

Sustainable Water Management in Semi-Arid India:
Learning from the *Gond* and *Kohli* Indigenous Communities

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Appendices

Peoples' Biodiversity Register (Extract dealing with water resources)

A. Mapping of water resource

The first step towards documentation is listing of water bodies on discussion with local people. This is followed by the mapping of these water bodies by using survey techniques. This step involves local people, who have clearer picture of their own setting. The sketch map would serve as a basis for further investigation. These maps could also be used to highlight elements surrounding water bodies all of which is an integrating system of various elements constituting the ecosystem. Next involves documentation of status and dynamics of the water bodies (Refer Box 1) (Gadgil 2006, 109).

BOX 1:

Form 9. 2a: Documentation of status and dynamics of various waterscape element types (WES)

- Name of WSE type as a whole: For instance, tanks and reservoirs
- Local Name/s (if any): For instance, tanks, reservoirs are known as *kere* in Karnataka
- WSE sub-type: Streams, a subtype of streams and rivers
- Local Name/s (if any): Streams, a subtype of streams and rivers is known as *jhara* in Maharashtra
- Total length of stream / river (km): Within the study area
 - Trend in change in length over past 10 years:
 - Immediate reason & motivation:
 - Long term reason & motivation:
- Water spread area of the tank/pond/lake (ha): Within the study area
 - Trend in change in water spread area over past 10 years:
 - Immediate reason & motivation:
 - Long term reason & motivation:
- Availability of water (No. of days) for WSE: Within the study area
 - Trend in change in availability of water over past 10 years:
 - Immediate reason & motivation:
 - Long term reason & motivation:
- Change in flora & fauna over past 10 years:
 - Immediate reason & motivation:
 - Long term reason & motivation:
- Significant activities:
- Ecosystem Benefits & Services:
- User groups gaining most from goods & services:
 - Change in benefits & services:
 - Immediate reason & motivation:
 - Long term reason & motivation:
- Bad & disservices:
- User groups affected most by bad & disservices:
 - Local groups
 - External groups
 - Change in bad & disservices
 - Immediate reason & motivation
 - Long term reason & motivation

Apart from documenting the physical characteristics, this also makes an effort to document not only the trends in change of the water bodies but goes a step further to identify the causes over a period of time. This shows that PBR is a continuous process over time. This also documents the activities related to the water bodies, user groups benefited or affected by it, changes in flora and fauna and quality of the water resources.

B. Management of water resource

This is an important objective to be obtained. This step involves preparation of a management plan by a community to promote conservation, sustainable use and equitable sharing (Gadgil 2006). This information would be mainly based on perceptions of people from all segments of the society. This would be gathered through in-depth interviews. The information would relate to current management practices, experiences from these, and groups that stand to lose or gain (Refer Box 2).

Form 9. 2b: Documentation of different management issues relating to various waterscape element types (WES)

- Name of WSE type as a whole:
- Local Name/s (if any):
- WSE sub-type: Streams, a subtype of streams and rivers
- Local Name/s (if any): Existing management authority:
- Existing management system/ practices:
- Local groups:
- External groups:
- Loser user groups:
- Local groups:
- External groups:
- Other management patterns prevalent in recent past: User groups:
- Desired changes / desired future:
- Desired management system from the perspectives of different user groups:
- Suggested components for a management plan that can be implemented under present circumstances as a consensus of the *Gram Sabha*:
- Code numbers of focal elements selected for further study as marked on the map:

The document would also gather information on what the various user groups would like to be included in the management plan. These would relate to but is not limited to a) rights to access and use of the resource, b) roles of different government agencies, landowners, community groups, private industry, c) local versus outside actors, d) technologies to be used and e) access to capital or markets (Gadgil 2006, 115).

This would help the community to come up with innovative solutions which would be context specific. This management plan would then be implemented after gaining consensus from the local *Gram Sabha* or Panchayat. Hopefully, this people-centred approach to planning and management of their resources, serves as a significant tool in coming years.

Appendix B

Archival sources

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Appendix C

Copy of Human Ethics Clearance



RESEARCH BRANCH
RESEARCH ETHICS AND COMPLIANCE UNIT

SABINE SCHREIBER
SECRETARY
HUMAN RESEARCH ETHICS COMMITTEE

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CRICOS Provider Number 00123M

6 December 2007

Professor N Pollock-Ellwand
Architecture, Landscape Architecture and Urban Design

Dear Professor Pollock-Ellwand

PROJECT NO: *Study of traditional water management practices in rural India for sustainable planning of water resource - a case study arid region: Ramtek watershed in Nagpur district, India.*
H-164-2007

I write to advise you that I have approved the above project on behalf of the the Human Research Ethics Committee. Please refer to the enclosed endorsement sheet for further details and conditions that may be applicable to this approval.


Approval is current for one year. The expiry date for this project is: 30 November 2008

Where possible, participants taking part in the study should be given a copy of the Information Sheet and the signed Consent Form to retain.

Please note that any changes to the project which might affect its continued ethical acceptability will invalidate the project's approval. In such cases an amended protocol must be submitted to the Committee for further approval. It is a condition of approval that you immediately report anything which might warrant review of ethical approval including (a) serious or unexpected adverse effects on participants (b) proposed changes in the protocol; and (c) unforeseen events that might affect continued ethical acceptability of the project. It is also a condition of approval that you inform the Committee, giving reasons, if the project is discontinued before the expected date of completion.

A reporting form is available from the Committee's website. This may be used to renew ethical approval or report on project status including completion.

Yours sincerely


Professor Garrett Cullity
Convenor
Human Research Ethics Committee



THE UNIVERSITY
OF ADELAIDE
AUSTRALIA

RESEARCH BRANCH
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CRICOS Provider Number 00123M

Applicant: Professor N Pollock-Ellwand

Department: Architecture, Landscape Architecture and Urban Design

Project Title: *Study of traditional water management practices in rural India for sustainable planning of water resource - a case study arid region: Ramtek watershed in Nagpur district, India.*

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

Project No:

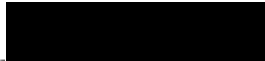
H-164-2007

RM No: 000008092

APPROVED for the period until: 30 November 2008

subject to minor modification to the participant information sheet and consent form. It is noted that this study will be conducted by Namrata P Vishwasrao, Masters student.

Refer also to the accompanying letter setting out requirements applying to approval.


Professor Garrett Cully
Convenor
Human Research Ethics Committee

Date: 28 NOV 2007

PLAN/DESIGN OF PROJECT brief description in lay terms

Once the approval has been given by the Human Research ethics Committee, the researcher will go to India, to identify the community people who have the relevant information and to interview them. Identified participants from the Indian Water Board will be interviewed by taking prior appointments during which they will be given the Information Sheet, Consent form and Independent Complaints Procedure Statement.

DRUGS

Not Applicable

Will drugs be administered to participants? ~~YES~~ / NO

- If so give name of drug(s)
- Dosage:
- Method of administration

Is the administration for therapeutic purposes? ~~YES~~ / NO

Will the project be conducted under the Clinical Trials Notification (CTN) Scheme? ~~YES~~ / NO

Clinical Trials Exemption (CTX) Scheme? ~~YES~~ / NO

Is Commonwealth Department of Health permission required? ~~YES~~ / NO

If so, has permission been obtained? YES / NO

PARTICIPANTS

- **Source:** Gond community people in Ramtek region in India and members of the Indian Water Board at Central, Regional and Local Levels.
- **Age range:** From approximately 50 to over 80 years of age for the participants from the Gond community. From approximately 35 to 60 years of age for the participants from the Water Board
- **Selection criteria:** Participants from the Gond Community and the Indian Water Board able to contribute information about the traditional system and current water planning policies respectively.
- **Exclusion criteria:** NIL

SIGNATURE OF ALL INVESTIGATORS NAMED IN THE PROTOCOL



Date 7/11/07

7/11/07



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12 November 2008

Professor N Pollock-Ellwand
Architecture, Landscape Architecture and Urban Design

Dear Professor Pollock-Ellwand

PROJECT NO: *Study of traditional water management practices in rural India for sustainable
H-164-2007 planning of water resource - a case study arid region: Ramtek watershed in
Nagpur district, India.*

Thank you for your report on the above project. I write to advise you that I have endorsed renewal of ethical approval for the study on behalf of the Human Research Ethics Committee.

The expiry date for this project is: 30 November 2009

Where possible, participants taking part in the study should be given a copy of the Information Sheet and the signed Consent Form to retain.

Please note that any changes to the project which might affect its continued ethical acceptability will invalidate the project's approval. In such cases an amended protocol must be submitted to the Committee for further approval. It is a condition of approval that you immediately report anything which might warrant review of ethical approval including (a) serious or unexpected adverse effects on participants (b) proposed changes in the protocol; and (c) unforeseen events that might affect continued ethical acceptability of the project. It is also a condition of approval that you inform the Committee, giving reasons, if the project is discontinued before the expected date of completion.

A reporting form is available from the Committee's website. This may be used to renew ethical approval or report on project status including completion.

Yours sincerely

for Professor Garrett Cullity
Convenor
Human Research Ethics Committee

Appendix D

Copy of Information Sheet and Consent Form

INFORMATION SHEET- NOTES FOR PARTICIPANTS



1. Project Description:

Title- "Study of Traditional Water Management practices in Rural India for Sustainable Planning of Water Resource – A case study of arid region: Ramtek watershed in Nagpur district, India"

Project description:

I am Namrata P. Vishwasrao, undertaking research as a part of my Masters of Landscape Architecture (by research) at The University of Adelaide, Australia. My research aims to understand the traditional water management practices and how this could be integrated with the current sustainable planning policies of water resource.

Purpose of the study:

The purpose of this research is due to the fact that water management is a major issue for rural India. There have been certain significant changes in the Indian water policies but the management of the resource is still a problem and specifically the rural population is not benefited. In some rural areas there has existed traditional water harvesting systems and management practices for centuries, which are now in a state of despair. I intend to study as to how culture had shaped the Traditional practices of water management and how could they be involved in present practices of water management.

2. What will be asked?

You will be asked about the traditional water management methods, their relevance in the present context and the possibility of their revival.

3. How long will take?

The interview will be conducted at a time suitable to you. It is anticipated the interview will take an hour to an hour and a half depending on your schedule.

4. Outcomes of the Study

The information gathered from the interview will be an important part of the research and will be incorporated in the thesis and will be appropriately referenced that will be submitted for the degree of Masters by Research in Landscape Architecture. In addition I would like to audiotape the interview with your permission.

I assure that in case you would like to remain anonymous the information would remain confidential and they will remain anonymous in any publication of the results.

5. Withdrawal from the Interview

You may withdraw from the interview whenever you desire by simply advising the researcher of your intention to do so. Please refer to the attached independent complaints form if you wish to speak to someone independent of the study.

If you wish to have any more information or discuss further please free to contact any of the following:

Professor Nancy Pollock-Ellwand
(Head of School and Supervisor)
Telephone: +61 8 8303 4839
Email:
nancy.pollockellwand@adelaide.edu.au

Namrata P. Vishwasrao
(Postgraduate Research Student)
Telephone: +61 8 8303 3702
Email:
namrata.vishwasrao@adelaide.edu.au

Thank you and awaiting your reply.

Regards
Namrata P. Joshi-Vishwasrao

**STANDARD CONSENT FORM
FOR PEOPLE WHO ARE PARTICIPANTS IN A RESEARCH PROJECT**

1. I, *(please print name)*

consent to take part in the research project entitled:

.....

2. I acknowledge that I have read the attached Information Sheet entitled:

.....

3. I have had the project, so far as it affects me, fully explained to my satisfaction by the research worker. My consent is given freely.

4. I have been informed that, while information gained during the study may be published, I will not be identified and my personal results will not be divulged.

5. I am aware that the interview will be audio-taped and give my consent for the same.

6. I understand that I am free to withdraw from the project at any time..

7. I am aware that I should retain a copy of this Consent Form, when completed, and the attached Information Sheet.

.....

(signature)

(date)

WITNESS

I have described to *(name of participant)*

the nature of the research to be carried out. In my opinion she/he understood the explanation.

Status in Project:

Name:

.....
(signature)

.....
(date)

Appendix E

Questionnaire for Mendha, Rajapur and Aashti

Set 1: GOVERNMENT OFFICIALS / WATER PLANNING OFFICERS/ ENGINEERS/ SCIENTISTS :

Preamble: Self Introduction, About the University of Adelaide, Why I am conducting this research?

Introduction about the research: How the research is being conducted? How will this information be disseminated and used? How confidentiality of the participant kept? What is the possible outcome of the research?

Current water management process:

1. What is the degree of consistency between local, state and national level water policies?
2. Who is responsible for the water management at a village/ watershed level? What is the process?
3. What are your goals when you address water management issues?
4. What are the key decision stages? Who are the people constituting the decision body?
5. If you had difficulties in the current process of planning and management of water resources would you like to identify them?
6. Does the geographic scale, political boundary affect the decision making? Does it consider multidisciplinary approach – social, environmental, political and economic aspects and also a holistic view- soil, water, land, forest etc?
7. Does your department/ engineer's/ scientist/ water planner have sufficient information to solve water management problems working without Indigenous community involvement?
8. Are there opportunities for stakeholders, especially for the local Indigenous community to participate in the process? If yes, at what levels?
9. What are the steps taken by the planning body to generate effective participation of the local Indigenous community? (Awareness campaigns, public meetings etc.)
10. How are the participants identified? (eg- based on gender, economic status, knowledge possessed etc.)
11. What is your opinion on current solutions to water management problems?
12. To what extent does your planning body prepared to take responsibility and accountability for their decisions and actions?

Indigenous/Traditional knowledge and community participation:

13. What type of involvement do you believe Indigenous community could have in water management process? At what level could they participate?
14. To what extent is the local knowledge encouraged or currently being used to address the water management issues?
15. Is Indigenous/ traditional community acceptance of the decision taken vital for effective implementation?
16. If the Indigenous/ traditional acceptance necessary, do you believe that the government adequately takes their views into consideration?
17. Are the relevant government agencies/ department representatives willing to engage and share power with local Indigenous communities while planning the management of water resources to improve the water management practice?
18. What are the benefits of Indigenous community participation?
19. What are the problems with Indigenous community participation?
20. What are the barriers for having effective Indigenous community participation?

Set 2: LOCAL INDIGENOUS COMMUNITY INTERVIEW QUESTIONS:

Preamble: Self Introduction, About the University of Adelaide, Why I am conducting this research?

Introduction about the research: How the research is being conducted? How will this information be disseminated and used? How confidentiality of the participant kept? What is the possible outcome of the research?

Current water management process: (if government managed)

1. Who is responsible for the water management at a village/ watershed level? What is the process?
2. Are there any problems/ issues / conflicts?
3. How are they being addressed?
4. What is the extent of your/community participation in the process of problem identification, planning and implementation?
5. Do you think there is a degree of consistency between local, state and national level water policies?

Indigenous Community participation:

6. What do you think is sustainable water management?
7. What level of participation by Indigenous communities will lead to sustainable water management?
8. Are you willing to share power in decision making with the local Government officials and other stakeholders? To what extent?
9. What is the current participatory process in practice in your village? What are the different roles identified?
10. Who constitutes the planning and decision-making body? How are the representatives to the decision making body elected?
11. Do you think the social structure of the Indigenous community influenced by social cultural aspects or traditional historic rights affect the representation in decision making and implementation?
12. What is the process of electing representatives to the groups? What factors affect the selection process?
13. Do you think you have an impact on the decision making process?
14. What key factors influence the decision making process and implementation?
15. How does the decision-making by your group influence what happens in your village?
16. Who takes the responsibility and accountability for the decisions taken and for their implementation?
17. Are there any problems with the current participatory process?
18. How do you think it can be further improved?
19. What are your goals to be achieved through water management process?
20. How do you think getting involved in the process helps you and your community?

Indigenous/ Traditional knowledge:

21. What are the cultural- religious or spiritual beliefs associated with water?
22. How many of your ancient traditions and activities related to water are still pursued? In terms of religious rituals, festivals, water access restrictions, specific plant cultivation, fishing etc.
23. To what extent are these integral to present water management?
24. How do/could these traditional practices or beliefs facilitate or influence water management?

Set 3: NON-GOVERNMENT ORGANIZATION'S REPRESENTATIVE/ FACILITATOR:

Preamble: Self Introduction, About the University of Adelaide, Why I am conducting this research?

Introduction about the research: How the research is being conducted? How will this information be disseminated and used? How confidentiality of the participant kept? What is the possible outcome of the research?

Current water management process:

1. Do you think there is a degree of consistency between local, state and national level water policies?
2. Does it consider multidisciplinary approach- social, environmental, political and economic aspects and also a holistic view- soil, water, land, forest etc?
3. Do you consider the Indigenous knowledge and community participation relevant to water management in present context? How?
4. Who is responsible for the water management at a village/ watershed level? What is the process?
5. Are there any problems/ issues / conflicts? How are they being addressed?
6. What is the extent of community participation in the process of problem identification, planning and implementation?

Role of Your Organization:

7. What is the process of your appointment?
8. What is your role as a Facilitator/ mediator in the process of Government and Indigenous community participation for water management?
9. What are your duties/ actions/ involvement in this role in the water management process? Specially decision making?

Indigenous community participation:

10. Do you consider the Indigenous knowledge and community relevant to water management in present context? How?
11. How important do you think power sharing is in decision-making between the government and the community?
12. Are government and Indigenous community representatives willing to share power in decision making? What factors affect this?
13. Do you think leadership/ representation in decision making is an important issue in water management? Why?
14. To what extent does the social structure of the Indigenous community influenced by social cultural aspects or historic rights (caste etc.) affect representation in decision making and implementation?
15. Who takes the responsibility and accountability of decisions taken and their implementation? Is that appropriate? Why?
16. What level/ type of participation by Indigenous community will lead to sustainable water management?
17. To what extent are the religious spiritual beliefs associated with water considered in the current water management process? How does this influence the overall management?
18. In what ways do you think the Indigenous community social capacity building is important to water management process?
19. Would the quality of Indigenous community participation be improved if social capital building occurs among the Indigenous community people about the situation?
20. What, according to you, are benefits of Indigenous community participation to the overall process and to the community itself?
21. What, according to you, are the barriers to effective with Indigenous community participation?

Article 1 Submitted for publication

*Sustainable Water Management in Semi-arid
India: Learning from the Gond and Kohli
Indigenous Communities*

Namrata P. Vishwasrao

**Revival of traditional water management practices:
Self governance model from central India**

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Peoples, Traditional Knowledge & Water Management: Lessons for
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2010**

¹ In publication of this and following articles, the researcher has also used her maiden name 'Joshi'.

Revival of traditional water management practices: Self governance model from central India

1. Introduction

The urgent need to integrate Indigenous people and knowledge in mainstream planning has been advocated for more than a decade. However, till date there is little evidence of any change.² This applies also to India where water planning is essentially influenced by the National Water Policy and guided by the State Legislation, thereby completely overlooking regional natural and cultural diversity.³ Although a participatory and context specific approach has been called for by the government of Maharashtra, one of India's 28 states, in its Integrated Watershed Development Program for more than a decade, progress towards meaningful participation has been slow and difficult.⁴ This study aims to describe the issues relevant to the engagement of local Indigenous communities and their traditional knowledge in mainstream water management process.

It is the political-and not technological- issues which inhibit the engagement of Indigenous communities in mainstream planning.⁵ The two case studies situated in the Vidarbha region of Maharashtra, namely Ashti and Mendha-Lekha, describe two distinctive approaches to the association of the local communities and their traditional knowledge in water resource management. The success of both these case examples is of significance because (a) both communities take the entire responsibility towards water management in terms of construction, operation, and maintenance; (b) they have attempted to revive the traditional techniques and; (c) both discourage the presence of any hierarchical structure for water distribution, thereby ensuring equity. Moreover, in both the examples, successful water management has been accompanied by social capacity building and empowerment of the local community.

1.1 The Study Area

The study area focuses on the region in the Indian sub-continent called the Deccan Plateau. This area has no regular water sources with occasional high rainfall that is characterised by excessive run-off. This unpredictable climatic pattern led to the development of a tank system by the first settlers, the *Gonds* and the *Kohlis*, approximately 400-500 years ago. All these structures were managed by the community with incentives received from the controlling ruler in terms of tax payments, labor charges, land ownership etc. According to historic records and Indigenous informants, the region has always been rich in natural resources because of its excellent management of water resources.⁶

Of the two case studies, Aashti is a village located in the Bhandara District on the banks of the seasonal river Bavanthadi. The main occupation is agriculture and related activities. It is a homogenous village largely populated with the Kohli tribe. Mendha-Lekha, on the other hand, is located in a reserve forest area of the Gadchiroli District. The main livelihood occupations are agriculture- and forest based activities. This village is also a homogenous one inhabited by the *Gond* tribal community. Both the sites were a part of the *Gond* kingdom and had a highly developed community-based water management system.

1.2 Methodology and Scope

This study is largely based on first-hand information obtained from interviews conducted during the author's field visits to the villages in January 2008.⁷ This has been supplemented by secondary literature. The field investigations and interviews were crucial as there has not been much documentation of these examples. The study forms a part of the research currently being undertaken by the author to examine the factors of success and constraints of participatory attempts to water management in the discussed examples. Subsequently, it also aims to develop a framework to

¹. This part of the study will be undertaken during the author's next field-trip to these villages in 2009.

². UNESCO, *Water and Indigenous Peoples*, 12.

³. Iyer, *Towards Water Wisdom*, 35.

⁴. Ministry of Rural Development, *Common Guidelines for Watershed Development*, 4-5.

⁵. Vanda Shiva, *Water Wars*, vii; Kothari, *Traditional Knowledge and Sustainable Development*, 10.

⁶. Lawrence, *Bhandara District*, 5 and 10; Grant, *Gazetteer of Central Provinces*, lxxxiii; Borkar, *Kohli Samajacha Itihas*, 249.

⁷. People from both the villages, NGO representatives working in the region were interviewed during the first preliminary field trip.

integrate these principles into the state policy for effective co-management of water resources through a comparative evaluation.¹

2. Historical Context

2.1 Traditional knowledge and techniques

This study aims to bring forth the traditional water management process and its relevance for the present policy making. The Kohli tribe, through their years of experience, had gained the knowledge of locating site for tank and technical knowledge to build the tank structures. The *katta's* (tank) were constructed by building an earthen *bund* (embankment) across natural runoff and *nullahas* (diversion channels) were used to divert water to the fields. For domestic purpose separate *bandhs* (small tank constructed with four sides) were excavated below the *katta* and received water by percolation from the later. At some places *baoris* (stepped wells) were also constructed. There was a segregation of water structures for religious, domestic and irrigation purpose. The cultural and religious values associated with water formed the guiding principles for this form of organisation and management of water resources. The customary practices for use of water and all other resources were based on deep ecological knowledge and were guided by belief system. The system reveals conscious efforts by the communities to collect every drop of water and manage and use it in most efficient way.

2.2 Institutional Structure

The *Gond* rulers did not stop at building tanks but consequently developed an institutional framework to manage them. It is commendable that such a structured and well integrated social mechanism was developed across three different levels viz. the *Gond* ruler, the *Malguzars*, the *Kohli's* and other lower caste communities.

The *Gonds*, one of the very few Indigenous tribes in India (non-Aryan), were the ruling community.⁸ They were the administrators and established incentives for those who cleared forest for settlement and those who constructed tanks to collect water. The Kohli's are a notable caste recognized as being the builders of the great irrigation reservoirs or tanks.⁹ A *Malguzar* or *Gountias* (village headman) was a person appointed by the *Gond* King to collect tax revenue and to look into the overall administration of an area.¹⁰ He was responsible for the maintenance of the tanks that ensured the agricultural production. The distribution of water was handled by a committee of *malguzars* who decided on the distribution of water as per its availability. A person called *pankar* was appointed to implement the distribution of water.¹¹

On the face of it the system sounds hierarchical but it functioned efficiently because the *malguzar* wanted to ensure profits by minimizing crop failure, and therefore personally supervise the construction, maintenance and operational activities associated with the tanks, with effective participation of all stakeholders. The efforts of the cultivators who laboured on these works were compensated by land allocations and free water for their crops.¹² Thus there was a clear distribution of work, roles and responsibilities of all the stakeholders in the management of water resources. Certainly, this was a decentralised approach and closer to people. This is particularly to be noted as in the post independence context in India this seems to be completely overlooked by the Indian Government and Planning authorities.¹³

2.3 Impediments to continue traditional practices

The study highlights four main impediments to continued traditional practices of water management in the region. The first is the alienation of the local communities from their water resources by making the public resources as government assets. The *Malguzari* System was put to an

⁸. Russell and Lal, *Tribes and Castes*, 39; Tiwari and Mishra, *The Raja Gonds*, 12.

⁹. Russell and Lal, *Tribes and Castes*, 494; Borkar, *Kohli Samajacha Itihas*, 247; Rajankar, *Ponds in Bhandara*, 137.

¹⁰. Chhotroy, *Orissa: Indigenous Marvel*, 183; Rajankar, *Ponds in Bhandara*, 139.

¹¹. A *Pankar* was a landless labour and he would be responsible for the water distribution. In return every cultivator would give a share of his cultivation to the *pankar* for his duties. (Rajankar, *Ponds in Bhandara*, 139).

¹². Grant, *Gazetteer of Central Provinces*, lxxx; Chhotroy, *Orissa: Indigenous Marvel*, 182; Rajankar, *Ponds in Bhandara*, 139.

¹³. Kothari, *Greening India*, 8; Iyer, *Towards Water Wisdom*, 35; Rajankar, *Ponds in Bhandara*, 141.

end with the abolition of the Property Rights Act of 1950 and with this the traditional water management system of the *Gonds* also collapsed.¹⁴

The second factor relates to the damage of the water structures due to inability of the Irrigation department to maintain them.¹⁵ The traditional structural elements were replaced by modern technology to improve water holding capacities. However, owing to lack of knowledge, use of inappropriate techniques for the local context, absence of holistic approach, funds and manpower resulted in poor maintenance of the structures.¹⁶ The role of local people in the water management process was completely disregarded and resulted in the system decline.

The third major factor deals with the gradual loss of traditional knowledge itself. The traditional knowledge is usually passed on as oral tradition and direct practice or implementation of the knowledge. The significant issue is inability to pass such knowledge to next generations due to hindrance to ongoing practice of the traditional knowledge to construct, operate and maintain the tanks. Another issue is the attrition of the older people of the community, who hold the direct knowledge and experience of the traditional practices.

The fourth issue is of lack of any kind of institutional framework to assure participation of the local people in water management. There have been a few attempts by government to encourage community participation, but have mostly remained on paper.

3. Indigenous people's engagement in current policy making

3.1 Government initiatives

The willingness and attempts to incorporate local communities into mainstream water policy making process has been limited by a wide range of factors. Water resource management is largely considered to be the business of the Central Water Commission and related government agencies. At the highest level, the 73rd and 74th amendments of the Indian Constitution, passed in 1993, have increasingly advocated for the inclusion of participatory approaches in the process of undertaking development initiatives at the local level government i.e. *Gram Panchayat*.^{*} However, these government directives fall short of integrating Indigenous interests in planning and implementing regional water policy initiatives.¹⁷

Although the Maharashtra state government has initiated participatory projects in its Integrated Watershed Development Program (IWDP), progress towards meaningful participation has been slow and difficult.¹ Although there has been encouragement and some good participation in individual projects like the Ralegaon Siddhi, Hiwre Bazaar and Mahur *Pani-Panchayat*, such examples nevertheless remain limited due to the absence of structural arrangements. The latter requires changes in the bureaucratic attitudes (moving away from current vested interests in centralised planning) in addition to changes in the perceptions of the local community with respect to participation for sustainable water management.

Furthermore, these government policies do not give due consideration to the integration of traditional knowledge and customary practices of water management. Very little attention has been paid to the traditional owner's rights, cultural values, interests, and responsibilities in any government initiative, which have ended-up further affecting water resources.¹⁸ Besides, it is also clear that these traditional systems are rapidly eroding due to various factors, discussed in previous section. Having said this, there are still some examples initiated by community, in times of increasing water scarcity, which have initiated the revival of the traditional practices and developing them in the present context.

¹⁴. Rajankar, Ponds in Bhandara, 140; Personal communication with various informants.

¹⁵. Rajankar, Ponds in Bhandara, 140; Personal communication with the Dongarwar family belonging to the Kohli Community.

¹⁶. *Ibid*.

^{*}. *Gram Panchayat* is the mid-level unit of the three-tier *Panchayati Raj* Institution (*Zila Parishad, Gram Panchayat and Gram Sabha*) initiated under the 73rd and 74th amendment of Indian Constitution. It is an elected village council for a group of villages and is the representative body of its constituent *Gram Sabhas* to the *Zila Parishad*.

¹. IWDP includes a) the National Water Policy 1987, 2002; (b) *Adarsha Gram Yojna* (Ideal Village Development Program) 1992; (c) Water User's Association Act 2005; (d) Catchments of River Valley Projects; (e) *Pani Panchayat* (Water Councils).

¹⁷. Iyer, *Water: Perspectives, Issues, Concerns*, 68; Iyer, *Towards Water Wisdom*, 163.

¹. IWDP includes a) the National Water Policy 1987, 2002; (b) *Adarsha Gram Yojna* (Ideal Village Development Program) 1992; (c) Water User's Association Act 2005; (d) Catchments of River Valley Projects; (e) *Pani Panchayat* (Water Councils).

¹⁸. Iyer, *Towards Water Wisdom*, 163; Shiva, *Water Wars*, 13.

This chapter studies two such examples of revival of the traditional tank system and evolution of new community structures.

3.2 Case-study of Aashti village- a co-management initiative¹⁹

Following various disagreements with the irrigation department, the villagers of Aashti have taken over the management of the tanks by forming self-help groups, working under the *Gram Panchayat*. People, no more depend upon the Irrigation Department for operation and maintenance, but have taken it upon themselves. This has ensured them an uninterrupted, assured supply of water. The traditional tank system has given back people their ownership over the tanks and enabled them to sustainably manage their irrigation by community participation.

The village currently has 52 tanks of various sizes, constructed during the *Gond* reign, currently being maintained and operated by the village community. Out of these tanks, 2 large tanks are in the jurisdiction of Irrigation department, while the remaining are managed and maintained the *Gram Panchayat* with effective participation from the local community members. The ownership of the tanks, under the *Gram Panchayat* jurisdiction, is leased on a rotational basis to private owners who take on the responsibility of its maintenance. However the villagers who are benefited by these tanks contribute in kind or in labour towards the operation and maintenance to ensure water supply. The *Gram Panchayat* uses partial funding obtained from the central and state government authorities (e.g. *Jawahar Rojgar Hami Yojna* and *Gram Sudhar Yojna*) to ensure effective water management.

The villagers have gone back to the use of their ancient traditional techniques of building tanks with earth *bunds*, wooden gates and sloping overflow channels. This policy of local governance supported under the State Government institutional framework has significantly helped Aashti village evade its water problems and ensure high agricultural productivity and meet their domestic needs.

3.3 Case-study of Mendha-Lekha village- a self-governance model²⁰

Similar to Aashti, the *Gond* community in Mendha-Lekha was deprived of its rights to manage and use its natural resources. After suffering persistent water scarcity and the lack of provision of support from the government, one individual, Mr. Devaji Tofa, led the villagers to proclaim self governance. They were supported by a non-government organization (NGO) *Vrikshamitra* (Friends of trees) in helping the villagers realize their own knowledge, collective strength and provided necessary information and assistance to establish local autonomy. As a result, the *Gram Sabha* was empowered to take all decisions regarding all the local resource management including water.* Small committees, called the *Abhyas Gats* (*study groups*) are initiated to discuss various issues being faced by the village and potential solutions. But all major decisions are taken jointly in the village council to ensure transparency in governance. The *Gram Sabha* has also been registered as a civil society body to acquire funds directly for developmental activities. Any government, or civil society body, wishing to undertake any work in Mendha-Lekha has to take consent of the *Gram Sabha* before commencing their work.

Water distribution is not based on the measure of land holding but to the number of persons in the household. Even a landless gets an equal share of water. All the decisions are made by the village council after discussing the issues with all the villagers during the council meeting.

Mendha-Lekha thus presents a unique example of local self-governance, in the management of natural resources and revival of traditional systems, with the right combination of facilitators, and the institutional structures. The village leader and the NGO were the driving forces, who initiated the process. The *gram sabha* and the *abhyas gat* provided the institutional basis through which participation worked. The village council inspired by the traditional governance system and ensuring transparency and equity in governance have achieved sustainable water management. At the foundation of this entire attempt, the people have made conscious efforts to build their capacity and understanding their own historic roots, to be able to achieve more efficient and just governance. In light

¹⁹. Information from Personal communications during the field observation in January 2008.

*. *Gram Sabha* is the basic and most powerful foundation of decentralized governance unit of the *Panchayati Raj* Institution, directly accountable to local people. *Gram Sabha* is a body consisting of persons registered in the electoral rolls of a village or a group of villages which elect a Panchayat.

²⁰. Information from the Personal communication with Mr. Devaji Tofa, during the field observation in January 2008.

of these observations, it may be argued that the rest of the country and other developing countries may learn meaningful lessons to ensure equitable and sustainable natural resource management.

4. Integrating traditional knowledge and practices in national and regional water planning

4.1 Opportunities

There are some emerging opportunities that can be learnt by policy makers and other villages from the above case studies. These revival attempts need to be better understood and their lessons need to be spread in other areas. The above examples indicate that the new institutional structure should be based upon the relevant aspects of the local traditional knowledge and institutions. For instance, *Gram Sabha*, *Gram Panchayat* and *Abhyas gat* are village initiated structures through which a modern system for sharing of knowledge is developed and result in a informed decision making. This should also be supplemented by social capacity building leading to the empowerment of the local Indigenous communities. Social learning would not only help the communities overcome the traditional social inequities of caste, class and gender but will also encourage more equitable management.²¹ At the same time, formal training needs to be provided to agencies to work with the Indigenous communities.²²

The most considerable aspect of community initiatives is their holistic approaches towards resource management (including water and land together), linked with social dynamics and livelihood perception.²³ The government approach on the other hand is highly fragmented, often with very little coordination between different agencies. As evident from the above examples, since, the basic unit of decision making is the local community, all the processes are linked to overcome problems at local level.

The self-governance rule of Mendha-Lekha, co-management at Ashti and other such examples has resulted in challenging the Indian legal system itself. Attempts are now being made to recognise and institutionalise the customary laws in formal ways. People's Biodiversity Register (PBR) is one such example that facilitates the community to document its traditional knowledge and has a right to take decisions pertaining to its resource management.* Although there are still doubts about the Intellectual Property Rights of this documented knowledge, case examples presented above clearly demonstrate that traditional knowledge and practices hold a key to sustainable use and management of natural resources.

The examples also points out to the important role of the facilitators to initiate a movement from within the community. This is relevant to make the community realise about their own traditional knowledge, policies being made which may have direct or indirect impact upon them and realisation of their ownership of the natural resources and rights and responsibilities to manage them.

4.2 Challenges

The above discussion on revival of community management systems in many parts of India demands for the recognition of traditional knowledge and customary laws in the legal system. However, there remain significant challenges that inhibit its operationalisation. Despite the success of Ashti and Mendha-Lekha in effectively controlling and managing their natural resources, the institutional structure remains essentially centralised. It calls for a bigger change in the attitudes of the bureaucrats to accept decentralisation and local community management of water and other resources. Another dominant challenge is the market driven- water privatisation aspect, which will further take the resources away from the control of the local community. Further, to legally recognise customary laws and traditional knowledge within the Indian judiciary system, a strong political will is necessary that will in turn bring about suitable amendments to the Indian constitution. Moreover, these policies need to be context specific, to allow the implications of local customary laws to better acknowledge regional cultural diversities.

²¹. Kothari, *Greening India*, 8.

²². Sillitoe and Barr, *Decision Model*, 61; Afreen, *Towards effective conservation*, 11.

*. People's Biodiversity Register(PBR) is a innovative program by Centre for Ecological Sciences(CES) at the Indian Institute of Science (IISc) Bangalore, which seeks to document the traditional knowledge of occurrence, practices of propagation, sustainable harvests and conservation, as well as economic uses of biodiversity resources that reside with India's local communities.

²³. Kothari, *Greening India*, 8.

*

Finally, the most important challenge is to bring the community members together through social learning and detach them from the inequality of caste and gender which are integral to the traditional systems. The facilitator or non-government organisation could play a crucial role in community education and empowerment and bring about a change in their attitudes. Social capacity building will therefore be of great significance in enabling Indigenous communities to develop new unbiased water management systems as evident in Mendha-Lekha.

5. Conclusions

The study demonstrates the importance of deep cultural connections and local traditional knowledge in effectively managing water resources. In the past, traditional societies have lived with a reverence for land and nature; the present planning and regulatory bodies need to acknowledge this. The study further argues that the ability of the locals to exercise their traditional practices of water management is impaired as a result of the government restricting local possession and management of water resources. Social capital present within the community from their Indigenous norms and practices needs to be re-energized and developed with coordinated support from non-government organisations. The above case studies emphasises the need for the acceptance and revival of traditional knowledge and systems in mainstream planning processes, with decentralisation in institution structure. In addition to upholding the principles of equity, opportunity generation, security, and empowerment of local communities, incorporating Indigenous value systems will further lead to sustainable use and management of natural resources.

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Article 2 Published article

*Sustainable Water Management in Semi-Arid
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Indigenous Communities*

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**Decentralized Institutions for Sustainable Water
Management: Study of Indigenous (*Gond and Kohli*)
Community-based Organizations in Maharashtra, India**

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NOTE:

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Abstract of the paper presented at a Conference

*Sustainable Water Management in Semi-Arid
India: Learning from the Gond and Kohli
Indigenous Communities*

Namrata P. Vishwasrao

**Significance of community leadership and NGOs for effective
water management by Indigenous community organisations:
Case studies from central India**

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2010, The University of Adelaide, 5 - 8 July 2010: **accepted abstract***

Vishwasrao, N.P. 2010, Significance of community leadership and NGOs for effective water management by Indigenous community organisations: case studies from central India, paper presented at *Proceedings of the 18th Biennial Conference of the ASAA: Crises and Opportunities: Past, Present and Future, 5 - 8 July 2010, held at the University of Adelaide, Australia.*

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