does it influence the village decision-making (MLS1; MLS 4; MLS 5; MCR 1; Pathak and Gour-Broome 2002).

The village, through its institutional structure, has succeeded in providing equal employment opportunities to all the villagers (MLS 2; MLS 3). The main source of employment and revenue generation for Mendha is forest-based activities. These include bamboo and timber extraction (*Tendu patta* and *Mahua* collection)[7], and honey collection. Another major source of livelihood for the villagers is agriculture. The main crop of the village is paddy (rice), which is largely water-dependent. As this is determined by the availability of water, the villagers have decided to raise only one crop per year. This strategy has a further benefit in enabling soil fertility conservation for longer durations of time. Traditionally, different varieties of rice were grown, for which the seeds were used from the previous year's crop. However, with the Government's introduction of high-yielding crops, many of these native paddy varieties are under threat of extinction as many of the youth are not even aware of their existence. The elders of the village, in contrast, demonstrate a tremendous amount of

7 The village gained rights to access the forest to collect the Non-Timber Forest Products (NTFP). *Tendu patta* are the leaves of *Diospyros melonoxylon* used for manufacturing *bidis* (kind of cigarette) and hence have very high economic value. Although this is not a traditional occupation of the communities, as the activity yields large revenue, the villagers have obtained rights to collect it and gain profits. *Mahua* is an Indian tropical tree, with the scientific name *Madhuca longifolia*. This tree is of great significance for the Indigenous community of *Gonds*, because of its high medicinal value and usefulness in various ways.

knowledge about the different varieties (PFO 5). Farmers currently use farm ponds and community tanks for the irrigation of their paddy fields. However, one of the interview participants noted that since the farmers have begun using the high yield crops, their water requirements have increased (MLS 4). Hence, the tanks and the ponds have started to dry out much earlier than they have in the past, thus further aggravating water scarcity. This clearly indicates the inability of government policies to be context specific in terms of agricultural recommendations and the lack of recognition of traditional crops and cropping processes.

6.1.2 Institutional structure and decision-making procedure

Historical profile and control over resources

As detailed in Chapter Four, section 4.2, Mendha was once a part of the *Gond* kingdom. Although there seems to be no official history of the Gadchiroli District, the various accounts by travellers in the region indicate that the administrative system was similar to that under the *Raja Gond* (Fürer-Haimendorf 1979, 1948; Wllis 1923; Grant 1870).

Current Administrative profile

Currently, in the state of Maharashtra, under the *Panchayati Raj* Institution (PRI), the Gadchiroli district has a Collectorate Office headed by a Collector. This is the highest level in the three-tier structure of PRI. The district is further divided into *Tehsils*, which constitute the second level called the *Panchayat Samiti*. In regards to Mendha, this office is located at the *Tehsil* of Dhanora. The *Panchayat Samiti* have been assigned two main functions to perform, firstly the collection of revenue in the form of various taxes imposed by the State Government and, secondly, to undertake rural development programs. In regard to the second function, it is important to note that these development programs were funded by the Collectorate Office. However, the responsibility to undertake certain projects and ensure their implementation has been left in the hands of the Block Development Officer at the *Tehsil* Block Office.[8] As discussed earlier the *Gram Panchayat* is the lowest level of administration according to the judicially approved organisational system. It is responsible for interaction with the upper level of the PRI and other agencies, and for execution of the various programs at village level. This administrative system is expressed in Figure 6.4.

8 The Block Office is the department in the *Tehsil* Office, constituting Panchayat Samitis and is the basic unit to implement the rural development schemes in the state of Maharashtra.

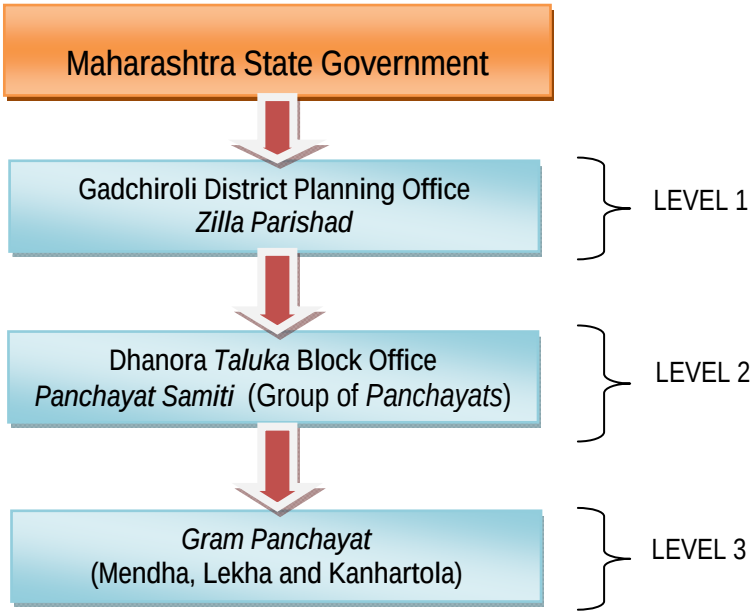

Figure 6.4: Administrative hierarchy in Mendha

Mendha, along with two other adjoining villages, Lekha and Kanhartola, form one *Gram Panchayat*. Each village 'selects' their representatives to the *Gram Panchayat*, who collectively consider matters of concern for the three villages and thereupon a decision is made and conveyed to the upper level institution. It is interesting to note that following the development of self-governance in Mendha, the other two villages have also been attempting to carry out similar steps in their villages. Another significant factor is that, although according to the PRI the *Gram Panchayat* is to develop and become a local decision-making and implementation agency at the local level, it has been observed and upheld by various researchers that *Gram Panchayats* have merely become implementing agencies, rather than decision-making bodies (Mishra et al. 2008; Iyer 2007; Briscoe and Malik 2006; Sharma 2003; World Bank 2000; Kothari 2000). However, in case of the Mendha, Lekha, and Kanhartola *Gram Panchayat*, it has become a decision-making body, primarily due to the significant role played by Mendha villagers (MLS 1; MLS 2; MLS 3; MCR 1; MCR 2; MGR 1).

In addition to the *Gram Panchayat*, Mendha has its own village-level agency, which is called the *Gram Sabha*. This is responsible for all decisions being taken at the village-level including those relating to mainly forest and water resource use and management. These decisions are then taken to the *Panchayat* by selected members of the *Gram Sabha*. A detailed discussion of the *Gram Sabha* and its functions is articulated in the next section on the new institutional structures developed in the village. Another aspect to be discussed is the process of selecting representatives to the *Gram Sabha* and also to the *Gram Panchayat*. It is

interesting to note that currently the representatives are 'selected' not 'elected' as directed by the *Indian Constitution*. The villagers have stressed this difference from their previous experiences, stating that in the process of 'election', it is easy for a representative or candidate to bribe the village in some favourable ways. However, the process of 'selection' needs to be unanimous and takes place in an open meeting of the *Gram Sabha*, where the qualities of each candidate are discussed and a final decision is taken collectively (MLS 1; MLS 2; MCR 1). The presence of such an open and transparent process is a step towards effective representation for decision-making, and for the nomination of community member at upper levels. Such an arrangement reinforces that power actually rests in the hands of the village community of Mendha in being able to select their representatives, rather than the other way round, and is essentially a demonstration of a decentralised democracy. A deeper examination of this process further suggests that this, in itself, is proof of community mobilisation for social capacity development and advancement.

The above argument highlights the emergence of a new governance structural level and a different way of functioning. The following section provides a summation of what led to the development of such a system and what factors played a significant role in its formation and development.

Origin of the community-based initiative

The roots of this self-governance movement in Mendha lie in an anti-dam protest in the Gadchiroli District in 1984. The Maharashtra State Government had planned the hydro-electric project Inchampalli-Bhopal-Pattanam, constituting a twin dam complex on the rivers Indrāvati and Godavari, in the context of major development projects proposed by the State and National Government. These dams would have submerged large areas of forest and displaced thousands of tribes who resided in these forests and were dependent upon them for their livelihood as well as their socio-cultural connections (MCR 1; MLS 1; Pathak and Gour-Broome 2001). It was further argued that the benefits from the project would only be enjoyed by industry; and in contrast the tribes would suffer enormous social and cultural disruption as well as economic loss. The tribes were supported in this mobilisation by many civil society bodies.

This reaction gave rise to the movement "*Jungle Bachao Manav Bachao Andolan*" (Save the Forest, Save Humanity Movement). This Movement was a first step towards community mobilisation and thus self-determination at the local level. In doing so, this not only enhanced the learning capacity of the tribe communities but also created awareness among

them about their rights, power, and their role in institutional organisation structures. Following strong opposition the State government finally abandoned the dam project. After this community-based victory there was little continued action. Most of the villages continued with their regular routines and did not advance the new powers they had discovered in the community-resistance process (Tofa and Hiralal n.d.). However, in Mendha, the community-level decision-making practice continued and the villagers continued to fight against the bureaucratic system to obtain their rights in various arenas.

In Mendha this continued resistance was initiated by Mohan Hirabai Hiralal, Head of the *Vrikshamitra* (Friends of Trees) NGO, and Devaji Tofa, a *Gond* tribal elder from the village. Devaji Tofa, then a youth, had been part of the anti-dam movement and, although not formally educated, he had learnt from his interactions with different people during the process. Early discussions amongst the villagers led to the realisation that the village had immense potential within the village to strive for self-rule. However, when the question arose of who would take responsibility for this action, it became evident that unless there was a major social change and people gained the capability to take on this role, the demand for self-governance would be futile (MLS 1; MLS 2; MCR 1). Further discussions revealed that the capacity of the villagers was prejudiced by the practice of various behaviours like alcohol consumption, which was religiously accepted and a socially upheld habit. This led the villagers to adopt a targeted anti-alcohol drive, which was mostly executed by the women in the village.

Advanced discussions raised other complex issues of generation and gender equity, as well as the need to protect and regulate the use of the surrounding forests and to manage their resources, including water. Through these various discussions, a decision was made to establish a village-level decision-making body. It is important to note that, although these discussions were initiated by Tofa or Hiralal, the villagers collectively participated in these discussions. Most significantly, decisions were made collectively and were not directed by Tofa or Hiralal (MLS 1, 2, 3, 4, 5; MCR 1). Thus, the *Gram Sabha* was formed, and it was also agreed that all decisions would be unanimous and based upon consensus and not upon majority vote, and that these decisions would prevail above any government body decision. Thus, guided by the slogan, *"Mawa nate mate sarkar, Delhi, Bombai mawa sarkar",* which means "we ourselves are the government in our village and our government is in Delhi and Bombay", the villagers became determined to strengthen the *Gram Sabha*.[9]

9 The origin of the slogan is not clearly known. It is said to have been raised by an old *Madia Gond* tribal member, in a meeting of the representatives of 20 villages. But the villagers heard it from Shri Mukund Dikshit at a later date. They picked up and adopted the slogan as their village motto and have since been working to achieve the goals (Tofa and Hiralal n.d., 35).

Since its formation this *Gram Sabha* has gained significant power and respect, and has taken important decisions for village development. In this movement of social mobilisation and self-governance, the villagers have developed another slogan of their own. This slogan states: "*Jungle nashta karna vikas nahi, sanskriti nashta karna sudhar nahi",* which means destroying forests is no measure of development and destroying culture is not an appropriate way of undertaking improvement. This slogan has inspired the villagers to trace their cultural roots and revive their traditional practices. Through discussions and meetings they have gained knowledge and hence the confidence to fight for their rights, thereby obtaining jurisdiction over the surrounding forests for their conservation and use (PFO 4, 5; Godbole 2002).

This struggle has not been limited to internal village-level problems of alcohol, gender, or generation issues. The village has faced strong opposition from the upper administrative levels in their movement to establish an autonomous *Gram Sabha* (MCR 1; MLS 1, 3). However, the *Gram Sabha* of Mendha has eventually succeeded in obtaining legal recognition, and therefore, has gained access to information about its own village, its resources, various programs and funds, and also to *Nistar* documents.[10]

6.1.3 Community participation in water management

Since its formation the community of Mendha has successfully enacted several decisions in their *Gram Sabha*. These decisions vary from complex resource management questions to simple village disputes. The main focus of the overall initiative and the decisions taken has been related to forests, as they are the principal source of livelihood for the villagers. In the last decade, decisions pertaining to the extraction of forest material by the villagers and by government officers, the equitable sharing of benefits, protection and conservation measures and any conflict resolution over the forests have been undertaken by the *Gram Sabha* (Pathak and Gour-Broome 2002). Meanwhile, under the Joint Forest Management Program adopted by the State Government in 1992, Mendha became the first village with standing forest cover to undertake the program.[11]

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10 *Nistar* rights – *Nistar* is basically a provision in the 14th and 21st articles of the Indian Constitution, to ensure the traditional rights of Indigenous peoples over local resources. This provision upholds the rights of traditional cultivators over the use of water stored in tanks and ensures that their water rights are not overlooked if more land is brought under irrigation serviced by the irrigation tank. These rights are transferable through the sale of land. After the abolition of the *Malguzari* system in 1955 *Nistar* rights were documented. However, they primarily focus on agricultural rights, and fail to acknowledge the rights of other people like the fishing community, cultivators of lotus, *shingada* (water chestnut) and other plants in the tanks, who are also dependent on the water (MCR 1; ACR1).

11 The Joint Forest Management Program (JFM) intended to handover degraded forests to adjoining villages for re-plantation and re-generation and was proposed to be jointly managed by the state Forest Department and the

The *Gram Sabha* and the village elders further realised that "water was one such resource, which can bring together all villagers; because everyone understands the fact that water is life" (MLS 4). Realising the importance of the water resource for their forests and for their own survival, the villagers displayed similar determination to conserve and manage the water resources. Thus, the following section describes the new institutional structure and its constituting bodies developed by the villagers. It is followed by a discussion highlighting community measures taken towards sustainable water management.

New institutional structure

As mentioned earlier, Mendha participates in the *Gram Panchayat* along with other two villages, Lekha and Kanhartola. Following the 'selection' process in Mendha, these other two villages have also agreed to 'select' their members to the *Gram Panchayat,* instead of following the election process governed by the legislation (MLS2; MCR 2). At the village level the decision-making body is the *Gram Sabha*. The other important structural elements of the village institution are its study circles or *Abhyas Gats*, and its women's Group or *Mahila Mandal*[12]. All the three components act at the village-level and are sometimes supported by NGOs. This section highlights the relevance of each of these structural elements and their relationship to each other.

a. *Gram Sabha*

The *Gram Sabha* is the most important body at the village-level for all the decisions to be taken and for their subsequent implementation. It is composed of at least two members (one male and one female) from each household. This kind of composition ensures a maximum representation to the *Gram Sabha* discussions and enables the *Gram Sabha* to take informed decisions. An office administrator, usually a literate person from the village, is appointed to undertake the official, and clerical work of record-keeping, arranging meetings, taking minutes of meetings and so on. The chairman of the *Gram Sabha* is not a permanent post held by an individual for a certain period; the chairman for every meeting is selected by

villagers. This also involved the sharing of the benefits from these forests in subsequent years. Since Mendha's surrounding forests still had good forest coverage due to the villagers' conservation and management efforts under its *Gram Sabha*, it was not considered eligible to participate in the scheme. However, the villagers persistently demanded its successful inclusion and were finally able to enter into a JFM agreement (MCR1; MLS1).

12 Women of all ages and classes in the village are members of the *Mahila Mandal*. Women in Mendha have been active in the village movement since the struggle against alcoholism. They play a significant role in decision-making regarding forest-based activities. They also carry out various economic generating schemes for women of village for their financial security. For example they are responsible for the lodging and boarding arrangements for visitors coming to the village, making and selling incense sticks, selling forest produce to market. They have also recently started the *Bachat Gat* (money saving group) scheme being promoted by Government.

consensus from amongst those who are present at that *Gram Sabha*. Further investigation on this revealed that even women have been elected to chair meetings in the past. This is particularly noteworthy, considering the fact that *Gonds* are traditionally patriarchal (Godbole 2002; Fürer-Haimendorf 1979), demonstrating that considerable and conscious efforts are being made by the villagers to involve women in the decision-making process and thus to minimize gender inequity.

The *Gram Sabha* is essentially a village meeting and is restricted to participation by the village community only. It is held once a month on a specified day declared by the office administrator or decided in previous meeting.[13] The *Gram Sabha* can also be called in an emergency if the issue is critical and needs to be resolved immediately. Outsiders like NGOs or government agencies are invited only for specific meetings where they are allowed to put forth their intended programs. However, their participation is limited to presenting the program or clarifying any questions raised by the villagers, and they are excluded from discussions of the advantages and limitations of the project for the village. The final decision is taken by the villagers and the chairman unanimously.

In the past the *Gram Sabha* had to depend upon the *Gram Panchayat* or civil society bodies to obtain funds under various programs or schemes introduced by the Government or other funding agencies. This occurred because the *Gram Sabha* was not a recognised legal body under the administrative structure of the government, as well as under the PRI, and hence was not entitled to legally take decisions and carry out developmental works. Consequently, the Mendha *Gram Sabha*, after discussing how to overcome this difficulty, registered itself as a civil society body named *Gram Niyojan ani Vikas Parishad* (Village Management and Development Organisation). This enabled the *Gram Sabha* to overcome the time consuming decision-making processes of the centralised administration system, and also to obtain funds directly into their account for their own use.

The Mendha *Gram Sabha* has always tried to work efficiently with the *Gram Panchayat* and other government agencies functioning in the village (MLS 1, 2). In order to establish links with the upper level, the *Sarpanch* or elected head of the *Gram Panchayat,* is always invited to the meetings conducted by Mendha's *Gram Sabha*. This allows the villagers to interact directly with the upper administrative level, as well as to convey village decisions to them rather than *vice versa,* which is normally the case in most other PRI's in the country (Iyer 2003; Kothari 2000). Such an arrangement provides a truly decentralised system and rests

13 The researcher made a request to attend a *Gram Sabha* as an observer during her fieldtrip. However, the *Gram Sabha* did not approve of this, but allowed the researcher to attend meetings of *Abhyas Gats*. Members of the *Gram Sabha,* however, agreed to be interviewed individually.

more power upon the villagers for taking decisions in relation to their own issues of concern and their development with the community. For the villagers, the decisions taken in their *Gram Sabha* are more binding and strictly followed than those imposed by outside agencies, especially where these are enacted without any discussion with them (MLS 1, 2, 4). According to the charter prepared by the *Gram Sabha*, for any government agency willing to introduce any program in the village, it is mandatory to discuss the program with the *Gram Sabha*. This discussion normally involves evaluating the positive and negative impacts of the program, leading to a consensus decision of whether the *Gram Sabha* approves or disapproves the program. Initially, however, this form of village authority was not accepted by bureaucratic officials, who are bestowed with power by State legislation, and this has sometimes led the *Gram Sabha* into conflict with the officials of certain agencies (MGR 1; MCR 1; Pathak and Taraporewala 2008; Godbole 2002). Over time and given the achievements of the village through their *Gram Sabha*, a few officers at the Block Office have started respecting the Mendha *Gram Sabha* (MGR 1). Now these officers seek a prior appointment with the *Gram Sabha* for discussions on any issue or program concerning the village.

The process of decision-making by the *Gram Sabha* is based upon consensus. A thorough discussion of each aspect regarding the issue of concern is undertaken by the villagers. Issues vary from government projects, to employment schemes and resource-related issues to community and personal problems. All villagers have to participate in the discussion and help to reach a final decision. Villagers who are against a certain venture also present their concerns and reasons for differing from other villagers. Their concerns are discussed and an attempt is made to devise a solution. Even then if the villagers are not convinced then the decision is left pending and the scheme may be discussed in subsequent meetings (MLS 1, 2, and 3). Discussions with the villagers suggested that the community has an active participation in all *Gram Sabha* meetings. However, on the whole, female participation is considered less than that of males (MLS 1, 3; MCR 1, 2). Several researchers (Gupte and Bartlett 2007; Godbole 2002; Tofa and Hiralal n.d.; Pathak and Gour-Broome 2001) have confirmed that women take time to express themselves; however, they are constantly encouraged by the men to speak-up. During the field visit it was also noticed that women were more engaged in their house and farm jobs, and hence leave the discussions or meetings early to complete their tasks.

The *Gram Sabha* has a unique and transparent system of managing its accounts. The main source of funding for the village is through various government grants marked for the region under a variety of programs. In addition, the *Gram Sabha* has successfully secured some financial support from the international agency OXFAM and from some Indian civil

societies for specific projects. Other significant contributors are the village community members themselves. Members of the community who are employed under various *Gram Sabha* schemes under the State Government employment program (*Rojgar Hami Yojana*), donate 10% of their wages to the *Gram Sabha* fund. Money remaining from the sanctioned budget for a particular program is also transferred to the *Gram Sabha* fund. In addition, donations and payments for lodging, boarding and food made by visitors to the village are also lodged with this fund.

Thus, the membership pattern, selection process of the head, consensus decision-making process, awareness about their rights, and transparent money transactions, have contributed to Mendha *Gram Sabha's* efficient and equitable operations and its success in advancing the interests of village members.

b. Abhyas Gats

The *Abhyas Gats* or study circles are informal study groups that meet to discuss specific issues. These were initiated in 1989 by *Vrikshamitra*, a civil society, and Devaji Tofa, the Mendha village elder, to discuss various aspects of village life. These groups over the last decade have played a significant role in building the knowledge-base of the village. The village currently has several groups discussing various issues. One of them is called the *Jungle Abhyas Gat* (Forest Study Circle) that focuses on monitoring forests, conservation measures and the impact of the NTFP collection on forest productivity. Another group, called *Pakshi Abhyas Gat* (Birds Study Circle), has helped to identify various native species in the surrounding forests, their importance in the ecosystem and measures for their protection. A similar group studying honey bees called *Madhumakhi Abhyas Gat*, is investigating the collection of honey from the forest without destroying the comb. In addition a *Jal Abhyas Gat* (Water Study Circle) is also active in the village. This is responsible for studying water conservation measures, their management, and water distribution. However, the work of these *Abhyas Gats* is limited to the collection of information on specific issues, and evaluating possible solutions and their impacts. The final decision to implement any of these measures is taken in the *Gram Sabha* by the entire village community.

Figure 6.5: The knowledge process (Adapted from Tofa and Hiralal n.d., for the purpose of clarification of the *Abhyas Gat*)

The membership pattern of the *Abhyas Gat* also varies. Anyone from the village interested in a topic can participate in the discussions of the respective *Abhyas Gat*. One person can be a member of two or more *Abhyas Gats*; it depends on how much time that person can commit. Membership of these *Gats* is not limited to the villagers so *Abhyas Gats* include many visiting members who can contribute to the community knowledge. These interactions help the community to increase their awareness of world views on particular issues as well as different approaches taken in other regions on similar issues, and, in general to synthesise large amounts of information. This enhanced information base leads to a more informed decision at the *Gram Sabha* level. In turn, the visitors gain knowledge about the village process as well as traditional knowledge, which is mostly oral with minimal textual documentation (MCR1; ACR1).

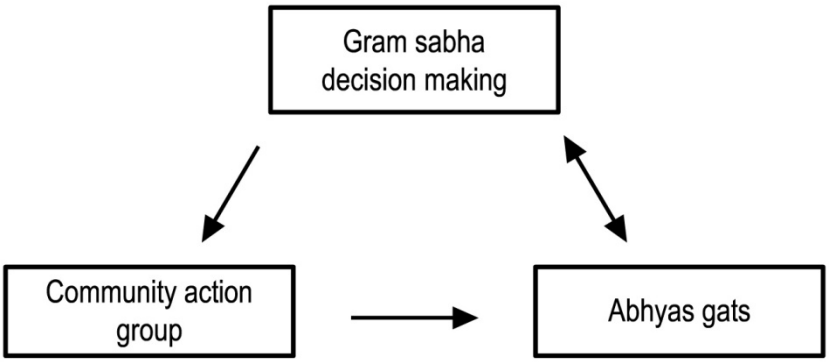

Figure 6.6: Cyclic planning process in Mendha

Thus, a unique process with appropriate links between the knowledge generation, decision-making, and implementation is generated (refer Figure 6.5). The *Abhyas Gats* form the "Knowledge Domain", which is free from any tensions of decision-making. This domain informs the *Gram Sabha* in making decisions on particular issues. Thus, the *Gram Sabha* lies within the "Decision Domain" and is well supported by the "Knowledge Domain". A decision reached with consensus and after thorough thinking generates an "Action Domain" for the implementation of the decision. This in turn becomes an issue for the study circles to consider, in order to learn from their decisions and actions and to improve them further. This cyclic process of knowledge generation, decision-making and action (refer Figure 6.6) has certainly strengthened the Mendha community and its institutions in its self-determination.

Community-based water management initiative

As mentioned above, Mendha village is located at the foothills of dry, deciduous, forest-covered hills. The main source of water is the run-off from this forest, which is collected in tanks, and wells and then flows into the River Kathani located north of the village. The village, once under the *Gond* rulers and currently still occupied by *Gond* tribal members, has a legacy of traditional water management and is famous for its paddy cultivation. In addition, historically the *Gond's* were good administrators, which they have proved again by the development of the new institutional structure in their village. In the past, similar to other regions, Mendha had given up the traditional tank system and became dependent on the Irrigation Department and Water Works Department for providing water for their all needs. One of the project respondents stated that, "People had started thinking individually, as to how to satisfy their personal needs, rather than thinking for whole village" (MLS 2). Another villager declared, "Dependence on the government agencies had made us slaves. And people were

happy being slaves in the name of rejoicing democracy" (MLS 4). This individualistic approach had given rise to the problem of water scarcity due to the overuse of the River's water supply, low water tables and no alternative measures of water supply from government agencies.

With the establishment of the *Gram Sabha* and the *Jal Abhyas Gat*, the issue of water scarcity was frequently discussed in its meetings and a few decisions were reached. The villagers agreed, "if the village wants water, then the question of responsibility for its management, distribution, and use needs to be addressed as a priority" (MLS 1). One resulting decision was to construct a community tank at the upper level of the village in the forest area which would ensure water for domestic purposes and irrigation, and help maintain the water table for longer periods. The new tank would also become a source for fisheries which not only would be used as a food supply but also for economic gain. Accordingly the *Jal Abhyas Gat* represented by the elders from the village who still possessed traditional knowledge of tank building, and also supported by outside agencies, identified an appropriate location in the forest area. However, there were two significant impediments to the construction of the tank in that area. Firstly, the land was under the Forest Department and hence the villagers were not allowed to construct anything there. The second difficulty was the need for adequate funding to construct such a huge tank. In 1992, following discussions with the Forest Department, a solution was found to construct the tank under the JFM scheme. Although the Forest Department did not allow the use of this tank for irrigation purposes, it certainly supported community fish production in the tank (MLS 1; MCR 1). The village community accepted the revised proposal and the tank was built with contributions from the Forest Department fund. In addition, it was also agreed by the village community to contribute in labour to the construction of the tank.

After the agreement with the Forest Department, it was decided that the work could be undertaken by the JFM Committee under the Employment Guarantee Scheme.[14] However, only half the work was completed because of insufficient funds. This issue of tank completion was discussed in the community and a novel way was conceived and proposed to the *Gram Sabha,* which they agreed to implement. The idea was called "Eat the fish and complete the tank" (MLS 1, 2; MCR 1). When the partially constructed tank was full of water after the rains, fish fry were dropped in. After six months, when the fish were fully matured, the villagers went fishing in the tank. It had already been decided that the fish were not to be sold. The fish were distributed for consumption amongst village households as per arrangement or demand. It was proposed by the *Gram Sabha* that each family would dig one *nali* i.e. approximately 3.1 X

14 The Employment Guarantee Scheme or *Rojgar Hami Yojna* is a scheme by the National and State Government to develop employment opportunities in villages for the villagers.

3.1 X 0.3 metres of clay and place it on the retaining wall of the tank for each kilogram of fish taken. Thus, the entire village community contributed in labour and the tank was completed without any additional expenditure. The tank was named *Van talav* (Forest Tank) (refer Figure 6.7) and it is used for community fishing activity generating funds for the *Gram Sabha*. No individual access and use of water is permitted at this tank. In subsequent years, two more tanks have been built in the higher region by the villagers on their own through *shramadan* (voluntary labour).

Figure 6.7: *Photograph of Van talav (Forest Tank) (Author 2009)*

During 1991-92, the study circles on water, forest, and soil held serious discussions about soil erosion and the declining fertility of soil. The villagers realised that due to the increased number of forest fires, there was a reduction in the amount of grass and vegetation that had stabilised the soil and water during the monsoon. The villagers came together and with funding from OXFAM, through *Vrikshamitra*, they constructed over 1000 check dams on the various seasonal forest streams. This has helped to retain water in the soil for longer duration and hence increase water availability and soil fertility in adjoining fields. Further, it stopped the wastage from water flowing downstream and joining the storm drains.[15] However,

15 A Field visit in March 2009 was made to observe the check dams and to establish where the streams led to. The streams in the past must have joined the River Kathani to the north. However, due to construction of the road from Gadchiroli to Dhanora, the flow has been broken and these channels are connected to storm water drains along the roadside. Driving along these drains for some distance revealed that these were clogged in many places. It was, however, not possible to locate where these storm water drains led and drained the water to.

after almost two decades, these dams require significant repair (PFO 5) (refer Figure 6.8). Discussion with the villagers revealed that the *Gram Sabha* was aware of the condition, but owing to lack of adequate funds, the project had yet to be undertaken (MLS 1, 2, 5).

Figure 6.8: *Photograph of check-dam across a seasonal forest stream (Author 2009)*

Thus, the *Jal Abhyas Gat* has brought the traditional knowledge holders together and led a revival of the historical tank irrigation system in the village. In 1997, with funding from the Watershed Organisation Trust (WOTR), an NGO from Aurangabad, a fund for 17 *bodis* (farm ponds) was directly given to *Gram Sabha*, under the condition that the villagers would construct an equal number of *bodi's* on their own. With great community effort, now most of the villagers have a *bodi* in their fields. Further, the villagers of Mendha have developed a system for the maintenance of these tanks and *bodis*. Each individual is given ownership of each tank or *bodi* within their landholding. That person or family is then responsible for its maintenance and for an equal distribution of water to adjoining users. The *Gram Sabha* has decided by consensus that the village community will have control over the water in the village and that the landowners will not be the sole owners of this water. Water distribution is not based on the land holding but upon the number of persons in the household. Even a landless person obtains an equal share of water. It is then a person's discretion as to whether to sell their water share to another person who has more land. It was also earlier agreed to give water allocations on the basis of a half acre of land to one person. This decision is still pending in the *Gram Sabha,* as all villagers have not yet agreed to this formula. On the other hand, all farmers have agreed and signed a legal stamp paper to allow the

construction of *pats* (water distribution channels) through their fields (MSL 1, 2, 3, 4, 5; MCR 1). All users dependent on these tanks or *bodis* have to participate in kind or labour towards the maintenance of the tanks, involving de-siltation, strengthening tank *bund*, repairing gates or the construction of *pats*.

The villagers also felt the need to construct community wells for irrigation and drinking purposes. Some of the villagers and members of the *Jal Abhyas Gat* had visited the nearby Amravati region[16] and had realised that having too many private wells to irrigate individual farms had severely depleted the ground-water in the area. Thus, after many discussions in the *Gram Sabha*, a decision to construct a community well was taken. However, the quantity of water to be distributed is still under discussion and awaiting decision in the *Gram Sabha*.

The above discussion thus highlights the unique approach of the *Gram Sabha* of Mendha in conserving and managing their water resources. The community has made an enormous effort to revive their traditional systems and have attempted to integrate them with modern methods for achieving sustainable water management outcomes. The above analysis has also established the importance of the *Abhyas Gats,* which have generated a learning process and supported the *Gram Sabha* to make informed decisions. The next section elaborates upon the support systems needed for the efficient functioning of the *Gram Sabha* and the *Abhyas Gats*.

6.1.4 Support structure

The above discussion has highlighted Mendha's community-based initiatives of for sustainable water resource management. It is, however, very clear that the Mendha village initiative of developing a new institutional structure cannot be accommodated in any existing legal system of governance (Godbole 2002; Tofa and Hiralal n.d.; Pathak and Gour-Broome 2001). This is also exemplified by the JFM and also by the *Gram Sabha* and *Abhyas Gat* initiatives. Thus, the sustainability of the village initiative heavily depends upon various informal support structures. The following section discusses the role of some of these support systems which have played a significant role in Mendha's present movement towards self-governance, and are also crucially important for its progress in future.

16 The Amravati district is famous for its oranges. The region is located towards the west of Nagpur district. It is heavily dependent on ground-water resources to irrigate its agricultural fields. Currently the district faces extreme water problems which have given rise to social problems like suicide by farmers, water thefts and so on.

Civil Societies

People from civil societies have played a significant role in Mendha's initiatives. The head of the NGO *Vrikshamitra* (Friends of Trees), Mr. Mohan Hirabai Hiralal, has been constantly working with the villagers to motivate them and has assisted them to accomplish self-governance. He works constantly with various study groups raising questions to stimulate the villagers. Following this the villagers participate in discussions and bring forth their years of experience which is to a great extent useful for resolving problems (MCR 1; PFO 5). *Vrikshamitra* has been a strong external support agency bringing awareness to the village community about various government policies and projects they could participate in. It was evident from observations made during attendance at a study circle meeting that *Vrikshamitra* has helped considerably to increase the knowledge-base at the community-level. The NGO has also involved young people from the village in nurturing the longevity and youthfulness of the *Gram Sabha*. However, it is important to note that even though *Vrikshamitra* has a close association with the community, members of the NGO do not participate in the *Gram Sabha* meetings or direct the *Gram Sabha* to make any decision (MCR1; MLS 1, 3). Decisions are left solely to the village community to be taken with consensus.

Similarly, there are many other organisations which collaborate with the study circles to raise issues, discuss new techniques, and introduce measures to improve certain practices. But ultimately the *Gram Sabha* decides on what has to be adopted and implemented. Even before conducting any program in the village, any civil society has to put forth their proposal in a *Gram Sabha* meeting, which then considers the benefits of the project for the village before making a decision about whether the program should be conducted.

From the various discussions with villagers, it was evident that the community is very much aware of some critical issues on resource management. Furthermore, they are able to provide answers to some difficult problems. This achievement has been possible because of detailed discussions in the study circle. It strongly indicates that the continuous interaction with the outside agencies makes the villagers more aware about the outside world and current developments in the respective field and this in turn help them to make informed decisions. As demonstrated, partners or outside supporting agencies are placed fully in the "Knowledge domain" and strictly not in the "Decision domain" (MLS 1, 2, 5; Tofa and Hiralal n.d.). However, they are in constant contact with the decision-makers. On occasion, when there is agreement they are placed in the "Action Domain", but if not, then they continue to work with the people and learn from them.

Dedicated village members

For a community to accomplish a stage of self-governance and gain respect from a variety of agencies, there needs to be a team of villagers who take initiative and manoeuvre the community throughout the process. In this respect, Mr. Devaji Tofa, a poor landless villager, has played a significant role and has been a constant source of motivation for the village process towards autonomy. Since the 1990s, following the anti-dam movement and later the *"Save forest, Save humans"* movement, Tofa has emerged as a local leader. He plays a key role in raising issues, both in the *Gram Sabha* and in his study circles. However, he does not act on behalf of the *Gram Sabha* in taking decisions (MLS 2, 3, 4). He also plays a significant role in the implementation of certain decisions taken by the *Gram Sabha*. Being such a leader involves dedication of time and effort for community development. This has affected Tofa, in certain aspects of his personal responsibilities, such as working on his own farm and performing duties towards his family (MCR 1). Despite all this, Tofa continues to work with the same zeal and participate in working towards self-governance. There are some other village elders like Dukku *kaka* (uncle), Shriram Dugga and Sadhu Poretti who have supported Tofa in this process.

Until recent years, the villagers had felt that there could be a problem in developing a second-line of leadership among the villagers and co-ordinating an effective succession plan (MLS 1, 2, 4; Godbole 2002; Pathak and Gour-Broome 2001). This was evidenced in low youth participation and a preference for staying outside the village for better job opportunities. However, during the field visit in February–May 2009, it was revealed that there was active participation by youths in various initiatives being undertaken at the village.[17] Tofa and Hiralal attribute this success to the recent development of a formal education syllabus focusing on village life and local issues. This, along with the interaction with outside agencies, has stirred interest amongst the youth and achieving greater participation. It was also found that an equal number of females participated in the various discussions. Thus, the village now has the possibility of the emergence of a viable second-line of leadership.

17 Attending as a participant observer at the Biodiversity meeting and another on self-empowerment, revealed the fact that the attendance of youths was remarkable. They were found to be more open to expressing their ideas, and knowledge, to raising questions and also making an attempt to learn from the village elders. These kinds of meetings are held once every two months depending upon the availability of villagers and the issue to be addressed. They are usually attended by about 20-25 people, with a mix of village elders and youths. The ratio of male to female attendance varies depending on the time of the meeting and the issue to be discussed. In both the meetings attended by the researcher there was an equal number of males and females present.

Government officials and policies

As established earlier, the self-rule process of Mendha cannot be accommodated in any existing legal system. However, the *Gram Sabha* is making a conscious effort to study the various acts and policies made by the National and State governments and to link them to their processes. The *Biological Diversity Act, 2002,* and the National Rural Employment Guarantee Scheme are two significant policies made by the National Government, which can bring an immense amount of development to the rural sector, if the policies are implemented properly. The Mendha village *Gram Sabha* with initiatives from Tofa and Hiralal have attempted to integrate the two policies and generate employment within the village (MCR1). They have managed to bring together a few youths from Mendha and adjoining villages to undertake biodiversity and natural resource documentation, along with cultural practices, in their respective villages. These youths are being paid under the employment scheme by the *Gram Sabha*.

Another scheme recently adopted is the National Government's *Scheduled Tribes and other Forest Dwellers (Recognition of Forest Rights) Act, 2006,* which is a landmark attempt that aims to give the communities living in forests, ownership rights over the land occupied by them and traditional community rights over the forests (GoI 2006b). Mendha *Gram Sabha* is currently perceiving this as an opportunity to establish their traditional rights over their resources and manage them in a sustainable manner (MLS 1, 4).

Thus, a deeper examination reveals that the Government is recommending policies that do provide a path towards the decentralisation of power. However, it is left to the villages to investigate and reach an appropriate strategy for using and implementing these policies to their benefit. In addition, they clearly need the support of organisations like *Vrikshamitra* who inform them about such policies. However, the government agencies neither provide information nor implementation inputs, unless the *Gram Sabha* and study circles specifically invite them. Thus, a gap seems to exist between the decision-makers at the upper levels of governance, their ideas of implementation at lower levels, and the actual requirements at the grass-roots level.

In practice there exists another layer of engagement between the policies and the villagers: the Government officials in-charge of implementing the policies on the ground. Mendha's efforts have been constantly confronted by officials possessing a bureaucratic attitude of distrust towards local communities and expecting subservience from them in the face of their power/authority entrusted to them by the Government (Tofa and Hiralal n.d.). Conversations with one of these officials revealed their dissatisfaction with the village *Gram*

Sabha concept and with the motto of self-governance (MGR 1). The respondent expressed his concerns by stating, “When we try to take a village meeting, in Mendha very few people turn up for discussion. They seem to resent any form of government intervention” (MGR 1). On the other hand, there were some officials who acknowledge the community initiatives. Therefore, the *Gram Sabha* sometimes has to depend on officials who to appreciate their efforts and who are willing to help them develop further. However, this is not always the case.

Summary

This section has provided a deep insight into Mendha’s approaches towards sustainable management of its water resources. In doing so, it has considered how social, cultural, ecological, institutional, and economic dimensions have played a significant role in achieving sustainable water management. The discussion has argued that the socio-cultural background, natural setting of the village and their traditional knowledge base have played a significant role in achieving self-governance. However, factors like the loss of the traditional knowledge, urban sprawl, and lack of support from Government officials are affecting their progress. Further, the section has demonstrated the benefits of community-based initiatives towards sustainable water management. Furthermore, Mendha has progressed remarkably well on the institutional front, by the development of a transparent, efficient and well-informed decision-making *Gram Sabha*. In addition, the analysis has highlighted the role and importance of the support system in the governance structure, highlighting the links between various tiers of the structure.

In summary, this part of the chapter has demonstrated that the Mendha approach is an unique example of self-governance and consensus decision-making. At the same time Mendha works successfully under the provisions of upper governance tiers and obtains enormous support from outside facilitators. This has resulted in a ‘bottom-up’ approach to governance, which has reinforced local autonomy while not challenging the role of the upper levels of the administrative structure and other government agencies. At the foundation of this innovative project it is the people who have made conscious efforts to build their capacity and to understand their own historic roots, to be able to achieve more efficient and just governance. However, while there is no doubt regarding some of the Mendha’s achievements in sustainable water resource management, challenges still exist in terms of leadership, equitable distribution, achieving consensus decision-making and integration with upper tiers. In order to evaluate the sustainable management practices in regards to the framework criteria, Chapter 7 will further analyse the data in this section. The next section discusses the second case study with the goal of developing an argument around the data collected.

6.2 Case study 2: Rajapur village

Rajapur can be considered one of the oldest community-based initiatives in Maharashtra State that has effectively managed its water resources over the past five decades (Mishra et al. 2008). Since the abolition of the *Malguzari* system in 1955, Rajapur has used its ancestral knowledge in its community endeavours to protect its water resources. This section provides the second case study undertaken to understand the community initiatives as well as community perspectives on this topic. With the information obtained during the field study, this section evaluates Rajapur's new institution and its course of action and development in realising the goals of water sustainability. In the course of this examination a discussion is also initiated to understand its achievements and challenges. Using data from field observations and interviews, this section presents a detailed evaluation of the efficacy of Rajapur's sustainable water management approaches.

This section is organised into four sub-sections. The first sub-section provides a background on the contextual setting of the village in terms of its landscape and socio-culture that is essential for understanding the later sub-sections. The second sub-section discusses Rajapur's institutional structure developed to effectively manage its water. Subsequent sub-sections evaluate the new structure in terms of its strengths and weaknesses, as well as providing information on the role of the various government structures that have an impact on its process of sustainable water management. Finally, the conclusion draws together important findings regarding Rajapur's sustainable management approach.

6.2.1 Setting

Natural features

Rajapur is located in the Tumsar *Tehsil* of Bhandara District of Maharashtra State. It is situated between the latitudes of 21°34' 36" to 21°33'.52" N and longitudes 79°43' 57" to 79°45' 3" E (Google 2009; Survey of India 1927). Rajapur is located on the State Highway and is well connected to the nearest town which is Tumsar. The village can be reached by road from Nagpur via Bhandara and Tumsar (refer Map 6.9).

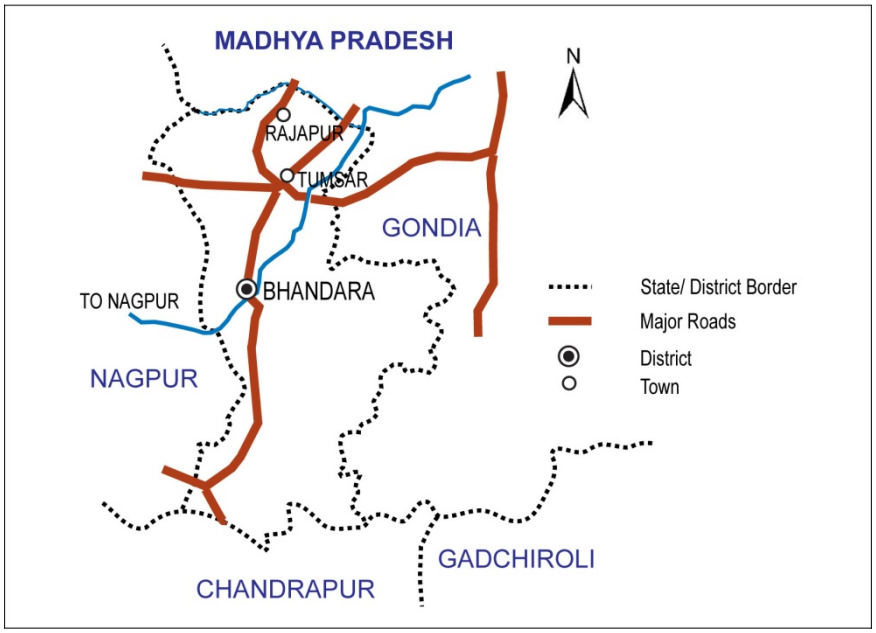

Figure 6.9: Rajapur location map

The village is spread over a total area of 204 hectares, of which 200 hectares is agricultural land (Village Records 2007). The small patch of forest cover is southern tropical deciduous with patches dominated by teak (Russell 1908a; Ward 1869). The topographical features in and around the village, as seen in Figure 6.10 Slope Map, vary from flat to undulating, with the Ambagad Hills rising to the south. These Hills are the extreme outliers of the Satpura Ranges which run north-westerly in the District. These Ranges separate the valley of the Bawanthadi River from that of the Waingangā (Russell 1908a; Topographical Sheet no. 55 O/10. 19; Grant 1870) (refer Figure 6.10). Rajapur is situated on the north-western side of the hills that form the watershed for the Bawanthadi River running to the north of the village. The River runs eastwards and joins the Waingangā River. Although small and seasonal in its upper catchment, the River after it enters Bhandara district becomes perennial because of numerous streams from the Ambagad Hills. Rajapur is located some distance from the River, but does not depend upon the River for its water needs. The village is solely dependent on traditional irrigation tanks for its water requirements, which has the legacy of the *Malguzari* tank system that existed in the region. Other sources of water include numerous private farm wells and bore wells. In addition the *Gram Panchayat* has constructed a *dhobi-ghat* (washing area) on a community well which is a source of domestic water accessed by hand-pumps. The flat land around the village is mostly used for cultivation.

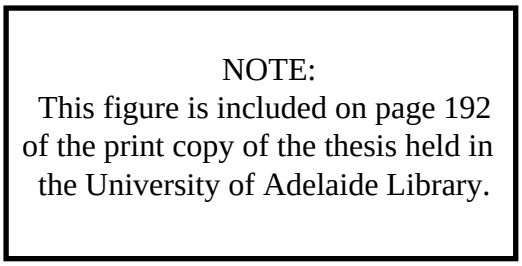

Figure 6.10: Slope and Landuse maps of Rajapur village (GoM. Maharashtra Remote Sensing Centre 2006-2007)

Socio-cultural setting

As established earlier, the idea of sustainable water management requires an understanding across five main characteristics: social, cultural, economical, environmental, and institutional. This sub-section discusses the socio-cultural context of Rajapur which has direct relevance to its various approaches to water management.

The village consists of 400 households, a majority of which belong to the *Kohli* Indigenous community. As discussed in Chapter Four, *Kohli's* are well known for their traditional knowledge of tank building. The credit for constructing a large number of tanks in the Bhandara District and around the region goes to this community. As outlined above, the *Kohli* community was introduced into the area by a *Gond Raja* to construct tanks in the region to meet the needs of the people and to develop agriculture. The other households that reside in this village include *Brahmin*, *Kunbi* and *Dheewar* community.

Economic setting and livelihood

The main sources of livelihood in Rajapur are based on agriculture, fishing and related activities. Both these activities are significantly dependent on the availability of water. The villagers have decided to harvest two crops in a year, but this is eventually determined by the availability of water for that year. However, equity is maintained in the amount of water distribution. The irrigation water distribution is decided by the Water Committee, and charges are collected from respective farmers. However, for common livelihood purposes there is a free open access system for all villagers to fetch water from the tanks. Thus, the basic right to water is addressed equitably in the community.

Fishing is carried out by the *Dheewar* community in the traditional way using old fishing techniques. Fishermen also have to follow the strict rules of the Water Committee in their access to water. They are also not allowed access to the tanks if the water level goes below the certain level.

There is a small variation in the economic status of the villagers. This is due to the fact that some of the farmers who used to be *Malguzars* of the village have larger landholdings up to 4.8 hectares. Nevertheless, the villagers and the Water Committee refuse any kind of influence on water distribution by these landlords. It is however, to be noted that since the distribution is based on landholding size and that charges are decided on the same basis together with the capacity to pay these charges, water distribution in terms of quantity is unequal.

The traditional tank system

The village of Rajapur still has a historical irrigation tank system of *Malguzari* tanks functioning and providing water to the fields. Rajapur has seven such tanks inherited from its predecessors and another four tanks have been constructed over recent years (RLS 1, 2). All these tanks vary in size and capacity. They are built on the same pattern as constructed by the *Kohlis* between the 13th and 15th centuries. This involves a series of tanks, providing examples of flawless engineering built on different elevations. This arrangement ensures that the runoff from the Hills and adjoining higher elevations first fills the upper level tank. The excess water from the first tank flows into the second through connecting channels and then consequently into the third and so on. This ensures that the village settlement, which is located usually closer to these water sources, is protected from getting flooded as the overflow is properly directed. This type of structuring ensures that most of the water falling on the earth's surface is collected and directed to various tanks for efficient use. In this way the traditional system is commendable in being able to harvest rainwater efficiently and then manage it competently.

The largest tank is spread over an area of 12.8 hectares and is called *Dhivri talav*. It is located on the highest elevation and is linked to the second largest, *Paani Khaya talav* (refer Aerial map 2). The overflow water from the *Dhivri talav* flows into *Paani Khaya* talav and then into other smaller tanks. The smallest tank is about 0.4 hectares and the other nine tanks range in size between these two. The villagers informed the researcher that all the tanks except *Paani Khaya* dry up completely by March or April each year. This was also observed during the field visit in March 2009. However, in this year even the *Paani Khaya* had dried more than expected due to the extreme summer conditions.

Generally the Rajapur farmers manage to produce two crops per year using water obtained from these tanks. It is also important to note that there are *Dheewar* (fishermen) community members in the village, who are dependent upon the tanks for their livelihood. Their traditional fishing rights are given due consideration in the overall management of the tank water. The Water Committee, with the help of villagers, have also constructed about 36 private farm wells and 11 bore wells using government funds, thus accessing the ground water resource to meet their increasing water needs. The *Gond* and *Kohli* system of having wells in the tanks was meant to recharge ground water to provide for only domestic use. Wells constructed at higher levels also helped to maintain the water table downstream at the settlement level. However, with the use of electric pumps on these privately owned wells, it is

evident that Rajapur is moving away from reliance on its ancient techniques of water harvesting, management and distribution.

Figure 6.11: *Photograph of Paani Khaya tank (Author 2009)*

Aerial map 2: Rajapur tank system (Google 2009)

6.2.2 Historical institutional structure and management of water resources

As discussed in Chapter Four, Rajapur is similar to the other two case studies in that it was under the rule of *Gonds* and later taken over by *Marathas* and the British, before Indian Independence. Although a recorded history of the village is difficult to source, the village is mentioned in the *Central Province Gazetteer* (1870). In 1870, Grant recorded a brief profile of the village being located in the *Mundlah* District of the Central Province, which was once ruled by a *Gond Raja* of the *Mundlah* dynasty. From its historic association with the *Gond* rulers and the *Kohli* community, it can be concluded that the village had a flourishing history during the reign of the *Gond* rulers. From the field interviews, it was recorded that the traditional system of water management was called *"Vakkal"* and it was looked after by the *Malguzars* of the

village.[18] However, it could not be established whether this system was developed during the *Gond* rule or at a later date.

Discussions with the villagers helped appreciate the *"Vakkal"* system, which was practised until the abolition of the *Malguzari* system in 1955. The management of the tank and the water distribution process were carried out by three *Malguzar*s of the village. The cultivated land in the village was divided amongst these *Malguzar*s. The land under the tenure of each *Malguzar* was individually termed one *Vakkal* and probably the name of the system was derived from this nomenclature. The ownership of this land was distributed among various farmers, while the maximum landholding belonged to the *Malguzar*. It was the responsibility of the *Malguzar* to provide his *Vakkal* with an adequate amount of water so as to obtain good productivity and earn profit. Thus, it was evident that each *Malguzar* was dependent on the tanks for livelihood and to gain income, and hence was also liable to maintain the tanks and the efficiency of their functioning. The *Malguzar* ensured that the tanks were de-silted before the rains, the tank *bunds* were strengthened with soil to take the water pressure, the tank gates were strong enough without any leakage, and the distribution channels were cleared of any blockage. This kind of assessment made certain that the tanks would fill up to their complete capacity, which in turn guaranteed good productivity. Along with the measures to harvest and conserve water, the *Malguzar*s were also responsible for the well-organised distribution of water to the agricultural fields. Villagers mentioned the existence of well-defined rules for this water supply. They stated that each *Vakkal* would be supplied with water for three days and three nights at a time.[19] The internal distribution of water in each *Vakkal* was the responsibility of the respective *Malguzar*. The distribution was organised such that the furthest fields would receive water first, by blocking the intermediate channels. After that the second line of fields would receive water by closing the far end channels and last of all fields near the tank would receive water. In addition, there would be rotations between *Vakkal*s in receiving water.

The above discussion highlights a different type of decentralisation that existed in the past. The *Gond* rulers gave power to local *Malguzar*s to develop their own management system reflective of the contextual setting. Although each *Malguzar* enjoyed maximum power

18 From the study of various historical documents it is understood that the *Malguzars* were appointed during the British rule. But it was not possible to establish if the *Vakkal* system was practiced by the *Gond*s prior to British occupation and then was adapted by the *Malguzar.* However, the villagers reported that they have known this system since the *Gond* period.

19 This time frame was different for other villages, as it was decided entirely by the respective *Malguzar*. It was also based on the type of crop, its water requirement and the water availability in the tank, and the number of fields to be catered for. Thus, it can be observed that the distribution rules involved considerable specific calculations, which the people had learnt over their years of experience.

over the distribution of water, eventually they ensured that everyone had an equal opportunity to obtain water. This is because if the water conservation and its distribution were done fairly, the farmers would reap good harvests and would be in a position to pay the requisite tax, in the form of grains or money or other suitable modes. Ultimately the *Malguzar* would make more profit. Therefore, it was essential that the water requirements of all farmers were met properly. However, it is evident that not all the farmers were involved in this decision-making process, and the *Malguzar* would formulate decisions on his own accord. Although this cannot be called a true form of decentralised power and participation by a community, it is a representative form, where the representatives acted for and on behalf of the community and ensured that everyone obtained an equitable share.

The *Malguzari* system was abolished in the region in 1955 with the introduction of the *Zamindari Abolition Act, 1948*. Following this *Act* all water resources were transferred to the Maharashtra State Government. The State Government then directly undertook the management of resources including water under their jurisdiction and ensured that a community would be supplied with water by the Government Irrigation Department and Public Works Department. Thus, a strong system of community management and use of water was abruptly put to an end, by not acknowledging the customary rights over the common property resources. Unlike the other two case studies here, Rajapur addressed the issue of water crises as early as 1955, after the abolition of *Malguzari* in 1955 in the region. One respondent quoted that a concept known to their ancestors: “If they conserved water, only then was life possible” (RSL 2). Hence, immediately after the 1955 centralization of tanks, the villagers (mainly farmers) formed a Water Committee to enable the regular management, and appropriate distribution of water and the maintenance of tanks. Therefore, it is important and inspiring to understand the process and perceptions of this community that has evolved since 1955 into an independent organised body.

6.2.3 Community participation in water management

New institutional structure

The *Kohli* community of Rajapur reacted to the centralisation process of the Indian Government way back in 1955. The villagers formed a Water Committee to take care of the tank system, in terms of its maintenance, water distribution, and management. Over the five decades, this committee has evolved into an independent body that has managed water resources equitably and efficiently during this time. After the introduction of the *Panchayati Raj* Institution, the Rajapur village community formed a *Gram Panchayat* from elected

representatives from the village community. The tanks, which had previously belonged to the community, were transferred to the *Gram Panchayat*. The Rajapur *Gram Panchayat* operates under the *Zilla Parishad* and Block Office at Tumsar, which is the government-proposed second-level administrative body.

The Water Committee continues to exist alongside the *Gram Panchayat* and works as an independent body. Although the ownership of the tanks is with the *Gram Panchayat*, all the distribution, management, and maintenance are looked after by the Water Committee. All its members are 'elected' in an *Aamsabha* (public meeting) on a rotational basis. It is particularly significant to note that, although members are elected in a public meeting, the nominations are submitted previous to the meeting. This still gives an opportunity to the nominee to influence village opinions to elect him/her to the Committee. In addition, this form of nomination still replicates the central government system of elected representation and theoretically does not correspond to the true form of decentralised power. However, further discussion with the villagers revealed that the work of the Committee members is continuously scrutinised by the villagers and the *Gram Panchayat.* Hence, if there is any form of complaint against the functioning of the Committee, then the members may be subject to re-election (RLS G). Some of the villagers also stated that "As the Water Committee is separate from the *Gram Panchayat*; there is no influence of politics and political parties" (RLS G).

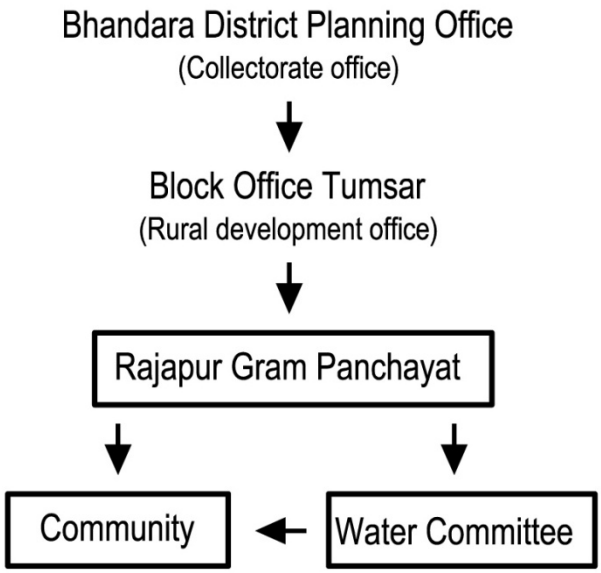

Figure 6.12: New institutional structure in Rajapur

Another noteworthy observation made during the field investigation was that there was no representation of women in the overall functioning of the Water Committee. When the

Committee members were asked about this, it was evident that they had not considered this question earlier, as the community views regarding female participation are very conservative. Thus, although the Rajapur community has demonstrated being an advanced and developed community in its formation of the Water Committee back in the 1950s, the issue of equal representation by women shows that the village has not yet addressed this social capacity building. The Committee accepted that female participation in the overall village was negligible, and accepted that insufficient efforts had been taken to improve this situation. Furthermore, the Committee members realised that they would require two women members, if they wished to register their interest under the Government administration.[20] This, in itself, is evidence of a lack of interest in enabling female participation in any decision-making or administrative processes.

In addition, the village has other independent committees concerned with forests and fisheries. The villagers and the *Gram Panchayat* asserted that all the committees worked in co-ordination and helped each other. Furthermore, it was also acknowledged that "The *Gram Panchayat* was an important link between all of them" (RLS G1). The *Gram Panchayat* is responsible for calling any joint meeting if there is an issue concerned with all the three committees. The decision is then taken by consent from all the Committee members. However, some villagers belonging to the *Dheewar* community (fishing community) felt that water for irrigation was always given a priority over their needs for fishing (RLS G2).

Functioning of the Water Committee

The Water Committee functions in accordance with the responsibilities vested in it by the village community. Every year, the Committee decides upon the water fees to be collected from the water users. Accordingly all farms are allocated water via channels at a uniform rate. It is the responsibility of the Committee to undertake the maintenance of tanks and channels. However, during the field investigation in March 2009, it was noticed that the tanks, which had completely dried due to the heat of summer, needed de-silting. When the Committee members were questioned about their intentions for de-silting, it was admitted that the Committee did not have enough funds to carry out this work. The Committee also informed that the people are ready to participate by *shramadan*, but the complete work was beyond manual work. They needed special machinery to complete the task. They had approached the *Gram Panchayat* to resolve this issue, of getting some finance to hire the required machinery. The *Sarpanch* himself, after studying the various government policies, had already made an

20 Under the Indian constitution, any committee to be registered under the Government needs to be equally represented by men and women.

application to the Irrigation Department for funding. Thus, it can be seen that the administrative process is lengthy and impacts on the work to be carried out for the benefit of the villagers. When the villagers were asked about it, they showed interest in doing *shramadan* to get the work done, although it should be acknowledged that the tanks are too large to be de-silted manually alone, and that this would require certain equipment. However, the labour cost could be reduced if most of the villagers participated in this community work.

The Water Committee is also responsible to appoint *pankar*s, for opening and closing tank gates and channels to individual fields, in order to ensure proper water distribution. The Committee usually appoints small or marginal farmers for this job. It is also important to note that the rights of the landless over the water in the tanks are negligible and limited to domestic and livestock use only (PFO 3; Mishra et al. 2008). This need was intended to be fulfilled from the community wells and hand-pumps. As a Committee policy, the landless community members are allowed to access the *Paani Khaya* tank for their domestic and livestock needs. Thus, although there is inequity in the sharing of water from the tanks, the Committee has ensured that the basic requirements of equitable water distribution are at least fulfilled.

After working for more than five decades, the Committee, along with the broader village community have developed a well-defined set of rules for the management of the tank systems. These are based on a set of responsibilities well-defined by the village community, including:

1. Monitoring the distribution of water for irrigation and punishing offenders
2. Setting up and collection of water fees for different crops in each season
3. Conflict resolution
4. Maintenance and repairs of the tank structure and distribution channels.

(RLS 2, G; Mishra et al. 2008)

However, from the interviews with the Committee members, it was evident that there is no delegation of these responsibilities among the various committee members (RLS 1, 2). In the interests of transparent functioning, all members investigate and oversee all the aspects of water management and take decisions collectively.

There has been an important transformation by the Water Committee in terms of the rights of access to tank water. In the past, only traditional owners of land had rights to obtain water from the tanks for irrigation purposes under the *Nistar* rights given under the *Indian Constitution*. This meant that the individuals who were allotted land by the Government at a later date or those belonging to other communities (other than *Kohli*) were not permitted to

obtain water from the traditional tanks. This rule is still strictly followed in many of the surrounding villages (RLS 1; RLSG 2, LS1; CS3; Mishra et al. 2008; Rajankar and Dholke 2006; Paranjape n.d.). However, the Rajapur Water Committee has taken a different approach, by deciding to supply water from the tanks to non-traditional owners in the village. In the late 1960s, when the *Zilla Parishad* increased the height of the *bund* of the *Dhivri talav,* vastly increasing its water-retaining capacity, the community supported the Committee's decision to supply water to the fields of non-*Nistar holders*. The *Nistar* right holders are given the first priority and then the water is distributed to non-*Nistar* members. Thus, the Water Committee and also the village community at large have taken steps to incorporate the non-*Kohli* community members into the system by giving them rights over tank water. One of the respondents stated that they decided to distribute water to the non-*Nistar* holder to avoid any future conflicts as the number of such people is growing in the village (RLS 2).

Any major work to be carried out on the tank system is proposed by the Water Committee and funded by the *Gram Panchayat* under various government schemes. Recently, the upper *Dhivri* tank's main *pat* had a leak, which was beyond the Committee's available funds. Therefore, the *Gram Panchayat* after receiving a petition from the Water Committee signed by about 100-150 farmers, obtained funding from the government employment scheme. Using the funds, the Water Committee constructed a 300m long new *pat* for which the labour was employed from the village itself. The Committee is also responsible for any minor works to be carried out on the tank system. Water charges collected by the Committee are used for minor works directly by the Committee without any consent from the *Gram Panchayat*. The independent functioning of the body aids quick actions and results. Furthermore, one of the respondents stated, "The members are aware that any negligence would result in their own loss. They feel a kind of loyalty or belonging towards this system and therefore they take the responsibility" (RLS 2). If it was restricted to functioning under the *Gram Panchayat*, its decisions would have been required to traverse through a lot of administrative processes and paperwork to get such minor works done. Excess funds are used for any public works in the village including temple construction, festival celebration, and so on. Even though it is an independent body, the Committee has to keep records of all its meetings conducted, jobs undertaken, employment history, and water distribution. In addition, it also records the revenue collected, expenditure on any form of irrigation works carried out and any outstanding payments of the farmers. All these records are presented in the *Aamsabha* and examined by village members and the *Gram Panchayat*. The presence of *Aamsabha* helps monitor the Water Committee and holds them accountable to the village community.

The Water Committee has also imposed certain restrictions on the use of water from the tanks. The Committee, with consent from the village community, has decided that there will be no withdrawal of water from the tank for irrigation purposes once the water levels in the tank fall below 1.5 metres approximately. The rule is strictly followed and in case of any breach, the relevant farmer is punished by denial of water supply to his fields in the next season. In summer most of the tanks are dry; only *Paani Khaya* retains some amount of water. Thus, to ensure that the water requirements of the village community are fulfilled, no water is withdrawn from this tank for irrigation. Also the *Dheevar* community is not allowed to carry out fishing during this time in the tanks. Accordingly, this water is kept in good quality to be used for non-economic purposes, and the rights of the landless are maintained. Another rule followed is that during fishing activity, care is taken that water is not let through the gates, to ensure that the interests of the *Dheewar* community are conserved.

Summary

This section has argued that the Rajapur initiative of community water resource management is certainly another effective move towards sustainability. However, the discussion has also revealed several issues that have impeded Rajapur's efforts in developing a sustainable water management plan, and that they have only been partially successful due to the presence of several social challenges. Some of these, according to this study, include conservative beliefs on female participation resulting in gender inequality, conflicts between the traditional *Kohli* community and non-traditional landowners, and negligible recognition of the landless in the management of the tank system. On the economic front also, the Water Committee constantly faces problems of lack of funds, and dependence upon the Government administration for financial assistance. This is a very long and bureaucratic process and takes considerable time, often affecting the landowners due to non-availability of water at the required time.

In addition to weak approaches on these social and economic fronts, the analysis has also argued for the efficiency of Rajapur's institutional structure. The Water Committee, with its vast experience owing to the long period of its existence and functioning, provides a significant approach to water governance. The policy to incorporate non-traditional owners, and small landowners, and also a little acknowledgement of the rights of the landless, suggest that improved policy reforms and changes from the old traditional ways are necessary for Rajapur's Water Committee to reposition itself as a model village for tank managing communities (Mishra et al. 2008). The villagers assert that three important factors are needed

for effective and efficient functioning of the Committee, namely "courage, feeling of belonging, and responsibility" (RLS G1).

In other words, the absence of social capacity development has to some extent undermined Rajapur's performance in making a smooth transition to effective sustainable water management. Thus, while there is no doubt regarding the significance of some of the Rajapur's achievements in sustainably managing its water system, the challenges mentioned above lead to some uncertainty with regard to Rajapur's representation as a pragmatic case of successful sustainable water management. Chapter 7 will further discuss the data presented in this sub-section to evaluate these sustainable management practices in regards to the framework and evaluative criteria used in this research.

6.3 Case Study 3: Aashti village

Aashti village was chosen as the third case study for several distinct reasons. Primarily the Aashti village community has managed their traditional tank system since 1982 through a Water Committee, and this case study highlights the exceptional work of a single person who initiated the process of community-based water management. In doing so, this sub-section evaluates the approach of the Aashti community in sustainably managing their water resources. Furthermore, it also discusses changes in the attitudes of people over a period of time towards the tank system and its management.

This sub-section progressively outlines every aspect of the Aashti community water management initiative. It sets up a context for the community initiative in terms of its natural, socio-cultural, and economic setting, and then discusses in detail the community initiative to manage their water resources. In doing this, it presents arguments in relation to the various difficulties faced to obtain this success. A critique of this community-based initiative and the factors responsible for the same is undertaken, followed by an examination of Aashti's success and its consequent break-down.

6.3.1 Setting

Natural features

As discussed in Chapter Three, the natural setting of a place plays a significant role in the development of a particular kind of water management system. This further governs the formation of a management institution to effectively manage water resources. This is very much evident in the case of the village of Aashti, located in the Tumsar *Tehsil* of Bhandara

District of Maharashtra State. It is situated between latitudes of 21° 35' 42" to 21° 34' 55" N and longitudes 79° 43' 45" to 79° 44' 20" E (Google 2009; Survey of India 1027). It is located a few kilometres from the second case study village of Rajapur on the border Maharashtra and Madhya Pradesh states. The village can be reached by road from Nagpur via Bhandara and Tumsar (refer Map 6.13).

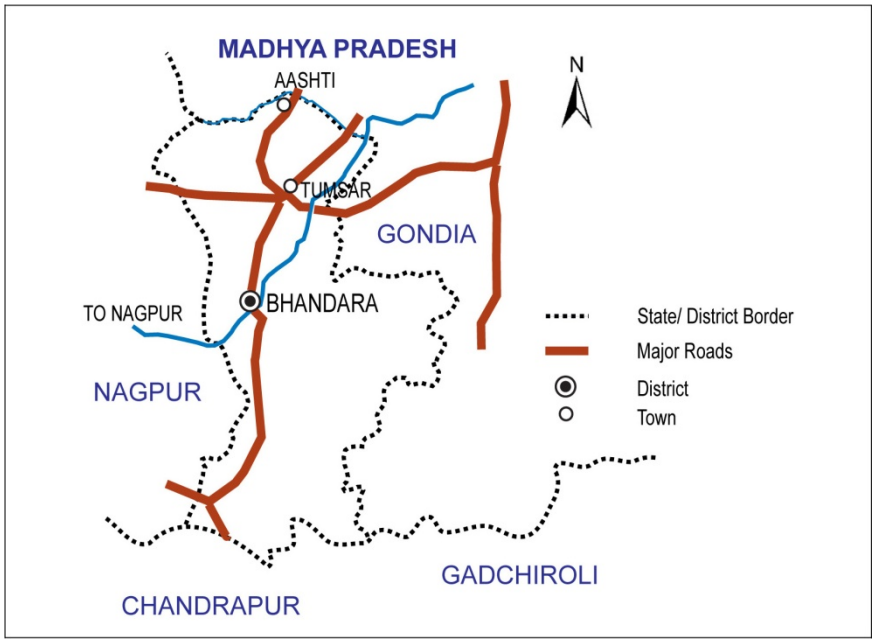

Figure 6.13: Aashti location map

Aashti village occupies an area of 987 hectares, out of which 523.94 hectares of land are under cultivation. A tank system is responsible for the irrigation of almost 80 percent (419.15 hectares) of this agricultural land. The high fertility of the land is a result of its location in the watershed region of River Bawanthadi which runs west-east on the northern flank of the village and also forms a natural boundary between the two states of Maharashtra and Madhya Pradesh. The village community mostly depends on the tanks for irrigation purposes and on the River for domestic and other uses. The tank system was developed on various levels of land responding to the topographical features and using the traditional construction techniques (refer Figure 6.14 and Aerial map 3). The community has been profoundly dependent on the tank system for their continued existence. However, recently there have been changes to this arrangement and the villagers have started obtaining more water from the River (ALS 1, 2, 3 and 6). The tank system and the river receive run-off water from the Ambagad Hills (part of the Satpura Ranges) running to the south of the village.

Figure 6.14: Slope and Landuse maps of Aashti village (GoM. Maharashtra Remote Sensing Centre 2006-2007)

Socio-cultural setting

As with the other cases, the socio-cultural background of this community is the second criterion that governs the concept of sustainability and water resource management. Aashti is a homogenous community of 500 households of which 75-80% of the population is *Kohli* community. The remaining population belongs to *Brahmins, Dheewars, Rajputs* and *Muslims*. The latter group are mostly dependent on non-agricultural activities for their livelihood. In contrast, the *Kohli* community are the primary landholders and are an agriculturally-based community. This community is also said to possess traditional knowledge about site selection for tanks, tank building, and channel construction.

Economic setting and livelihood

There is a large variation in the economic status of the villagers. This is due to the amount of landholdings among various farmers and some of the villagers being landless labourers. The main source of livelihood for the Aashti community is agriculture and the main crops of the village are paddy, wheat, and sugarcane. All the crops are significantly dependent on the availability of water. Depending on the soil type, land size and water availability, farmers decide on the crop they wish to cultivate. For common domestic use there is a free open access system for all villagers to obtain water from the tanks. There are also numerous wells in the village, some owned by the *Gram Panchayat* and some privately. There are also some water taps and hand pumps set up through State Government water supply schemes.

Fishing is carried out by the *Dheevar* community in the traditional way using old fishing techniques. Another source of livelihood for the landless is to work as farm labourers in other farmers' fields. This is seasonal work and depends on the availability of work and quality and quantity of crops. A further important source of livelihood for the landless is the production of *gud* (jaggery), following sugarcane cultivation.

Figure 6.15: *Photograph of Gud manufacturing (Author 2009)*

The tank system

Aashti was historically under the *Gond* rulers, during which time the *Kohli* community developed a robust system of water harvesting supported by an excellent community-owned and managed regime (Paranjape n.d.; Borkar n.d.; Russell 1916). Later, under the British rule, the village became a part of the *Malguzari* system developed by the rulers for the collection of taxes and hence the management of the tank system came to be known as *Malguzari talav*.

The village currently has 60 tanks of various sizes, including farm ponds which are seasonal, constructed during the *Gond* reign.[21] There was an attempt to collect the maximum amount of water falling on the earth's surface in the village during the rainy season, before it dispersed from the village boundaries (refer Aerial Map 3). The tanks were built on various levels and they are interconnected like chains with an overflow system. There are three large tanks at the upper level of the village forming a chain of three interconnected tanks (refer Aerial Map 3). When the tank at the upper level is filled completely, excess water flows into the tank constructed downstream, through a *pharas* or *pohar* i.e. waste weir, and the *pat* or irrigation channels (refer Figure 6.16). This collection and diversion system optimises the utilization of the available water. Though these tanks are one below the other, the water is

21 This number indicates the current tanks and *bodis* found in the village. The exact figure during the reign of the *Gond* kings could not be traced due to lack of records. During the British period the *Land Revenue Settlement Reports* mention that the village had about 75 seasonal large and small tanks. During the interviews the elder people of the village mentioned that they had heard from their elders that the village had more than 100 seasonal large tanks and *bodis*. It becomes evident from the discussion that the village previously had numerous tanks compared to current situation, and would have never faced water scarcity problems in the past.

taken in different directions with the aid of the *pat* or irrigation channels, to service the maximum area of land under cultivation. There is a different mechanism in place to draw water from the tank for irrigation, which uses a structure called *tudum chi payari* (step-like structure) (refer Figure 6.17). These structures, along with the *pat,* can still be seen in the Aashti village. The community still uses these structures for the distribution of water. However, during the field investigations it was observed that these structures are in a state of extreme dilapidation and in need of immediate repair if they are to be used for longer periods in future (PFO 2).

Aerial map 3: Aashti tank system (Google 2009)

Figure 6.16: *Photograph of tank and waste weir (Author 2008)*

Figure 6.17: *Photograph of Tudum at one of the tanks (Author 2009)*

6.3.2 Institutional structure and decision-making procedure

Historical profile

The entire Aashti system during the *Gond* and *Maratha* reigns was managed by the community under the leadership of the village Chief. The Headman enjoyed the entire revenue and rendered military service to the government whenever called upon. In addition to this occasional service, the feudal Chiefs had to pay an annual tribute of a jar of butter, and one or two bamboo sticks, or the like, to the *Gond* King (Wills 1923). They were, however, given complete discretion in the internal administration of their *taluqs* or *parganas* (estates). The *Gond* system of governance appears to have been almost exclusively feudal, with the greater part of this authority and power in the hands of *Gond* Chiefs. However, it has been noted that there was awareness among these *Gond* Chiefs regarding the importance of water, and this led to the employment of the *Kohli* tribe to construct tanks in the region. Furthermore, there were no ownership rights over these tanks and they were considered to be property of the village community.

This ownership pattern changed with the advent of British rule. During the course of this administration, the proprietary rights of a village were confirmed upon that person who could establish the strongest claims (Lawrence 1867). All those works related to resources, including the tank system and forest lands, were transferred to the *Malguzar*. The *Malguzar* was given the authority to collect payment for water in addition to the discretion to impose other taxes and deposit a fixed amount with the British Government. Thus, the community ownership of the tanks was transferred to sole ownership via the *Malguzar*. During the *Malguzari* system also, the management and maintenance of the tank system was the responsibility of the *Malguzar*. Although this was driven by his self-interest, he generally ensured that the tank system was maintained in an excellent condition, involving the community in this strategy.

As in other case study villages, following Independence the tank system came under the jurisdiction of the State Irrigation Department following the abolition of the *Malguzari* system in 1955. The absence of adequate knowledge and understanding of this complex tank system among Government officers marked the deterioration of the tanks (Rajankar and Dholke 2006; Paranjape n.d.; Agarwal and Narain 1997). Their dependence and preference towards newly developed engineering techniques was the second cause of the neglect and breakdown of the traditional system. The wooden gates were replaced with iron gates, the natural earth *bunds* and *pats* were replaced with concrete. It was observed that the iron gates rusted soon, resulting in gaps and holes when the gates were closed and thus, producing

continuous water seepage (ALS 1, 2; ACR 1).[22] The water flowed with higher speed in the concrete channels which reduced the seepage of water into the soil, which had been able to retain water for a longer time for the crop. Consequently an excellent system of water harvesting and management, which had been successful for centuries, was discarded and new techniques not specific to the local context were introduced. After a long period of alienation from the traditional tank management system, even the community became profoundly dependent on Government bodies for the provision of water. As a result, over a period of time, they began facing water scarcity problems (ALS 1, 5 and 6; Paranjape n.d.). Continuous struggles by the village community with Government officers to fulfil their water demands proved futile (ALS 1; ACR 1; Paranjape n.d.). A new community initiative to provide solutions to their water problems was undertaken, as discussed in the next sub-section.

6.3.3 Community participation in water management

Community-based initiative under Dr. Sonawane

Following various disagreements with the State Irrigation Department, the villagers of Aashti resumed the management of the tanks by forming self-help groups, organised under the *Gram Panchayat.* This decentralisation of water management started in 1982 under the initiative of Dr. Amrut Sonawane, a local *Kohli* community member and medical practitioner. After studying the *Panchayati Raj* Institution (PRI), Sonawane concluded that a village-level Water Committee could be established under the administrative structure (ALS 1). He initiated the formation of a water management committee, shaped by members elected from the *Gram Panchayat* and also from the village community (refer Figure 6.18). Village representatives were elected in an *Aamsabha* (public meeting) or nominated by the *Sarpanch by* passing a *tharav* (resolution*)*. The Head of the Water Committee was the *Sarpanch* of the *Gram Panchayat*. Regular meetings were scheduled for deciding on the maintenance of the system and the distribution of water. A *pankar* (water distributor in-charge) was also appointed to maintain the channels, operate the weir, and channel doors for distribution. He was also responsible for the maintenance of the *bunds*, to strengthen them, to plant trees, and so on.

22 In the case of wooden gates, there was no problem of leakage because once the wood came in contact with water, it would swell and fit tightly in its place, leaving no gaps for leakage.

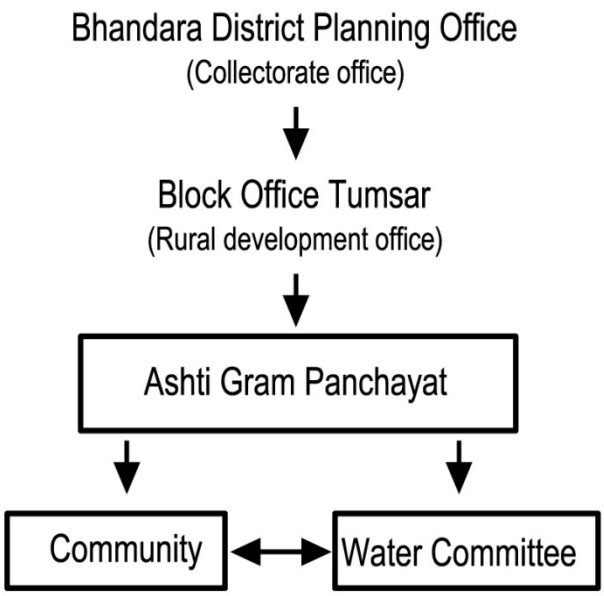

Figure 6.18: Institutional structure during Mr. Sonawane's period

Charges were decided by the Water Committee as per the landholdings of farmers. Receipts towards the payment of charges were given to the farmers. The money was deposited with the *Gram Panchayat* and used for the maintenance of the system. Yearly audits were also conducted to monitor these funds.

From the above discussion it can be concluded that the Water Committee in Aashti worked under the *Gram Panchayat* and had limited operational powers. Yet, the composition of the Water Committee had an advantage, as it included representation from the *Gram Panchayat* (who are the elected representatives under Government administration) and from the village community. Thus, there was direct involvement of the community members themselves in the process of water management. In terms of operationalising the system, the Committee had to depend upon the *Gram Panchayat* for some decisions and also for funding, and this provided an accountability process for the decisions of the Committee.

The Committee conducted meetings before the advent of rains to decide on the strategy of water harvesting (ALS 1, 3 and 4). The tank gates would be closed until tanks were filled up to their full capacity and then overflow water was let into the lower tanks. This was followed by a unique practice of distribution by the Aashti Water Committee. In this practice water was given for free sowing of rice to all cultivators who depended upon the tank system. Following this entitlement the tank gates are closed again. The second meeting of the Water Committee would be held with the *Gram Panchayat* members to decide on water prices and

the amount of water to be received by each farmer. This distribution is largely governed by the availability of water in the tank and was based upon the land holdings of each cultivator (ALS 1, 3 and 7). Accordingly farmers had to pay taxes before receiving any further water from the tanks. Once the process was complete and the time to provide water to crops had arrived, the tank gates are opened for the first set of farms adjoining the tanks. After a fixed amount of water was released to their farms, the *pat* (irrigation channel) to their farms is closed. [23] Then the next set of farms received water. This process continued until the last farms in the line received water.

A major decision in regards to water distribution was made during extreme summer conditions, given that tanks had not filled to their full capacity. The respondents informed the researcher that it was agreed that if the water was not sufficient for all farmers, then the fields adjoining the tanks would be given priority for that season (ALS 1, 2, 4, 6). The intention was that at least some of the farmers would be able to harvest complete crops. If the water was distributed equally, then due to insufficient water for completing the crop cultivation cycle, all the farmers would be at risk of suffering failure of crop. In such a situation, the farmers who did not receive water, would work on other fields and earn their livelihood. Thus, although there was inequality in access to water in this system, it was fair in terms of at least completing cultivation for some villagers rather than suffering a loss across the entire community.

Another important aspect of this community-based initiative was the system of ownership of the tanks. Two large tanks were under the jurisdiction of the State Irrigation Department and nine of them were under the *Gram Panchayat*, which is still the case. Other seasonal tanks or *bodis* smaller in size, are under single ownership and some are considered common property resources which were maintained by those directly benefitted by them. The ownership of tanks, under the *Gram Panchayat* jurisdiction, was leased on a rotational basis to private owners who took on the responsibility of their maintenance as well as water distribution (ALS 2, and 6). However, it is significant that the villagers were motivated to contribute in kind or in labour towards the operation and maintenance of the overall tank system to ensure water supply. The *Gram Panchayat* used partial funding obtained from the National and State Government authorities towards the maintenance of this system. For example, funds from the *Jawahar Rojgar Hami Yojna* (Employment Scheme) and *Gram Sudhar Yojna* (Village Development Scheme) were used to ensure effective water management.

23 Fixed amount here means the amount for which the cultivator has paid tax for depending upon his landholding and availability of water in the tank.

Thus, owing to the initiative of Dr. Sonawane and the interest taken by villagers, Aashti village has successfully tackled their water scarcity problem to a great extent. This success can be attributed to the community effort in effective participation in water harvesting and management and the operation process. One of the respondents commented that "Feeling of belonging and affiliation towards the tanks was important for us to participate in the activity" (ALS 3). This policy of local governance, supported under the State Government institutional framework, has significantly helped the Aashti village evade its water problems, ensure high agricultural productivity, and meet their domestic water needs.

Post-Sonawane period

In the last few years there have been some changes in this institutional structure. Dr. Sonawane left the *Gram Panchayat* due to personal reasons and no longer works with the Water Committee. The newly elected *Sarpanch* has altered the system. Now, according to a resolution passed by the *Gram Panchayat,* with the consent of the village community in the *Aamsabha,* the Water Committee is currently administered separately from the *Gram Panchayat*. Members are elected in *Aamsabha* and its Head is no longer the *Sarpanch*. The Committee functions completely independently of the *Gram Panchayat*. Thus, the Committee members solely decide on water prices, collect all funds, and maintain a separate account as a self-regulating system distinct from the *Gram Panchayat*. Although this has given more power to the Water Committee, with less dependence upon the *Gram Panchayat*, the villagers now perceive that this new governance system has resulted in a lack of accountability (ALS 1, 3, 4, 5, and 6). The villagers are now complaining that there is a lot of mismanagement of the tank system by the current Water Committee and that funds are not handled appropriately.

During the field investigation it was recorded that the Water Committee had been unable to maintain the tank system and had failed to enforce laws upon the community regarding the maintenance and management of the tank structures. It was mentioned by one respondent that people deceived the Water Committee in terms of tax payments (ALS 3). This respondent claimed that this was achieved by stating a smaller landholding size when paying the water tax and yet taking more water. This demonstrates a lack of sternness and urge to confirm details on the part of Water Committee. It was also expressed that the Water Committee members had not made adequate arrangements for the appropriate distribution of water from the tanks. Some villagers mentioned that even the *pankar* would take small bribes and release more water into the fields of the payee (ALS 3, 4, and 7). Thus, it can be concluded that the Aashti Water Committee had failed to mature into a robust institutional body to enforce laws for the accurate and fair distribution of water.

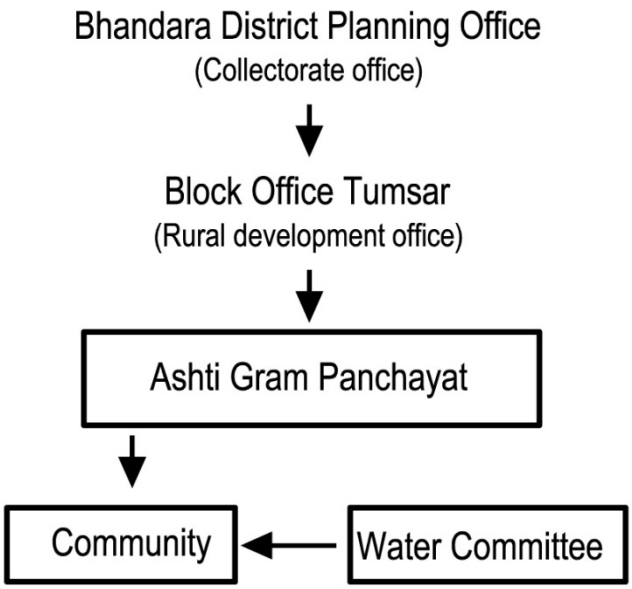

Figure 6.19: Institutional structure in the post- Sonawane period

Another major concern expressed was that some of the village community members have started to lose interest in the system of community ownership and management. One of the farmers stated, "Previously people felt responsibility and affiliation that water should reach everyone equally. They would come forward willingly to construct and maintain the *pats*" (ALS 1). Now, they expressed an increasing interest in personal profits without concern for the village community at large. During the field investigations to the village, it was observed that at some places the *pats* were broken, to provide additional water, and in some places they were neglected, allowing them to fill with waste (PFO 1 and 2) (refer Figure 6.20). In other places the *pats* were encroached upon and land had been brought under cultivation to increase productivity (PFO 1 and 2). These kinds of actions demonstrate deterioration in the Aashti community thinking and development towards an individualistic and self-interested approach. When the current Committee members were questioned about the situation, they acknowledged their failure to maintain strict rules, but also suggested that people are losing interest in the tank system due to new sources and techniques available. Further, they advised that they are proposing a *tharav* (resolution) that "Farmers through whose fields such broken *pats* are running, should themselves construct the *pat* again or pay for the same" (ALS 2, 4). However to implement such a rule, it would need to be accepted and implemented through the *Gram Panchayat*.

Figure 6.20: *Photographs of encroached and neglected pats (Author 2009)*

In describing the present situation of agriculture and quantity of production, one respondent confirmed, "Earlier a farmer who used to cultivate about 100 *nalis* (rows) of sugarcane, now cultivates only about 50 *nalis*. This is due to reduction in water availability and also due to non-availability of farm labourers" (ALS 3). The problem of obtaining people to work as farm labourers has two constraints. The first factor is the migration of people (mostly the young generation) from the village to nearby towns or cities for better employment, as they do not see any future in the hard, tiring agricultural work (ALS 1). The second factor is a government policy of leasing lands to landless labourers and selling seeds for cultivation at very low prices of Rs. 2 to Rs. 5 per kilogram.[24] Thus, many of the villagers who earlier used to be farm labourers have leased land from the Government and started cultivation. This has increased the amount of land under cultivation, and also increased the water requirement for the crops. As a result, the number of people to work on individual farms has reduced.

The present Water Committee continues to use funds from government schemes like *Jawahar Rojgar Hami Yojna* and those collected from the village farmers as tax for water distribution (ALS 2). The Government's employment scheme has made it compulsory for those people to be employed to have bank accounts. This was done in order to pay their salary directly to their respective accounts by the Government, without the involvement of

24 As of April 21, 2010, 1AUD is equivalent to 41 Indian Rupees. Therefore Rs 5 amounts to approximately 12 cents.

intermediate *Mukadam* (Contractor).[25] The villagers acknowledged that it was a fair system, but very tedious and problematic as it required excessive paperwork, and many of the villagers are not literate enough to do this (ALS 2, 3, 4, 5). Furthermore, the bank was not located in the village, so they would then have to travel to nearby *Taluka* every time they have to withdraw money (ALS 5; ACR 1).

Another reason for losing interest in the system could be due to the coming of electricity and the subsequent use of pumps to draw water. Many villagers have started to draw water from the Bawanthadi River with the help of electric pumps and some have also commenced exploiting ground water resources for irrigation (PFO 2). It was observed during the field investigation that there was considerable wastage of water due to pumps being left unattended, and drawing more water than required (PFO 2). All these individual actions are being carried out without the consent of the Water Committee. Furthermore, the Water Committee appears to have been little concerned about taking any action regarding these kinds of breaches, as it feels itself concerned only with the management of water from the tank system. However, during the field investigations some respondents expressed concern about using the pumps. The electricity supply to the village is not regular and there is frequent load shedding. As a result, the farmers who use pumps are often unable to draw water when required for their crops, especially during the summer period. Consequently, some of them are reverting back to the Water Committee to obtain water from the traditional tanks (ALS 1, 2, 4).

6.3.4 Support structure

The above discussion highlighted the development of a new institutional body under an existing administrative structure. It also discussed the subsequent failure of the Water Committee to mature into an independent organisational body thereby demonstrating the absence of a patriarchal umbrella to underpin new bodies. Thus, the sustainability of this village initiative heavily depends upon the community itself and effective leadership. This sub-section discusses the influence of some of these aspects which have played a significant role in the community initiative in Aashti and also its current situation.

As outlined, the decentralisation of water management in Aashti started in 1982 under the initiative of Dr. Amrut Sonawane. He had been a Water Committee member, and *Gram Sabha* member earlier and later became *Sarpanch* for three consecutive elections (total

25 Previous to the *Rojgar Yojna*, the system was to give jobs or projects to contractors on the basis of tenders. This Contractor was paid by the Government in whole for the project. He would then be responsible for the payment to his labourers. In many cases, it was common that the Contractor would keep a larger share of the money himself and give very low wages to labourers. In order to reduce this malpractice, the government introduced the system of bank accounts.

period 1982-2002). Sonawane emerged as a local leader and a role-model for the villagers. They tended to look to him to address their problems. During his period as a Water Committee member and later as a *Sarpanch*, he took a personal interest in each and every aspect of water management. He was the motivating force behind the village community to come together and work effectively towards revival of their traditional system and the further development of efficient water management. In addition, people revered his presence as an authority, and therefore abided by the rules (ALS 3; ACR 2). His actions, taking interest in all the matters of the village, and looking for the maximum benefits for the village community, gained him the enormous respect of the villagers.

However, when Mr. Sonawane discontinued his role, people did not continue their practices of water management. Individualistic approaches and personal gains became a priority. Thus, this emphasises the deterioration of social capital within the society. Without this second tier of leadership, the community is giving up on its traditional systems. Furthermore, even though they are realising the problems, no one wants to take 'responsibility' for doing anything to improve the situation. Thus, an absence of a support structure is evident and proves how crucial it is for maintaining continuity in such community efforts.

Another significant feature is the lack of consideration of this contextual tank management system in the Government policies. Government advised policies can be considered to be responsible for the hostility of people towards their community responsibilities. The agendas in these policies promote the provision of water by Government agencies as an easy and efficient way. These have made people dependent on government agencies to supply them with water. In the case of Aashti, another similar project has affected the community initiative to a certain extent. The Maharashtra State government and the adjoining Madhya Pradesh State government have jointly proposed to construct a dam on the Bawanthadi River. It has been proposed that as a result of this project, more land will be brought under cultivation and the adjoining villages (including Aashti) will be supplied with canal water. At the same time the Government has constructed pipelines providing drinking water to each household, which is being pumped from the River Bawanthadi. The Government's promise 'to provide water at the doorsteps' has resulted in further neglect by villagers towards traditional tanks and wells. Similarly Government policy to provide villagers with electric pumps at a subsidised rate to draw water from the River has drastically increased. As a result, dependence on the ancient tank system has reduced, leading to its further deterioration and greater stress on the Bawanthadi River.

Summary

This section has demonstrated the success and subsequent collapse of the Aashti community initiative towards sustainable management of its water resources. The discussion has highlighted the significant role of the village's natural setting, socio-cultural background, and heterogeneous community composition, in the development of the traditional systems. It has also shown the various institutional structures that have managed the tank system over a period of time. Further to this, it discussed the evolution of community initiatives and participation in the tank system management under an able and inspiring leadership. Moreover, it has revealed the absence of any kind of support structure in the form of outside agencies and local leadership to sustain and build further on the community-based management system. It has further focused on the lack of coordination between the various Government administrative agencies and also exposed the lack of integration of the traditional tank system in the State and National Government projects and policies.

In summary, the section has argued the strengths of the community initiative and the role of leadership in the process, together with the weak institutional structure and failure of the Water Committee. This reveals some important issues that may affect any village initiative in the course of its development. It once again highlights the significance of social capacity building in the development of an institutional structure for sustainably managing water resources.

Conclusion

Thus, this chapter has presented the natural, socio-cultural, and economic setting of all the three case studies which resulted in a specific kind of water harvesting and distribution system. It also presented the distinct institutional structures developed by each of the villages for the management of the water tanks and water distribution. These structures were in response to distinct factors present in each of the villages. The data further supported the theoretical evidence for the need of social capacity building, leadership or representation, accountability and adoption of adaptive learning process in its management approach. Chapter 7 will further discuss the data in this section to evaluate the sustainable management practices in regards to the framework criteria.

Chapter 7. Analysis and comparative study

Introduction

As the primary aim of this thesis is to explore the effectiveness of decentralisation in water resource management, understanding current practice by Indigenous communities in achieving sustainability is crucial. As a following step, this research examines how the management practices and participation may differ in the same region between communities with different social and cultural contexts. Chapter 6 provided a detailed description of the accomplishments and challenges of Mendha, Rajapur, and Aashti across social, cultural, institutional, environment and economic dimensions. This chapter reflects upon this discussion and draws together an argument to understand the effectiveness of the practices using the analytical framework developed in Chapter 3. The chapter also attempts to make a comparative discussion across the three case studies about their management practices using the same analytical criteria.

The water management practices in each of the case studies are discussed in the following sub-sections using the five components of the analytical framework. As derived in the theoretical chapter, the components comprise a decentralised governance structure which incorporates the participation of the Indigenous community in water management decision-making. This participatory stage is subsequently pursued by integration across administrative levels and of Indigenous knowledge in the mainstream management process. The elements of representation, accountability, and ownership also contribute towards the sustainable management process. Since it has been established that sustainable management is a continuous cyclic process, the final stage involves the evaluation of the ongoing responsiveness of the communities in improving all stages of the management process. In short, Governance structure; Participation; Integration; Representation, accountability and ownership; and Ongoing responsiveness are the five main components of the cyclic process.

In regard to this framework, the first sub-section of each of the case studies, discusses lessons learnt about the new governance models from the three case studies and explores the diverse institutional structures and the nature of decentralisation of power to strengthen Indigenous participation. The second section analyses the diverse forms of participation that inform the decision-making process. Assessment of the levels of integration of Indigenous knowledge in water management and also co-ordination between various institutional agencies at different scales and levels during the participatory process is undertaken in the third section. The fourth section discusses representation in the decision-making process and ownership of the resources in order to negotiate the responsibility for

sustainable planning of water resources. The need for accountability of the decision made towards the wider community, and mechanisms for the same in each of the cases is also examined. The final section discusses the degree to which the process is efficient and continues effectively by adapting to the lessons learnt over a period. The need for an approach that focuses on livelihood through employment generation is also detailed to understand the interests of the community for participating in the process. Following the individual discussions, the final section compares the three case studies using the same framework and concludes by summarizing the imperative findings regarding the water management approaches adapted by Mendha, Rajapur and Aashti to achieve sustainability of the resource.

7.1 Understanding sustainability of water management practices in Mendha

7.1.1 Governance structure

The Mendha village community has traditionally undertaken several efforts to develop a transparent and just governance structure. At Mendha the National Government's aim at extensive decentralisation of decision-making powers to local institutions through the *Panchayati Raj* Institution is evidently implemented in practice. The community has maintained consistency with the national decentralisation directives to contribute to grass-roots empowerment. The most prominent attempt by the villagers is the formation of the *Gram Sabha* as a local decision-making body. This step is evidence of the efforts taken by the community leaders for local capacity building in line with the national directives.

Having said this, the Government administrative bodies above the *Gram Sabha* follow a rigid system of planning and management of water resources in the region. Despite several efforts by the Mendha *Gram Sabha* to bring about reforms in the management of resources, bureaucratic and administrative interests have often created hindrances in the efficient functioning of the *Gram Sabha*. To this extent, Government officials at the Rural Development Block Office are often not willing to co-operate with the *Gram Sabha*. However, at certain times some officials have extended support to Mendha's efforts, but this depends on the interests of the individual officers. This kind of attitude ascertains that, good policies for decentralisation and participation of local communities exists. However, their success is greatly dependent on co-ordination from the local officials. There is a need for clear implementation guidelines for integration to actually happen at grass-roots level (Mishra et al. 2008; Iyer 2007).

In addition, the Mendha community has been constantly supported by the *Vrikshamitra* NGO to foster effective learning, decision-making and implementation. *Vrikshamitra* has also brought in other outside support when needed to address issues of funding and technical difficulties. Thus, the role of outside agencies or NGOs is crucial for the community-based activities and their development.

The rate of community participation in the Mendha resource management process is due to constant encouragement from the community leader Devaji Tofa and the *Vrikshamitra* members. Their constant efforts in raising awareness in the village community about their rights and responsibilities are significant. The efforts taken to discard the historical social-hierarchical structure (of caste, gender, and social status), and domination of the landholders are commendable. The decision for the entire village community to be members of the *Gram Sabha* strengthens the community and ensures social cohesion and accord in the village.

7.1.2 Participation in decision-making

The effective institutional structure has a crucial impact on participation in Mendha's resource management process. Historically, the *Gond* community was a ruling society and hence efficient in community-based decision-making. This is still clearly evident today in current community initiatives. The effort by community leaders to facilitate community interaction through the *Abhyas Gats* has significantly contributed to the sustainability process. The community participates rigorously in group discussions and shares their knowledge acquired over years and learnt from their ancestors. This encourages the youth to understand the village issues and also helps in the knowledge transfer. This knowledge building practice has a direct consequence on the decision-making of the *Gram Sabha* which is well rooted in the information gathered through these debates.

Another important feature is the participation of women in the *Abhyas Gat,* and *Gram Sabha*. Social capacity development through social learning is evident through this process, which is a departure from the historical patriarchal nature of this society. It gives equal opportunity to women to voice their situations and difficulties. This is particularly important in the case of water, as women are responsible for fetching water for domestic use and the majority also work on the agricultural farms.

The Mendha participation is enhanced by giving equal importance to all sections of the community including the landless and the poor and the lower caste. Historically, during colonial and post-Independence periods, their involvement in any kind of water planning and management decisions was curtailed owing to the rigid and hierarchical social structure.

Today, all the members are given an equal opportunity to express their views regarding the issues under discussion, and these are considered while making decisions. The involvement of landless individuals in the decision-making, and also their rights to obtain equal amounts of water based upon the number of individuals in the household, encourages their participation. Thus, the participation process is not limited to information gathering and consultation for probable solution identification, but goes beyond these goals to decision-making and implementation of actions. This ensures a form of 'true' community participation and management (Borrini-Feyerabend 1996).

Thus, it is clear that transparency and consensus-based decision-making are noteworthy features of these collaborations at the grass-roots level. However, at the district and state levels, the decision-making process lacks transparency, largely due to a lack of political will. The State's administrative structure and mechanisms further reduces transparency. In contrast, at the grass-roots level the process of *Gram Sabha* is transparent because the decisions are taken in village meetings in the presence of, and the consensus of, the entire village community. The perceptions of all concerned are taken into consideration. Since two members of each household are members of the *Gram Sabha*, wide participation and consensus is achieved. It is significant that without consensus no decision is taken in the *Gram Sabha*. It is also important to note that this can have an stifling impact because some of the important decisions, such as the amount of water for distribution, have remained pending, due to a lack of consensus. Although this kind of delay helps in minimizing the risk of escalating any future conflicts, this protracted process indicates a specific need for improvement in terms of capacity building of the community.

7.1.3 Integration of knowledge

In relation to this commendable participatory process, Mendha's community has also taken efforts for integration of their traditional knowledge. Mendha's *Abhyas Gats* brings community people and visitors together, thereby combining different knowledge types together for deliberation. *Abhyas Gats* have offered a very constructive platform for the Indigenous people to contribute their knowledge on water harvesting and subsequent management and distribution to current practices. Active interaction with various outside agencies members and other visitors contributes to the knowledge base of the community. During these interactions, the traditional knowledge is integrated with contemporary technical understandings resulting in improved knowledge relevant for the present situation. The traditional community-based resource management practices are being reinstated, using the cyclic planning processes of discussions, decision-making, implementation, monitoring, and evaluation.

There is also a holistic approach to the management of resources which the Indigenous community members are aware of resulting from their years of continuous practice. Management of land, water, and forests are considered cumulatively, which is an essential element of operationalising sustainability. The *Van* (Forest) and *Jal* (Water) *Abhyas Gats* have made significant efforts to re-establish forest cover which was earlier depleted due to continuous logging by the community for economic benefits. Neglect by the local Forest department and logging by villagers for personal benefits were the primary causes of this degradation. As a result of the *Van Abhyas Gat* initiatives the forest conservation program has helped immensely in reducing problems of high speed run-off, soil erosion, and loss of soil fertility, while at the same time increasing the availability of water.

In the process of integration towards a holistic approach, the new water harvesting structures were constructed using local materials and techniques with community involvement. A unique system of participation was designed in terms of obtaining fish in return for the labour for construction. Unlike modern methods of monetary gain, the community returned to the old ways in the form of a barter system. In addition, rituals associated with water have also been revived such as when to fetch water, fish, remove and soil from the tanks, dependent on various ecological events like the fish breeding season and water recharging the ground. This has helped in the maintenance of the structures, and longer duration of water availability in them. The capacity development programs have raised awareness among the people, and realising the importance of their historical traditional approaches, the community reverted back to a holistic approach.

In addition to integration of knowledges, integration and co-ordination across higher institutional levels is also crucial. The adjoining two villages which together with Mendha form the *Gram Panchayat* have been inspired by the Mendha *Gram Sabha*. As a result the *Gram Panchayat* is further supportive of the efforts of the Mendha *Gram Sabha*. Although the Mendha *Gram Sabha* has made numerous attempts to co-ordinate with the *Panchayat Samiti* and the Rural Block Office at Dhanora, the response from these bodies needs further improvement. Despite various positive measures, the level of co-ordination between the *Gram Sabha* and the higher levels in the governance structure remains inadequate. It was also observed that integration across various departments, dealing with varied but related disciplines is not efficient at block and higher levels of administration. In contrast, at the village level, significant efforts to integrate varied disciplines of resource management is evident through the inter *Abhyas Gats* discussions.

Further, the community has made efforts to achieve sustainability across the five dimensions identified in Chapter 2: social, cultural, environmental, economic, and institutional. For example, Mendha has managed to cross-integrate issues of Indigenous knowledge (cultural dimension) with *Abhyas Gats* (social dimension), at the same time generating employment (economic dimension) within the village through construction activities, forest-based business and biodiversity listing, and conservation programs (environmental dimension). Thus, through adaptive and integrated management Mendha has managed to achieve a successful outcome, which is crucial for the community to keep participating in the process (Plummer and Armitage 2007; Plummer and Fitzgibbon 2004).

7.1.4 Representation, accountability and ownership

The success of the participatory and integration processes is highly dependent upon the ownership rights over resources. Using the *Nistar Patrak*, the Mendha community has successfully claimed their rights to the adjoining water, forests, and land. These claims are legally binding and hence give *Gram Sabha* the right to make decisions regarding those resources. Another significant aspect is the moral feeling of ownership developed amongst the community. The slogan *"mawa nate mate sarkar"* (we are the government in our village) is encouraging the community to decide what is best for their village, and to better maintain resources for their own benefit.

Along with ownership, effective representation is required for making decisions acceptable and appropriate for the community. For ideal representation, the representatives need to effectively communicate community interests and co-ordinate with all levels and support systems of NGOs for informed decision-making. In Mendha, at the local institution or *Gram Sabha* level, fairness in representation is achieved through two members of each family being represented in the *Gram Sabha*. Further, the Chairman of each meeting, called for discussion on a particular issue, is 'selected' by consensus from the members present. This avoids developing any form of leadership or dominant personality control in the *Gram Sabha*, thus ensuring fairness and equity. In addition, women are also elected to chair a *Gram Sabha,* indicating gender equity.

In the higher levels of institutions, the form of representation changes from participatory to representative. The officers in charge are delegated to a particular region through a bureaucratic representative process to reflect their interests. Therefore, here there is a lack of participatory approach and their decisions do not necessarily reflect the perceptions of constituent stakeholders. However, in the past some officers at the Block Office, Dhanora,

have been supportive of Mendha's approach and have represented community interests at the higher levels, such as in obtaining permission to allow villagers to construct their own tanks and wells. The failure of satisfactory representation in the decision-making at these higher levels, which is responsible for broad policy-making and for initiatives at the local level, has negatively impacted on the success rate of Mendha's water management practices.

The transparent decision-making and fair representation at the local level, has in turn led to greater accountability. The accountability of the decision-making body to its wider community is now greater. The accountability of the representatives selected to join the *Gram Panchayat* from the constituent villages (including Mendha) towards the wider community across three villages has considerably increased, rather than being driven by political parties and bureaucratic processes. However, the community and the *Gram Sabha* still expect a higher level of accountability from officers at the Block Office. In other words, greater accountability from the Government is needed towards the village for further realisation of transparent and participatory decision-making.

7.1.5 Ongoing responsiveness and efficiency

The cyclic planning process discussed in Chapter 3 is clearly evident in Mendha. The three domains of 'Knowledge process' (*Abhyas Gat*); 'Decision-making' (*Gram Sabha*) and 'Action group' (Implementing community group) have strengthened Mendha's planning and management process of conserving and distributing water resources. Mendha has effectively used the adaptive learning process, through its cyclic planning process. The *Abhyas Gats* undertake in-depth research before the decision-making process in identifying probable solutions for the problems to develop an informed picture of the issues. The discussion addresses local needs, through local knowledge. In addition, case studies, which have addressed similar problems, are also undertaken.

At the same time with help from outside agencies, the examination of current government water policies (Central and State Government) is undertaken to understand their relevance for the village context. Further study is also done as to how these policies could be implemented at the village level to achieve the various benefits under the scheme. At different stages of the project, the *Abhyas Gats* and *Gram Sabha* members hold meetings with technical persons and other agencies for advice regarding any technical details and policy implementation. Although *Gram Sabha* members make an effort to bring technical officers from the Block Office, there is not always a timely response from the respective Government agencies.

The adaptive planning process undertaken by Mendha has ensured long-term environmental sustainability. The increase in forest cover, and continued monitoring by the community to prevent its exploitation ensures the conservation of its biodiversity. Construction of water tanks in the forest areas not only ensures water for the community but also for the wildlife in the forest. Further continuous monitoring by various *Abhyas Gats* has helped to improve the environmental quality around the village.[1]

Various projects undertaken by the *Gram Sabha* for water as well as other resources, owing to the complex systemic inter-relationships between them, have generated employment for the community in the village. This has reduced the migration of the population to adjoining developed towns and cities. The recognition of village efforts by visitors nationally and internationally and through different awards has encouraged the youth community of the village to stay and participate in further developing the village.

Summary

Thus, the above analytical discussion has established Mendha's achievements in developing a sustainable management process for water resources. These include implementation of the National Government's decentralisation policy to a great extent, the extensive participation of the villagers, and reasonable attempts to integrate Indigenous knowledge in the management process. The knowledge generation process adopted by Mendha has firmly established the role of NGOs in guiding the community-based resource management process. The local capacity-building and empowerment development approaches taken by Mendha leaders and the supporting NGO *Vrikshamitra*, have certainly resulted in positive progress in terms of resolving social issues and achieving equity including equity. As a result of these achievements, Mendha has resulted in a 'model' from which to draw lessons for surrounding villages to enhance their resource management process and also address social development.

Despite such success, Mendha has been unable to address certain challenges to be able to achieve a holistic approach towards resource management. One of the prime issues is the co-ordination and support of higher level institutions in their decentralised approach. At the same time there is a challenge to bring together all the different resource-related departments to address any issue holistically. Other aspects include the need for further social and cultural development to be able to reach 'consensus' whilst avoiding delays. These have restricted

1 Although assessing environmental quality was not the focus of this research, this assessment is made based on the villagers' observations and studies conducted on forest conservation (Gupte and Barlett 2007; Godbole 2002; Pathak and Gour-Broome 2001).

Mendha's progress towards achieving a holistic sustainable management process. For a long-term effective approach, as Becker, Jahn, and Stiess (1999) suggest, Mendha needs to further improve social, economic and environment interlinks and simultaneously further enhance the inter-institutional links to address issues related to governance.

7.2 Understanding sustainability of water management practices in Rajapur

7.2.1 Governance structure

The decentralised management practices adopted by each of the case studies differ. Rajapur's community has developed one of the earliest efforts to decentralise institutional structures following the transfer of ownership of the common property resource to the Government. Formation of a Water Committee for the management of its tanks system in the early 1960s was very significant. It was an attempt to decentralise power even before the Central Government's gazettal of the *Panchayati Raj Act*. Village elders, sensing the problems which lay ahead, established the Water Committee. They had an extensive knowledge of the historical systems and their management. Although the historical hierarchy of caste and the dominance of landholders was maintained, there was still a community-based approach to maintaining and managing the system. The positive aspect of this strategy was that the tank system remained in operation even after the *Zamindari Abolition Act*. This prevented the degradation of the basic infrastructure and also sustained continuity in the management structure.

The formation of the *Gram Panchayat* in the 1990s has further strengthened the Water Committee to some extent. According to the *Act*, the local decision-making body for resource management under the Regional Block Office was the *Gram Panchayat*. Within the new structure the Water Committee still remained and functioned as an independent body. However, a change in membership was witnessed during this time. Earlier membership, which was more voluntary and based on the seniority of the knowledge base, was replaced with an election-based nomination process. The acting members of this decentralised institution, elected by the villagers, are thus under constant inquiry by the villagers. However, it was also noted that there is considerable risk of influence by political parties operating in the region. This in turn could influence the people's election process.

In regard to the constitution of the Committee, the historical social structure is still widely accepted. This is evident by the absence of women representatives on the Committee and also in the *Gram Panchayat*. Although there was awareness amongst the community about this fact, it was limited to fulfilling administrative requirements and not effected out of

interest. Furthermore, the landless villagers or those not directly dependent on the tanks were also not eligible for membership to the Water Committee. Thus, in the absence of an appropriate structure in the local institution, participation of all members of the community is influenced by economic status and gender, and is therefore significantly limited in its equity (Hussain 2008; Leach, Mearns, and Scoones 1999; North 1990). However, the Water Committee, to some extent, has made a positive attempt by allowing the non-*Nistar* land holders to receive water from the tank system.

The governance structure, although decentralised, profoundly relies on the higher levels in the structure for its funding. The Water Committee does not have direct access to funds needed for any kind of maintenance or construction work. It has to depend on the *Gram Panchayat* for the release of funds from the State and National Government bodies. This bureaucratic and lengthy administrative process causes a delay in distributing the funds to the Water Committee. This definitely affects projects related to the major maintenance works of the tanks, such as de-siltation, strengthening tank *bunds* or construction of new water distribution channels. The Water Committee maintains transparency in its financial statement which is publicly audited. Similar transparency is also maintained in the discussions, decisions, and in employment generation.

The Government officers at the Regional Block Office, although not very supportive, have not hindered the advancement of Rajapur either. While being the implementation body of various State and Central policies, they are bound by administrative structures. Hence, they are not very supportive of the independent Water Committee functioning at the village level.

7.2.2 Participation in decision-making

Rajapur's participation process is highly influenced by the institutional structure. Participation in Rajapur for management of its water resources is of a representative nature. The elected Water Committee members make the decisions regarding water management (harvesting and distribution). Although, this requires the acceptance of the village community in the *Aamsabha*, it involves combination of consultation and joint planning. The knowledge generation process, however, is restricted to the Water Committee. At the same time, if someone wishes to voluntarily participate in discussions, their perceptions are considered.

As discussed in the previous section, female participation in the *Aamsabha* and *Gram Panchayat* meetings is minimal. There are no attempts to nominate women to the Water Committee. Thus, it is evident that the informal institutions in Rajapur in this context are stronger than the formal ones which mandate women's participation. In order to overcome this

social stratification, the community as a whole (including both men and women) needs a change in their social and cultural attitudes to achieve gender equity through effective capacity building programs (Pahl-Wostl et al. 2007; Pathak et al. 2006).

In contrast, the Water Committee has taken a significant measure by providing water to 'non-*Nistar*' landholders. This is apparent in the efforts to achieve social equity and trust, irrespective of the Indigenous and non-Indigenous differences, which facilitates better co-operation in collective action (Ostrom 1990). However, a similar equity arrangement is not provided to landless community members. The water rights of the landless are still limited to requirements for household purposes. Hence, their inclusion in any form of consultation and decision-making is not considered.

In regards to decision-making, the process is based on majority agreement and not consensus. The decision makers do not consider whether the entire village community agrees or not. This sometimes results in discontent among the community, some of them perceiving that they are being marginalised. To date however, there has been no conflict arising out of this discontent. Nevertheless, the Committee needs to address this issue in order to achieve long-term sustainable management. It is suggested, therefore, that Rajapur needs to re-design its decision-making process and make it flexible to take into account the maximum interests of the community people to achieve good participation.

The implementation stage of Rajapur is fairer. The landless are employed under the Government Employment scheme for any work to be carried out for tank system maintenance. But for the operation of the system such as operation of gates and *bunds* and water distribution, small landholding farmers are appointed and not the landless. Thus, inequity in aspects of gender; landholders and landless; and *Nistar* rights and non-*Nistar* right holders is still practiced in Rajapur.

In addition, water charges are decided by the Committee members and the wider community is notified. Interestingly, however, these funds are not transferred to *Gram Panchayat*, but remain with the Water Committee. They are used for various village developments like temple construction, festival celebration, and so on, and minor repair works to the tank system.

7.2.3 Integration of knowledge

The Rajapur Water Committee has attempted integration of knowledge through its participatory process to some extent. The membership has attempted to maintain the tanks using the traditional techniques. The old wooden tank gates which were replaced with iron

have been reinstalled using better water-proofing techniques. The traditional way of appointing a '*pankar*' for the release of water from the tanks is also employed. These sets of rules, defined by the village community for the Water Committee, determine the deep-rooted interests of the Rajapur community. Community interest is also evident through their constant checks on the performance of the Committee. However, the Committee has not made any attempts to distribute different roles amongst its members which might increase the efficiency of the Committee.

Rajapur's Water Committee addresses the immediate and future water needs using the traditional tank system to achieve sustainability. Their decisions are tailored to Rajapur's contextual conditions, both environmental and socio-cultural. However, their water management approach does not attempt a complete holistic approach. In the absence of other committees dealing with related aspects of water, superficially there seems to be a lack of integration between the various environmental elements. However, this study illustrates that the Committee does take measures to integrate disciplines, and address land, water, and vegetation in a moderately holistic way. Measures taken to prevent soil erosion and land use planning are addressed to some extent by the Committee. Lack of knowledge of contemporary processes and awareness about similar examples seems to be a significant impediment in the Committee's growth of knowledge and expertise.

There is also a very minimal network of support from outside agencies bodies to further improve the Rajapur attempts. The absence of any form of interaction with outside agencies has restricted the knowledge growth of the Committee and subsequently its water management practices. The Committee has sometimes used a case-study approach to address its funding problems. It has adopted modern water pricing methods to charge for water being received by farmers from the tanks. The prices are not extravagant and even the community members agree to pay for the services they receive.

The *Gram Panchayat* and the Water Committee demonstrate high level co-ordination at the local level. Both are working together to address the water problems of the village. The level of co-ordination of the two institutions, one which follows the administrative structure and the other which is an independent body, demonstrates a broader perspective to sustainability operationalisation. Rajapur *Gram Panchayat* has been supportive of the Water Committee functions. It has acted as a link between the Water Committee and other administrative agencies in the structure.

The transfer of decision-making power to the *Gram Panchayat* has been the strongest support from the Central Government. Further, the State Government has attempted

to empower the local *Gram Panchayat* through its various policies. Having said this, the implementation of these policies has still not been achieved to a great extent. As the local institutions are still greatly dependent on State Government funding, the *Gram Panchayat* has to go through a lengthy administrative process to access funds. Also, the occasional indifference of local officers towards social, cultural, and environmental priorities, and economic interests, has stifled the performance of the *Gram Panchayat* and the Water Committee planning for holistic water sustainability.

7.2.4 Representation, accountability and ownership

Rajapur follows the democratic election process to elect representatives to the *Gram Panchayat* and the election process is through ballot. The Water Committee members are elected in the *Aamsabha*. The current elected members have been working for the last 10 years, indicating the sincerity of the work of the Committee members. Though the community members did not mention about any form of influence from these representatives, the possibility of this happening in future cannot be discounted. The right to exercise a no-confidence motion against the Committee rests with the community. Despite this transparent system, the absence of women representatives on the Committee, or even in the Committee's discussions, demonstrates the lack of equitable social capacity and gender engagement in the village community. Thus, diverse interests within the community, those of women, landless villagers and non-*Nistar* holders, are not well represented in the management process (Sangameswaran 2006).

Furthermore, the absence of representation of community interests in the higher levels of governance structure impedes the sustainability operationalisation (Reed 2008). Although the *Gram Panchayat* is legally authorised to take decisions regarding the local resources, the final say still rests with Government officials in-charge of sanctioning the project and the required funding. This results in less accountability of the higher levels to the grass-roots community. In contrast, the authority of the community demands more accountability from the Committee members at the local level.

The ownership of the tanks is with the Rajapur *Gram Panchayat,* which is entitled to make all decisions on the tank system legally. The *Gram Panchayat* alongside the Water Committee, make decisions regarding their water resources. The community of Rajapur perceives the water resources and tanks as community property. They trust the *Gram Panchayat* and Water Committee for their efficient functioning. Their constant monitoring of

the Water Committee and *Gram Panchayat* demonstrates their awareness about their rights over water resources.

7.2.5 Ongoing responsiveness and efficiency

The efficiency of the Rajapur approach to water management is determined by its having functioned for almost five decades. Although longevity alone cannot be a measure to determine its appropriateness and success, the process seems to have found sound acceptance in the community. The planning cycle is slightly different. The absence of a defined 'knowledge generation' process affects the Committee's understanding of problems and limits consideration of different approaches to problems. Further, the minimal involvement of the local people who are the custodians of traditional knowledge impedes the planning process.

The Committee's efforts to understand the current water policies and their relevance to the village context is motivating. The Committee makes considerable efforts to contextually situate and implement water policies and obtain maximum funding for relevant action. These attempts would probably reap better rewards if the villagers and the Committee received some kind of support from NGO's and/or technical agencies to widen their knowledge-base.

The *Gram Panchayat* overlooks the implementation of the project which is executed by the Water Committee. The village community plays a significant role in this process and works effectively under the direction of the Water Committee. But there seems to be an absence of a monitoring and evaluation system, thereby not demonstrating an adaptive learning approach. Rajapur's community participatory efforts can further progress by adopting a continuous problem-solving, trial-and-error, self-organised process to test their institutional arrangements and their integration of Indigenous environmental knowledge so as to learn through their actions (Carlsson and Berkes 2005; Folke et al. 2002).

Summary

Accordingly, an understanding of Rajapur's management practice towards achieving sustainability has revealed its success and challenges. Being one of the initial attempts at community-based resource management, Rajapur's community has taken immense efforts to evolve its efficient decentralised institutional structure. By addressing the issue of water management early, the community has managed to keep intact the traditional tanks for water harvesting and distribution. The Water Committee has also managed to integrate some of the traditional systems of harvesting and distribution in its current management process.

In addition the Committee has also addressed some of its social challenges by considering the non-*Nistar* landholders, marginal landholders, and landless labourers. However, to further develop and maintain continuity in its progress, the community and the *Gram Panchayat* need to take further measures to develop its social capacity to address issues of gender and social equity. To maintain its social learning process, Rajapur needs to have a support system outside of the village community to further add to its knowledge base. These measures would certainly assist in improving the participatory decision-making process of Rajapur.

Similar to Mendha, Rajapur faces the challenge of establishing co-ordination with the higher administrative institutional levels, and also with related departments, which would further enhance its decentralised water management approach. Another challenge is obtaining funds on time, as the Water Committee still greatly depends on government bodies for its funding requirements. In addition, Rajapur's efforts are constrained due to absence of an on-going learning process. The community-based institutions and their processes need to evolve over time through a self-organised or external agency-supported evaluation and feedback method to work efficiently (Ruitenbeek and Cartier 2001).

7.3 Understanding sustainability of water management practices in Aashti

7.3.1 Governance structure

Aashti has had two different governance structures over the last two decades. The initial system was developed as a first attempt to operationalise the decentralisation of the Central Government. The initialisation by Dr. Sonawane to take water resource management decisions at the local level, exemplifies a prominent attempt. This attempt demonstrated the community's efforts to achieve decentralised democracy. The community shed its historical social hierarchy and dominance of landlords to come together as a cohesive community.

The formation of the Water Committee in Aashti was undertaken in an informal manner. Despite initial resistance, the community supported the decisions and implementation of the Committee owing to its positive effects on the environment as well as the resulting benefits for the community. As a consequence of this community involvement, the feasibility and credibility of the local sustainability water management process was strengthened. This Water Committee had demonstrated a good combination of government administrative and community representation. However, due to the absence of social capacity building, this experiment was short-lived and was profoundly dependent on Dr. Sonawane's leadership. The

organisational and social associations built by the community were profoundly leader-dependent, and were not based on trust, and shared knowledge (Putnam 1993).

This is further reflected in the present *Gram Panchayat*, which represents a comprehensive departure from the previous structure. The co-management structure has been replaced by a complete independent body with weakened authority. This has resulted in difficulties and flaws in co-operation between other related committees of governance. Thus, social norms, trust, and networks within the community groups are fundamental for a community organisation (Putnam 1993). Improved governance and innovation in the management process are required to help Aashti manage their water resources efficiently.

At the same time, the new dam project near Aashti on the Bawanthadi River further illustrates the power and domination of the higher level of institutions in a governance structure (Kothari U. 2001; Coleman 1990). It has added to the neglect towards the local institutions and their involvement in decision-making. This has resulted in further disregard for the traditional systems. This kind of proposal by the Irrigation Department demonstrates a lack of deliberative and participatory components in an efficient governance system (Meppen, Bellamy, and Ross 2005).

7.3.2 Participation in decision-making

The level of participation during the two different institutional structures varies greatly. The implementation of the national policy on decentralisation and the process of raising awareness by Dr. Sonawane provided a significant opportunity to bring people together to participate in the management of common property resources.

Community representation on the Water Committee and other similar committees (Forest, Agriculture, Soil Conservation) effectively discussed and analysed the issues in different disciplines and planned for holistic sustainability. However, observations and research evidence of the present situation demonstrates that people embraced these efforts owing to the direct encouragement from Dr. Sonawane and with the aim of finding solutions to their water scarcity problems. With subsequent complacency about the availability of water and the new dam project on the adjoining river, the people started to lose interest in the participation process. However, as Gleitsman, Kroma, and Steenhuis (2007) suggest, an effective participation process requires continuous engagement of interested parties into deliberative decision-making at all stages of participation. Furthermore, this project by the Government displays disregard for context specific requirements and also for concerns about

environmental capacity, which are significant criteria for achieving sustainability (Shiva 2002; Giddings, Hopwood, and O'Brien 2002).

The decision-making by the Water Committee, although based only on a majority, was transparent in the first phase. The community representatives and the *Gram Panchayat* reached decisions with mutual discussion and thereupon conveyed each decision to the wider community. In contrast, during the second phase, with separation of the Water Committee from the *Gram Panchayat,* disruption has occurred in the integration between the two levels and decisions regarding water distribution and maintenance of water harvesting structures. Furthermore, the implementation of decisions has been affected by a growing neglect and self-centred approach in the community. Since the State Water Department's proposal to provide water from the river and permission to draw water using pumps, people are no longer concerned with the Water Committee, thus losing interest in any form of a participatory approach. This indicates a lack of social and adaptive learning in the community to constantly monitor the changes in the context (social, cultural, environmental and institutional) and to improve the organisational as well as community responses through shared rights and responsibilities (Folke et al. 2002; Cartier 2001).

Lack of social learning is also evident through the absence of gender equity in the first phase. The Water Committee was greatly dominated by the male members. In contrast, in the second phase, women are participating considerably in different roles in village institutions. The *Sarpanch* of the village *Gram Panchayat* is a woman. Also, women were found to be members of both the Water Committee and the Forest Committee. However, it is also evident that this has happened due to the legal binding of administrative rules that require women members in the *Gram Panchayat*, and not owing to changes in social norms in the society.

The Water Committee still does not have equal participation for the landless. Their appointment was restricted to acting as a *pankar* to follow orders from the Water Committee to carry out the appropriate distribution of water. Thus, it is evident that social stratification within the community has given rise to unequal power relations, where the authority of one group has developed over others to take decisions on their behalf (Leach, Mearns, and Scoones 1999). This has constantly prevented Aashti village society from evolving as a cohesive community.

7.3.3 Integration of knowledge

During Dr. Sonawane's period the Water Committee represented an integration of institutions. The village community representatives applied the traditional knowledge of water harvesting passed on through oral and practical translations from their ancestors. The *Gram*

Panchayat members belonging to the same community also acknowledged and provided the required administrative support in terms of legal and funding options.[2]

The common representatives on the Water Committee and the *Gram Panchayat* thus established co-ordination between the community level and the lowest institutional level. The *Gram Panchayat* with Dr. Sonawane as *Sarpanch* was also effective in continuing this link with the Block Office and Water Resource Department. The presence of different committees at the local level achieved co-ordination and planning together with the *Gram Panchayat* as a decision-making body for a holistic sustainable approach. The *Gram Panchayat* was well informed from the discussions in each committee and this led to a holistic decision.

The recent separation of the Water Committee from the *Gram Panchayat* has broken the link between the community and *Gram Panchayat*. This has further highlighted the lack of integration of power and knowledge between higher and local levels. Moreover, the holistic approach is fragmented as each committee is given the authority of making decisions for its concerned resource. Lack of co-ordination between the Water Resource Department and the local *Gram Panchayat* has further aggravated community neglect. With the Water Committee having no control over water distribution from the River, the community is unrestricted from using water from the Bawanthadi River, thus distributing co-ordination between the community and the Water Committee and also the *Gram Panchayat*. This needs to be addressed in the upper level governance structure to incorporate local institutions when planning for any kind of project, and also in the subsequent management process (Molle, Mollinga, and Meinzen-Dick 2008; Smith 2004).

Sustainability across dimensions has as a consequence been affected due to the change in the institutional structure. For instance during the first phase, the decentralised institutional structure had a positive impact on social and cultural dimensions. Subsequently, effects were seen on the environment which was of a better quality attained a better state due to the increase in water availability for a longer duration of time. The water availability ensured better crops and hence economic gains. However, the deterioration of social values and development of self-interest have given more dominance to the economic dimension. The pumping of River water without any regulations has affected the environmental dimension. This breakdown certainly stresses the need for the community to undergo the process of social learning and capacity development.

2 Legal here means getting sanctions from the higher levels for participation projects and obtaining subsequent funding.

7.3.4 Representation, accountability and ownership

Initially the ownership of the major nine tanks with the *Gram Panchayat* enabled a feeling of ownership. Some other tanks, which were owned by certain community groups, brought together people to work collectively. The change of lease for the maintenance of the tanks owned by the *Gram Panchayat* ensured efficiency in their operation by the private owner. The feeling of community ownership and the right to decide for their benefit is positive. Although the ownership pattern has remained unchanged during the second phase, the people have lost interest in the concept of community ownership. This further reinstates the theory stated by Melloul and Collin (2002) that unless the basic individual needs of community people are fulfilled, they will be less interested to participate in projects for the content of wider community and environment needs.

In the first phase efficient representation and leadership played a significant role in efficient decision-making. The transparency in selection of the Water Committee also ensured fairness. This was continued in the second phase but continuity of representation in co-decision-making is no longer practised. Another aspect is female representation in the second phase which has increased. However, appreciation for women's work is not being acknowledged amongst the community nor amongst the officials. The participation of women in institutional structures has been due to a requirement made mandatory in the legal policies. The community does not yet seem to have accepted female leadership and expertise. Thus, through a gender perspective, the role of women in the process of knowledge generation and participation in decision-making needs to understand and address the embedded power relations (Kelkar 2007).

During Dr. Sonawane's period accountability towards the wider community was evident. Dr. Sonawane himself felt responsible towards the community and the environment. He gave personal attention to all aspects and levels of decision-making. The Water Committee was accountable to him and also the Aashti community. On the other hand, the community demanded accountability from the two institutions due to the awareness of their rights and responsibilities. In the second phase, this demand has been reduced and hence the Committee has become less efficient in its functioning. The break between the *Gram Panchayat* and the Water Committee has further resulted in minimal representation at higher levels. This has produced an absence of co-ordinated efforts between the higher and lower levels of the institutions.

7.3.5 Ongoing responsiveness and efficiency

In the first phase the research, planning, decision-making steps of the management process followed the cyclic order to some extent, which is essential for effective participation (Tippett, Handley, and Ravetz 2007). The Water Committee under the leadership of Dr. Sonawane took time to understand government policies and integrate their local institutions and policies with the overarching framework of Central and State policies. Over time there seems to have been lack of an assessment of their approach and efforts to improve it. In addition, with the absence of a support system from external agencies and from within the society, the progress of the management process has been hindered. The lack of NGO involvement by Mr. Sonawane indicates absence of quality of foresighted view on the part of the community leader.

The breakdown of the institutional arrangement and absence of social capacity development have further affected the on-going adaptive process. The major setback has been the reduction in people's interest in the management process. This has been due to people having higher concern for individual needs than social needs (Maslow 1943). Although the new Committee has decided to impose strict regulations on water law-breakers, owing to their limited authority this has remained ineffective to a great extent.

The Water Committee alongside *Gram Panchayat* has taken up the employment generation program under the Government scheme to provide the landless and marginal farmers with a livelihood. These tasks include construction and maintenance of water channels, tank *bund*s, gates, disiltation of tanks and so on. However, community encroachment upon these and increasing dependence on pumped water from the River has affected these schemes, thereby reducing the interests of the landless to participate in these schemes. This has affected Aashti's management process to achieve sustainability across the five dimensions and to generate positive results.

Summary

Consequently, using the analytical framework, this section has attempted to understand the sustainability of the water management process adapted by Aashti. The discussion has highlighted the advantages and limitations of each of the practices adopted by the village during two different periods. The first phase imposed a leader-driven approach, which was successful in bringing the community to work together for management of its water resources. There was also the revival of the Indigenous tank system to harvest water and distribute it, using the traditional gates and channels. This indicates devolution of the National

Government's policy of decentralisation at the village level, in terms of institutional design. It is acknowledged that this is not true form for participatory approach and there is an element of 'top-down' about this, but still it was effective. However, there was a problem to rally forward the approach due to lack of infrastructure for the leadership replacement. The second phase saw continuity in the local management system, but with a slight difference in organisational structure. There is certainly progress in terms of gender equity, addressing some social issues. However, Aashti has been unable to maintain a continual improvement of its water management practice, which is crucial for sustainability (Meppen, Bellamy, and Ross 2005).

Lack of social capacity-building through a social learning process within community stakeholders has definitely affected the continuity in collective action. This is very critical for effectively communicating the inter-relationship between, and diversity of interests in water resources for efficient water management process (Pahl-Wostl et al. 2007; GWP 2006). Thus, over a period of time, community participation has declined due to reduction in interest and dependency on common property resources, and to an increase in looking for personal benefits. At the same time lack of integration and co-operation from the higher level planning authorities add further challenges to Aashti's progress. Therefore, capacity building of government staff is also crucial for successful integrated participatory approaches (Sillitoe and Barr 2004).

Similar to Mendha and Rajapur, dependency on higher institutional levels for project funding, and consequent lack of interest from them, affects Aashti's water management process. In order to overcome these challenges, a network system outside the community could be of significant help for long term efficiency (Kothari 2006).

7.4 Comparison across the three practices

As mentioned earlier, the primary research aim was to understand the sustainability of the current approaches to water management in the selected case studies. As an allied step, this research also attempted to explore the relevant similarities and differences in management practices and to make a comparative analysis between those of Mendha, Rajapur, and Aashti. The discussion in previous sections has illustrated the sustainability management features of each of the three case studies. This section attempts to bring together previous discussions through a comparative argument on the planning and management approaches adopted by Mendha, Rajapur, and Aashti. The management process criteria are used again to evaluate the water management approaches in each of these case studies.

The governance structure is the first step towards managing water sustainability. An attempt to achieve decentralisation in all three case studies has been reasonably effective. The formation of a *Gram Sabha* in Mendha and a *Gram Panchayat* in Rajapur and Aashti indicate the translation of the Central and State Government policies into practice. Mendha's decentralization process and community involvement in decision-making through the *Gram Sabha* and its cyclical management process have been reasonably effective. Working at a grass-roots level, the *Gram Sabha* has empowered the village community. The institutional structure in Rajapur has also managed to achieve decentralisation of power, although it is of a representative kind and does not involve the entire community in the decision-making process. While their Water Committee is independent and works effectively, it is dependent on the *Gram Panchayat* for implementation of its projects and also for decisions which are taken in the *Aamsabha*. This ensures true decentralisation. Aashti started with a similar institutional structure as Rajapur. However, the change in system was short-lived and further segregation of activities has resulted in a weaker model. This case study demonstrates that community-based initiatives are greatly influenced by local dynamics.

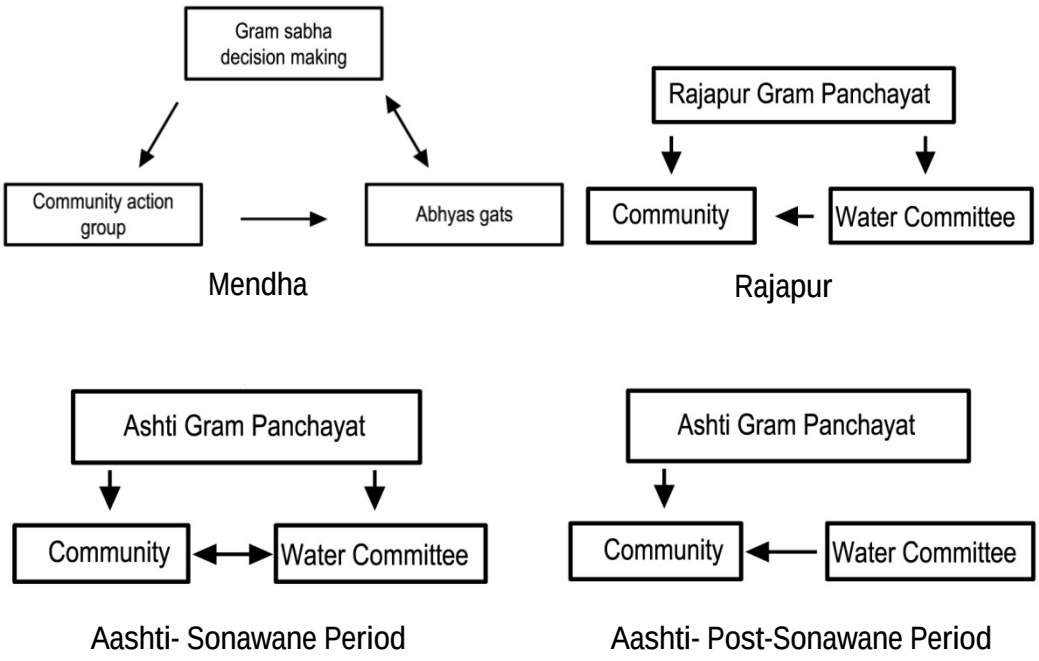

Figure 7.1: Institutional structures in Mendha, Rajapur, and Aashti

In the earlier discussions on the sustainability of the management process, in each of the three cases a crucial component which came forward was the role of an external agency. In Mendha, presence of an external supporting agency at all stages of its development was crucial and had a significant role. In contrast, the absence of any kind of

support in Aashti and Rajapur indicates a limited development. Thus, in a good governance system, in addition to substantive, participatory and deliberative components (Meppen, Bellamy and Ross 2005), a supporting agency in the form of NGOs has a crucial role. In case of Aashti a type of support was provided from within the community in the form of Dr. Sonawane who emerged as a local leader and supported the development of the first phase.

The micro-level informal institutions of caste, social hierarchical structures, and gender division are dynamic and crucial for positive outcomes. Their interplay with the formal institution of laws and policies significantly influences a community-based approach. The presence of social stratification to some extent is evident in all the three cases. Since Mendha is a homogenous community, caste and religious differences within the community are absent. The community has addressed its gender and economic stratification to some extent through social capital building. Conversely, caste (Indigenous and non-Indigenous), economic (depending on landholding size and landless), and gender differences are still apparent in Rajapur and Aashti. These divisions greatly affect the communities' efforts to achieve efficient participation and integration.

The previous discussions illustrate more differences among the participatory and decision-making processes. Despite variations in social, environmental, and institutional structures among the three cases, all of them face similar challenges that impede the participation process. Given the fact that all three villages are primarily homogenous communities, this homogeneity has definitely contributed to group cohesion. However, for enhanced participation it is important to understand the opinions of all participants, individual priorities, and benefits both community and personal. Mendha community seems to have overcome this challenge to a great extent through their investment in capacity development. They have tried to overcome these differences to strike a balance among these complexities. Similarly Rajapur has attempted to give priority to community and environmental benefits over personal concerns. This is evident through the acknowledgement of non-*Nistar* right holders. However, in Rajapur and Aashti the entitlement and involvement of the landless remain largely unchanged. For instance, their exclusion from any decision-making process and involvement only in implementing the decisions of water distribution has reinforced their weaker position in the community. Moreover, this affects their water access rights, which are sidelined in favour of the landholders' water requirements. In another instance, as a result of lack of this direct involvement in any decisions of the Water Committee, people in Aashti have started to satisfy their water needs through different systems. Hence, they are no longer dependent on the Water Committee. This demonstrates the development of a self-centered approach which is in

strong contrast to the community-based holistic sustainability approach. An unintentional impact of this approach is interruption in community cohesion.

Furthermore, decisions based on the majority decision and election processes in Aashti and Rajapur have not only affected social cohesion but have also been infused with local politics. Although at present there is no evidence of conflict within these communities, there is an increasing amount of disinterest and disregard for the function of local institutions. On the contrary, Mendha's adoption of consensus approaches, although a time-consuming method, has attempted to bridge the inequality gap. The participation in Aashti and Rajapur seems to be of a contested nature, as the decisions made are just 'informed' to the community and this greatly relies on the established power relations (Goodwin 1998; Berkes 1991). Thus, the previous two cases need to realise the 'passive' nature of their participation process and to reflect on how to more actively engage with all the community stakeholders. It is also evident from this that in a participatory program, it is a prior need to support and develop the community capacities. The diversity of interests in water resources and in the management process needs to be addressed by renegotiating the power among local people, those at the local institutions, and also expert outsiders from higher institutional levels (Goodwin 1998).

Similarly, the participation of women in groups in Aashti and Mendha indicate mobilization for gender equity, while the lack of this in Rajapur impedes its efficiency in achieving gender equity in the management process. Within the similarity between Mendha and Aashti too, there is evidence of a slight difference. While in Mendha, women's participation is due to capacity-building, their own will and the encouragement of male partners, Aashti has exercised equity to satisfy the governance need in various legislative policies. A significant motivation for the women to participate depends on what incentive they get to do so. This is because the priorities of women for water requirement are different to those of men, which are mostly for irrigation (Shah 2002). Women are concerned with water for cooking, washing and other domestic purposes. Therefore to enhance women's participation, the process needs to address their needs along with those required for agriculture.

Despite these differences, Mendha, Rajapur and Aashti also have similarities, and one of the most significant is the integration of traditional knowledge in their contemporary approaches. All the three village communities have revitalized their historical water harvesting systems using their traditional knowledge, local materials, and techniques. It was also observed that although all the three villages have the same tank system, each of them is different in the way it is adapted to its natural setting. The degree to which decentralising the

institution structure has contributed to integration of Indigenous knowledge in the water management process and raising awareness about it, is now much higher in all three. This has helped to transfer the knowledge to the wider community, which was earlier limited to certain groups and elders of the community. Youth taking interest in the process and attempting to engage with the Indigenous knowledge is definitely significant in Mendha and Rajapur.

In addition, all three contexts illustrate a holistic multi-disciplinary approach in their planning management of water resources. Although this is more evident in an organised structure in Mendha through its *Abhyas Gats*, the other two cases also demonstrate a similar approach in a minimalistic manner.

It is also evident that community groups in Rajapur, Mendha, and Aashti realised the importance of their traditional systems and the need to reinstate a grass-roots level management approach rather than depending on higher administrative authorities. However, lack of capacity development and investment in personal interests has resulted in the Aashti community abandoning these systems and preferring the government-initiated dam project for water supply. This change in attitude has affected the river ecosystem and will consequently affect the community in coming years. Although the impacts are not seen currently, the people of Aashti will have to recognize the significance of the deterioration of the ecosystem to avoid future problems. This could be brought about through an expert outside agency which could generate some awareness among the community members and negotiate between the local and government institutions.

Integration with outside agencies provides a greater platform for village groups to learn about other forms of knowledge, government policies, and any other possible approaches adapted elsewhere which might be relevant. *Vrikshamitra* has been the constant support system for Mendha to overcome its problems through social learning programs, developing their organizational skills and self confidence. This has enhanced the capacity for Mendha villagers to evolve as a cohesive community with political awareness, claim-making and decision-making capacity. An excellent example of this is the construction of the *Van talav* (Forest tank) through negotiation with the Government Forest Department and effective active participation. In the case of Aashti and Rajapur this interaction is limited to the Committee members and village heads who participate in workshops outside the village and bring back their acquired knowledge and share it with the village community.

As discussed in Chapters 5 and 6, the Maharashtra State Water Resources Department guides the water planning and management process across the various

administrative departments. The lowest administrative and implementation agency is the Block Office and local Irrigation Department. There is a lack of co-ordination across the various water departments, and far less across other departments including, for example, Forest or Land use. Lack of local context in planning is also evident, as a uniform plan is adopted for the entire state and the plan might differ in terms of provision of funding and population to be catered. Thus, absence of a central co-ordinated authority results in a piecemeal approach to water planning and management. Co-ordination between the local *Gram Panchayat* or *Gram Sabha*, the Water Committee and other resource committees is also significant for an informed decision-making (Meppen, Bellamy, and Ross 2005). Although this is evident in all the three cases, the Mendha community has grown up to demand and maintain this co-ordination from the higher institutions, whereas Aashti and Rajapur are still struggling to establish co-ordination across their village level bodies.

Another similarity in the three cases is dependency on the Government for its financial provision to carry out any project. The decentralisation of the institutional structure does not seem to have been followed by financial power devolution. Having a central authority does help in maintaining a check on the expenses made by the local institutions but the process of accessing these funds is sometimes very time consuming and also guided by political will and the interest of the government officer-in-charge (Iyer 2003).

Ownership patterns of the resources and related structures are particularly important in the planning and management process. Community ownership although acknowledged informally in the villages, has not been effectively translated into equality in entitlement to water. For instance, although the Rajapur community entitles the non-*Nistar* holders to receive water, similar equal opportunity is disregarded for a landless labourer who is given limited access to this common property resource. On the contrary, Mendha's decision to distribute water based on the number of people in a household rather than on landholdings is a valuable step towards achieving equality in ownership. However, a negative aspect of this is that it generates a trend of water trade where someone capable of buying the water rights will gain dominance in the process. Thus, it needs to become the primary aim of the local institutions to translate communal ownership rights into the practice of actual entitlements. At the same time there will be a need to monitor the water trade by the *Gram Panchayat* or *Gram Sabha* alongside an outside agency to ensure fairness.

The *Right to Information Act, 2005*[3], could be an effective measure to gauge the transparency and accountability of the various institutions and the representatives at various governance levels. Accountability should be from the higher levels to the lower levels rather than the opposite way (Agrawal and Ribot 1999). The planning officers at the higher administration levels are accountable to the wider community who are the most affected by any decisions taken by them. The accountability of the *Gram Panchayat* or *Gram Sabha* and Water Committee as decision-making bodies to the wider village community is uniform in Mendha, Rajapur and in the first phase of Aashti. Yet, in the case of the current Aashti approach, the Water Committee operations are becoming less transparent due to its independent functioning. Furthermore, the people's demand for them to be accountable and give explanations for their actions has declined in recent times, thereby leaving the Committee without a check on its procedures.

The biggest difference between the three case studies is with the fundamental management process and the ongoing efficiency of responsiveness. Mendha has a single decision-making body, which is the *Gram Sabha*, and this body is well informed from its knowledge base before the formulation of any decision. It is a primary link between the village and the *Gram Panchayat* and also other higher administrative agencies. The presence of a single authority thus results in a uniform and holistic decision and management process. Also, being registered as a civil society body, it obtains direct access to funding from sources other than Government bodies, further enhancing its ongoing responsiveness. Furthermore, the respective *Abhyas Gats* continue the process of monitoring and evaluating the implemented project to assess the success of the attempt and learn from any mistakes made, which further improves the management process. Rajapur and Aashti, with their respective *Gram Panchayats* as central bodies, work with their respective Water Committees through the planning process. But lack of an effective monitoring and evaluation authority hinders their long-term efficiency, as evident in Aashti where people are trying other approaches to acquire water without having to depend on the local institutions and their rules.

In Mendha the cyclic process of knowledge generation, decision-making, and implementation followed by monitoring and evaluation has ensured a co-ordinated and adaptive approach for long-term water sustainability. Mendha's *Gram Sabha* and an external supporting agency have legally organised themselves to enable them to work effectively and

3 *Right to Information Act, 2005,* mandates a timely response to citizen requests for government information. It is an initiative taken by Department of Personnel and Training, Ministry of Personnel, Public Grievances and Pensions to provide a – *RTI* Portal Gateway to the citizens for a quick search of information on the details of first Appellate Authorities, PIOs and so on,. amongst others, besides access to RTI related information / disclosures published on the web by various Public Authorities under the government of India as well as the State Governments.

make their decisions (Berkes 2004). The community has evolved itself over time through an on-going feedback learning process (Ruitenbeek and Cartier 2004). However, as stated by Berkes (2004), decentralisation implemented through legislative measures, as in the case of Aashti and Rajapur, has not been able to gain the same success. Thus, this supports the idea that a community needs to self-organise themselves through capacity building and develop a structured support system to enable them to work more efficiently.

Conclusions

In summary, the chapter has brought together the findings from the previous chapters to evaluate the sustainability of the water planning and management approaches adapted by Mendha, Rajapur, and Aashti. The chapter first analysed the three case studies and attempted to understand sustainability using the thematic framework derived in Chapter 3. Finally, it compared the efficacy of the three water management practices through the analysis of their efforts in achieving sustainability.

Furthermore, the chapter suggested that despite similarities in political, institutional, and economic settings, and differences across social, cultural, and environmental factors, the communities' own will and interests finally dictated the efficiency of the water management process. Furthermore, similar issues relating to the absence of governance structures, co-ordination and funding had an impact on the approaches of the three case-study villages.

The discussion has also highlighted certain concerns that might affect the long-term efficient functioning of the decision-making and management processes in the three case-study areas. Based on the comparison, this thesis shows that the efficiency of the Mendha approach to its water management is more satisfactory than that of Rajapur and Aashti. The weakness of the later two case studies illustrates the need for strengthening not only the institutional structures but also the decision-making and management processes. This, therefore, suggests the need for the development of social capabilities of the communities in the three case studies. Mendha, though at its best, faces similar challenges to maintain its ongoing responsiveness. The implications of these findings for further improvement in the theoretical components and management approaches to achieving long-term sustainability are discussed in the final chapter.

Chapter 8. Conclusions and recommendations

Introduction

Sustainable water management is a multi-faceted phenomenon because of the complex relations between social, cultural, environmental, economic, and institutional dimensions associated with the water resource itself. As a result of a general lack of understanding of the concept, sustainable and decentralised planning and management of the resource have remained weak and ineffective. As a result of in-depth analysis, this study has argued the significance of Indigenous communities and the importance of their knowledge integration into decentralised water management approaches.

India's water resources are at a critical state and many areas have witnessed the degradation of historical traditional water harvesting systems. To address this problem, Indigenous community participation at the grass-roots level has become a focus of the water management process. Indian national and Maharashtra State government have featured decentralised water management in its various approaches. However, the institutional structures and lack of co-ordination have limited the engagement of community groups in the management of their own resources at the grass-roots level.

This study was designed to examine three different Indigenous community-based approaches to water management in the semi-arid region of India, in Maharashtra State. Because the main philosophy underpinning this thesis was to mainstream Indigenous participation, it was considered important to examine the participatory institutional structures and opportunities provided by the Indian and Maharashtra State Governments and the subsequent adaptation of these structures by the community groups. This research was, therefore, conducted in a manner to allow the significant issues to emerge.

The research was structured in two parts. As sustainability, Indigenous participation and Indigenous knowledge integration were the key issues under study, the first part developed a theoretical framework based on the principles relevant to these key aspects. In the second part, this framework was used to examine data from the three case studies relating to community perceptions and experiences from these decentralised practices. This study has also analysed the integration of different knowledge-bases and institutional links across various levels in the three cases.

This final chapter summarises these findings from the previous analyses discussions to provide specific answers to the research questions. The following section presents the theoretical and practical implications derived from the research findings.

8.1 Summary of findings

This study is primarily concerned with the decentralisation of institutional structures at various levels, as well as the participation of Indigenous communities, and the integration of their knowledge in water management. In order to develop a comprehensive understanding of this problem, this study has sought to address two research questions:

Research question 1:

> How does the Indian Government's decentralisation policy actually devolve at the local level for sustainably managing water resources through the participation of the Indigenous communities?

Research question 2:

> What are the opportunities and constraints that arise from the decentralised and participatory water management approaches adapted by the Indigenous communities in the selected case studies and lessons learnt from them?

To facilitate answering these two questions, this research first explored the existing water management approaches and the practical complexities within international literature associated with implementing community engagement. The research yielded important insights for exposing Indigenous communities to these theories and revealed the difference in the perceptions of the Indian Government and Indigenous people. Following this, a constructive understanding of the key concepts of sustainability, governance structures and theories of community participation have provided insight into the multi-faceted role of Indigenous communities in water management.

In the course of developing this understanding, this research has drawn together discussions on the relevance of Indigenous knowledge, governance models, decentralisation, capacity building, social learning, and power dynamics to conceptualise an effective sustainable water management process. This argument proposed a cyclic sustainable management model for resource management in general, which brings together the five key dimensions of sustainability namely: social, cultural, economic, institutional, and environmental (refer Figure 8.1). In addition, this study has revealed that participation cannot be conceptualised as a ladder, as it needs to continuously adapt to changing contexts and is a cyclic process that involves different stakeholders at different stages of the process. The evolving nature of participation is in response to the changes in the five dimensions of sustainability in a given context. This way of conceptualising sustainability and participation as a process is not possible in the ladder model.

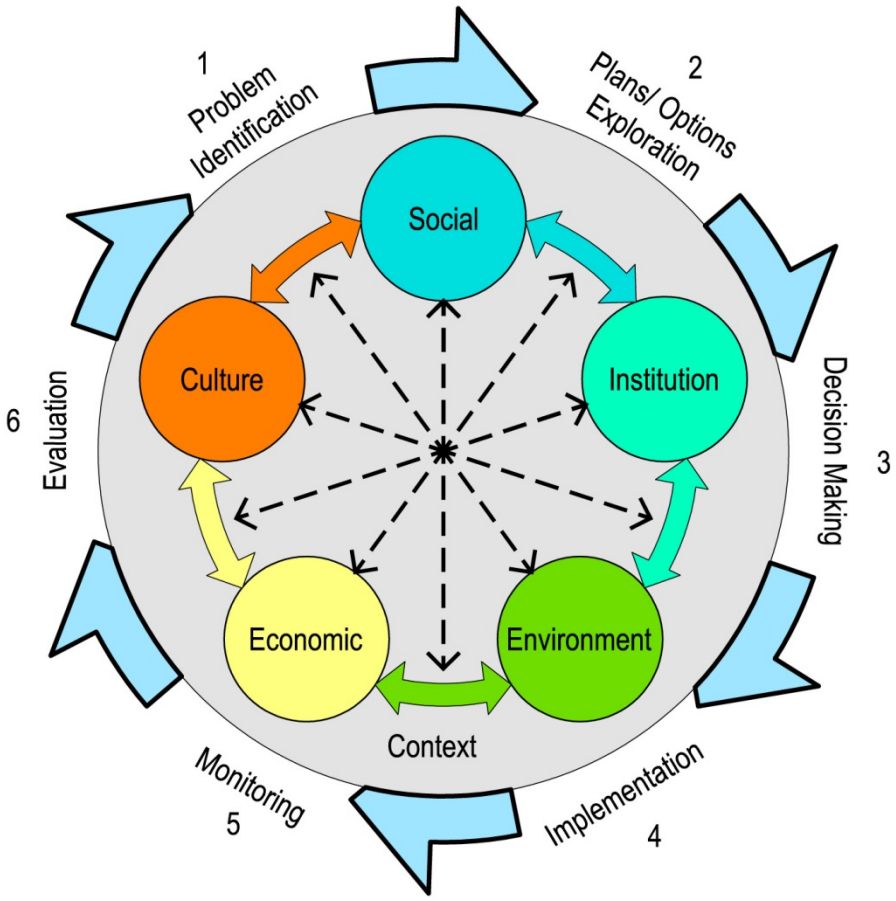

Figure 8.1: Sustainability as a cyclic process

This distinct conceptualisation by the researcher resulted in the formulation of five process components relating to an efficient management process along with operational criteria for each component in terms of sustainability and participation principles. The key point is that the contextual setting has a significant influence on the sustainability and participatory processes. Thus, the five dimensions of sustainability themselves determine the actions of the people involved, which in turn governs the outcomes of the process. At the same time each component of the process relates to all others. Therefore, the proposed fifth component relates to the process as on-going responsiveness (refer Figure 8.2). This theoretical framework was subsequently applied to analyse the selected Indian water governance systems and also to investigate the three case studies conducted in Mendha, Rajapur, and Aashti to answer the two research questions.

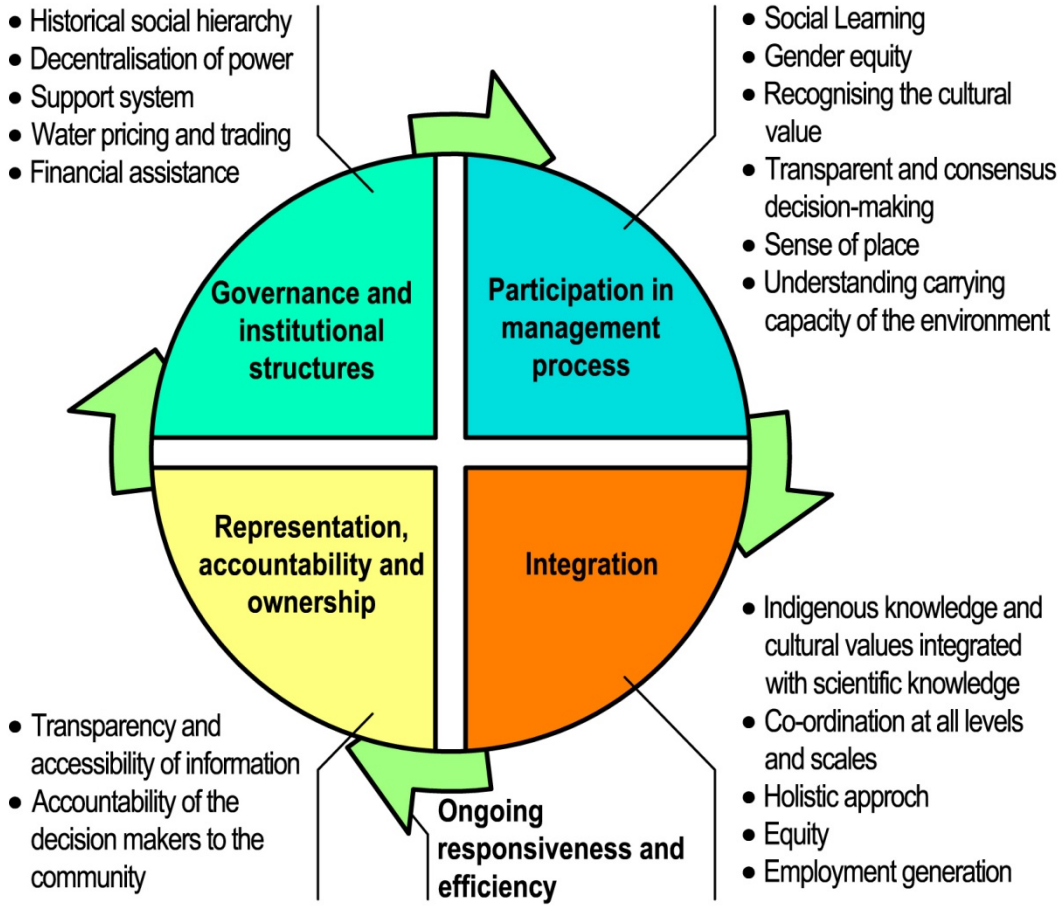

Figure 8.2: Thematic principles and operational criteria of sustainability proposed by researcher

The first research question focused on analysing India's decentralisation and participatory approaches to water management at the local level. The analysis of various policies demonstrates that they provide an opportunity for the decentralisation of power and management duties to local level institutions. As mentioned in the 73rd and 74th Constitutional Amendments of 1992, the *Panchayats* have been given the responsibility for making decisions regarding their own resources. Some of the other National and Maharashtra State Government policies also provide significant opportunities for active Indigenous participation augmented with traditional knowledge and supported with contemporary technical information. However, this research has highlighted that these opportunities are restricted to involvement in implementation of the project and are not integrated in the initial stages of project/ problem identification, exploring options and decision-making. This has restricted and undermined the extent to which Indigenous communities can successfully participate.

This study has highlighted that it is fundamentally important to address the ways in which participation processes are implemented. This research affirmed that the institutional structure to implement these policies is weak at the Indian National, State, and local levels. With regard to links and co-ordination between the various levels, the institutional structure exhibits weak governance mechanisms. The underlying discrepancies, especially through the presence of bureaucratic agendas and planning governed by politics, suggest shortcomings in the Indian and Maharashtra State institutional governance and compromise the success of participatory management processes.

The overall water management process in the State of Maharashtra is usually 'top-down', where information and decisions generally flow from the Government bodies to the local institutions which do not aim to enhance the traditional water systems but substitute them with new techniques. Although the representative decentralised *Panchayati Raj* Institution is in place at the local level in the form of *Gram Panchayat* or *Gram Sabha*, their presence seems to most often for practical reasons in the view of government officials as mere implementing agencies. They make little efforts to include these grass-root bodies in any decision-making related to local resources.

In addition, the absence of inter-departmental links further restricts the multi-disciplinary approaches in practice. With these uncoordinated efforts, it is difficult to achieve a holistic management process, which is an essential to effectively operationalise sustainability (Tortajada 2005; Dale et al. 2000). This fragmented approach by various government departments and at various levels significantly impacts on the water management process. This approach further affects the issue of ownership of the resource and subsequent accountability for the decisions taken. These issues highlight the weaknesses in the Indian governance structures (legislations, policies and institutions), to integrate 'top-down' and 'bottom-up' approaches. This poses a serious obstacle to realistic and effective decentralisation and Indigenous participatory processes for sustainable water resource management.

There are different propositions from various findings. Firstly, current Indian policies are considering social, cultural, economic, and ecological values associated with natural resources. They are also making provision for the active participation and incorporation of traditional knowledge. Thus, they provide a significant opportunity to integrate threads of environmental protection (water resources in this study) and cultural conservation (Indigenous knowledge) (Stevens 1998). On the contrary, however, the practical implications of these policies are either very few or non-existent. The second proposition suggests that the lack of

co-ordination across disciplines and the unwillingness by Government agencies to share power with the commons directly affects the implementation of water policies, which are interpreted through a biased perspective. Government planning authorities are influenced by the interests and keenness of politicians which have further limited the successful implementation of contemporary water policies.

Overall there is a trend for increased opportunities for local Indigenous communities to be involved in the decision-making and management process regarding their local resources. But there needs to be significant improvement in the way these are implemented at the individual local level. In this regard, it is crucial to understand the local issues and existing contextual conditions to improve the implementation of participatory approaches. It is critical that for enhancing participation there needs to be an institutional arrangement between the top and grass-roots levels which is adaptive and responsive to the local community needs. This calls for the social capacity-building of the government officials to improve institutional arrangements for enhancing Indigenous participation (Sillitoe and Barr 2004). In the context of this existing situation in India, which provides a common recipe for all situations, it is left to the local institutions to adapt these decentralisation and participatory policies in their own way in their own situations. This then leads to the second research question which aims to understand the adaptation of these policies by three village institutions and their communities. In addressing the second research question: *What are the opportunities and constraints that arise from the decentralised and participatory water management approaches adapted by the Indigenous communities in the selected case studies and lessons learnt from them?* three distinct but related issues have emerged from the three case studies:

a. The importance of institutional structures at village/local level,
b. The extent to which successful community participation is achieved and the factors influencing it; and
c. The significance of the government management process.

In earlier chapters, the lack of appropriate integrated institutional structures was considered and established. This demonstrated a practical challenge to the successful functioning of an appropriate local resource management institution. Accordingly, it was imperative to understand the structure and membership pattern of the local institutions. The three case studies affirm that institutional structures and their functioning are closely influenced by the social, cultural, economic, and capacity-development of the community.

The complex institutional dynamics at National and State levels, that is at the macro-level, further highlight the interplay between micro-level and macro-level institutions. The

macro-level institutions in Maharashtra State have included the Central and State Government policies of decentralisation, participation and holistic approaches to water management. However, the meso-level institution, that is the Block Office, which is the link between the other two, has failed to embrace these policies in relation to their practical implications. Their interaction with the micro-level institutions seems to be limited in terms of participation. Furthermore, their policies adopt a 'blueprint' approach for all micro-level institutions under their jurisdiction. This research has highlighted the need for a more context-specific approach as each village community and its resources are inextricably intertwined with each other, and with the myriad dimensions of natural features and their constraints, relevant stakeholders, caste system, and local authority, as well as the skills or capacity of stakeholders and gender division.

Mendha's institutional structure represents a more significant approach with only one decision-making body. This kind of structure removes the possibility of a lack of coordination emerging between different decision-making bodies. It was observed that the presence of *Abhyas Gats* provided a greater opportunity for people to critically discuss different issues and also to share their traditional knowledge. Also in relation to the membership the Mendha *Gram Sabha*, it was a significant aspect that two representatives from each family were members and had to attend the *Gram Sabha* meeting when called. This certainly obtained a majority of community representation in decision-making. For Rajapur community the shift from decentralised to centralised and back to decentralised management of water resources has been crucial. Their development of a Water Committee as an independent organisation from the time of the centralised system, has demonstrated a commitment by the community to protect their traditional systems. Furthermore, both the organisations have developed an integrated working plan which demonstrates a good governance model. Aashti, too, started with a good governance system with a Water Committee working in co-ordination with the *Gram Panchayat* and also related committees. However, change of leadership and loss of community interest has affected the efficient institutional functioning. This in turn has affected the long-term success of community initiatives in Aashti.

One significant dimension on which the strength of the local institution *Gram Panchayat* or *Gram Sabha* depends, is the community's interest to willingly participate in the resource management process for community benefit. Further, if participation is underplayed by local politics and not appreciated by the local administrative institution, this clearly affects the performance of the local institution. The application of the analytical framework to case studies confirmed that for effective decentralisation, it is necessary for the local community

groups to have capabilities, aspirations and adequate representation. The 'community' should be acknowledged as a group of people with varied interests in resources which will determine their participatory role and, in turn, may vigorously shape the effect of the local institutions. In order to develop an understanding of different interests in water resource management, it is imperative to have a commitment to capacity-building initiatives. Such an investment in capacity-building and social learning is evident in Mendha. Their approach to decisions based on consensus demonstrates a high level of capacity development. On the other hand, Rajapur demonstrates minimal efforts in attempting social learning processes for the whole community, and it was observed to be totally absent in Aashti.

The most significant opportunity for the effective implementation of a decentralised water management system is seen in the existing traditional water harvesting and distribution system. A related and key aspect is the wide knowledge base which is readily available to operate and manage these systems in the form of the village elders. This opportunity is present in all the three case studies. However, making the most of this opportunity has greatly varied among the three. Mendha and Rajapur have taken significant measures to revive these structures whereas the Aashti community is seen to be abandoning them. Thus, the research highlights that it is crucial to develop some kind of programs or workshops in the villages, which would aim to make them realise the importance of these systems for their own benefit.

These kinds of initiatives would certainly improve the participation of the villagers in taking interest in their historical traditional systems, as is clearly evident in Mendha. Furthermore, this study affirms that constant monitoring and evaluation of the performance of the institutions, as well as the projects and plans undertaken, is crucial. This kind of appraisal would definitely improve the overall management process by adapting to changing contexts and also would enhance the knowledge of the community (Carlsson and Berkes 2005; Olsson, Folke, and Berkes 2004).

The significant role of a second line of meso-level institution in the form of outside agencies or Non-government Organisations (NGOs) like *Vrikshamitra* is demonstrated in Mendha village. In this village the close interaction with the community dynamics significantly influences the water management process. For the continued existence of decentralised control and management of resources with micro-level institutions, the emergence of these kinds of meso-structures is crucial. As demonstrated in the case of Mendha, they can play a vital role in building effective relationships between the various systems of governance and lead to better water management in practice (Mollinga 2005; Smith 2004). This research has also highlighted that such a support system would help to ensure that the decentralisation

process, once initiated, is not withdrawn, as witnessed in Aashti. In addition, networking across these bodies would help to build stronger representation and links to learn from each other and to voice protests and demands in unity.

The findings from this study support the theoretical expectations that the implementation of a decentralised process exercised by micro-level institutions faces several challenges in terms of administrative and bureaucratic willingness. This is further evidenced by community willingness to step forward and take the initiative to manage their own resources. Another significant challenge is accessing funds for any project to be undertaken. In India, as Government is the main funding body, the local institutions have to greatly rely on the higher levels to obtain funds. This can sometimes be a lengthy process depending on the administrative procedures and also on the community or Government willingness to co-operate. As observed in Mendha, sometimes it is possible to access some resources from private funding bodies. This further highlights the need for a support system which can source information about various private funding organisations and inform the local institutions on how to approach them.

8.2 Implications of the research

The findings from this research were expected to identify several theoretical and practical contributions to the complex field of water resource management in a semi-arid region in India, with possible implications worldwide. This section discusses the significant implications of this study. It is necessary to acknowledge that while some of these implications may be significant at a global context for other Indigenous communities, others are seemingly specific to the Indian context.

8.2.1 Theoretical implications

The proposed sustainability model and theoretical framework of five major components and process criteria which was developed from a comprehensive review of literature identifies elements crucial to decentralisation, participation, and integration for a sustainable water resource management process. In doing this, it has acknowledged the complexity and dynamics associated with sustainability. Of particular significance, it has contributed to advancing theory on the shift from ‘sustainable development’ as a theoretical goal to ‘sustainable management’ as an active ‘process’. Further, by emphasising the crucial importance of the ‘process’ rather than the ‘goals’, which is central to all aspects of the discipline of landscape planning as a practice oriented field, this thesis has established a link

between management and sustainability. This adds value to the existing literature on sustainability, through this disciplinary lense, by suggesting 'how' to achieve sustainability.

Through the case study approach, this study further affirmed the theoretical significance of commitment to developing decentralised governance structures that have been pioneering in the Indian context and accepting Indigenous communities as important stakeholders in the sustainable resource management process. This necessitates further agreements between Government resource management agencies and Indigenous communities in each contextual setting.

The study has also presented the need to develop and implement strategies for recognising the ownership and rights to natural resources. This would result in the recognition of the customary rights of Indigenous communities to access and use resources, and, at the same time to include those of non-Indigenous people in the community and so to avoid conflicts. The thesis has strengthened the role that capacity-building can play in developing community ownership rights, rather than fostering single or individual ownership patterns. Further, the thesis has provided insights into different decision-making processes with regard to water allocation and emphasised that consensus is not a utopian concept but something that can be achieved through addressing people's commitment and capabilities.

This study of Indigenous communities in a developing region has contributed to examining the 'real' progress made in this region in understanding and achieving sustainability of water resources through Indigenous participation. It has added to the international literature the perspectives of Indigenous communities from India and their positive and valuable attempts to manage their natural resources.

8.2.2 Practical implications

This thesis has brought perspectives and the kinds of challenges faced in a developing region into a discourse. The sites chosen are located in the semi-arid region of the Indian continent. The understanding here achieved of the complexity associated with water in semi-arid and developing regions promotes the improvement of a broad set of 'policy guidelines' in the international arena that can address these challenges. Such guidelines could further offer detailed description of the transformation of national policies to local level in a semi-arid typology, making them additionally practical.

The case study approach and findings have highlighted several achievements and challenges from the three case studies. The findings directly demonstrate the validity of community participation in decision-making and management processes in the respective

villages. This in turn enhances them as model cases for other villages and Indigenous communities in the region, as well as in the country and across the developing world for scholars and practitioners to gain knowledge from them.

These findings have also emphasised the need for a 'meso-level' institution to provide a link between Government administrative bodies and local level institutions. This link would help improve governance structure and would also be a source of additional knowledge and funding for the local institutions to carry out different projects. This kind of support group would prove useful in sharing data and information between the community and the higher level institutions, to be able to reach consensus and informed decision (refer Figure 8.3). This discussion of successful decentralisation initiatives has addressed the changes needed to ownership rights over resources that will confer rights to local and Indigenous stakeholders, and give them capacities to make operational rules.

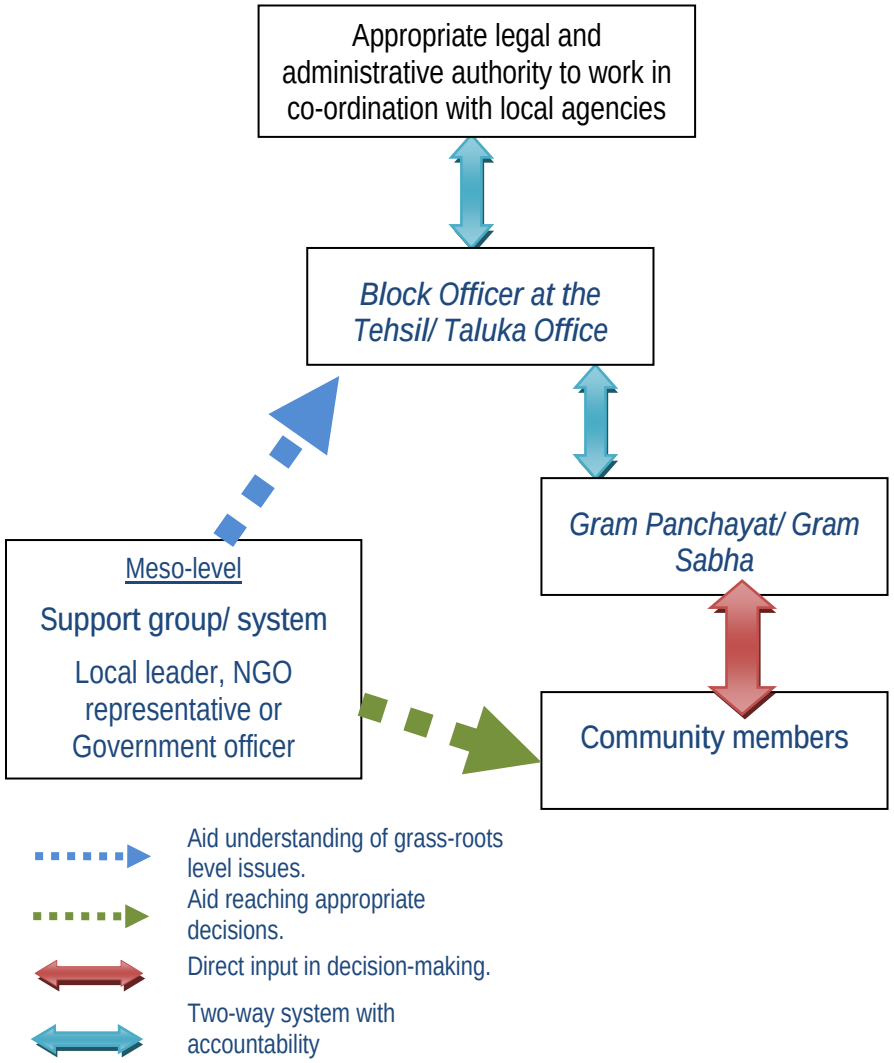

Figure 8.3: Proposed governance and institutional structure

The study has also highlighted the significant limitations due to insufficient financial funding that impact upon the implementation of key decisions. It has also demonstrated the importance of contributions by the community stakeholders themselves to the management of resources, thus making their participation more creditable and efficient and giving them a sense of ownership. In addition to capacity-building initiatives for community groups, it is also essential to target Government resource management agencies. This could be addressed through the meso-level institution. This study consistently acknowledged that there is a need for an adequate response from Government resource officers, planning authorities, and managers so that they recognise and address the local values.

Finally, to effect a practical change in resource management practice, Indigenous communities and Government agencies should jointly focus on practical management processes, in terms of problem identification, planning, decision-making, implementation and evaluation processes that are needed at the grass-roots level. For this to practically take place significant steps need to be taken for capacity building of both sides to result in better co-ordination. In addition, policies should clearly specify the role and responsibilities of each stakeholder at the same time giving a flexibility to adapt to local contexts when necessary. At the same time water requirements for all stakeholders, including environmental considerations, should be made fundamental. This kind of change would provide valuable direction for national, and regional level policy-making to achieve realistic outcomes of statutory obligations in India.

8.3 Directions for further research

This research has been undertaken because of the researcher's conviction shared with many national and international researchers that the cultural and spiritual association of Indigenous communities with water resources has resulted in the accumulation of a rich body of knowledge spanning generations (Afreen 2008; Ghate 2008; Kothari 2007; Borrini-Feyerabend and Tarnowski 2005; Iyer 2003; ICS 2002; Shah 2001; Sillitoe 2002; Berkes 2000). This knowledge can be successfully used to enhance contemporary resource management practices if given the opportunity. Despite several significant implications emerging from this study on the decentralised management of water resources, there are some practical difficulties and limitations that necessarily restricted its scope. This final section raises some of the questions that need further research based on these limitations.

This thesis has discussed different contemporary institutional structures devised by Indigenous communities to manage their water resources and the management process. It

has discussed the progress of certain community institutions until the present date. However, due to time and resource constraints, it has not been practical to understand the future long-term impact of this progress. This aspect needs data to be collected over a longer duration to actually assess the impacts of the current management processes. In addition, it has also not been possible, due to resource constraints, to assess decentralised approaches across other states in India, and within other Indigenous communities in the larger Indian context as well as the semi-arid region in a global context.

Further, this study has concluded that the three case studies face several short and long term challenges in managing water resources sustainably. There are several critical issues that have significant bearing on each village's long-term sustainability. First among these is the impact of climate change on the availability of water itself and on water quality. In order to evaluate the impact of this, further in-depth research is required to enhance relevant decision-making. The second issue which needs to be addressed is the food and water needs of the growing population, which would place additional pressure on water resources for an increased requirement for domestic and agricultural purposes. Study is also needed on the impact of urbanization in adjoining areas, where people with higher purchasing powers live, which is also placing an increasing demand on rural development.

Conclusion

Finally, then, this chapter has drawn together the major findings and implications of this research. The devised sustainable management model and the proposed criteria for evaluating the management process, suggests the 'what' and 'how' to improve the participatory water management process through Indigenous community engagement. The study has confirmed the significance of a sustainable management process to achieve long-term water resource sustainability in relation to the contributions of Indigenous communities in semi-arid environments. It has highlighted that the decentralisation of the water management process is an imperative for achieving long-term sustainability in these environments. Further, the likelihood of success is greatly enhanced by promoting the conditions that generate true participation of Indigenous communities through self-organisation. A core conclusion is that Indigenous communities should be acknowledged with their diverse interests and their deep knowledge of natural resources, which may actively shape the outcome of any institutional decisions. In addition, with a little external and administrative support Indigenous people can effectively manage their local natural resources.

It has been argued here that in developing countries the role that governments undertake in making decisions to initiate decentralisation and participation measures is significant. Moreover, the steps that the Indian government has taken thus far to initiate decentralised process are commendable. However, the nature or extent to which such decisions devolve to the grass-roots level is mainly determined by the community itself, depending on their capabilities and aspirations. In this regard, integrated decentralised institutional structures, appropriate support systems, and the capacity development of communities as well as of the government resource agencies, is absolutely crucial.