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# Traditional Water Management Systems of Gondia District: Community Conservation

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**Abstract:**
*The paper presents the case of village tanks in Gondia District of Maharashtra State in India. Essentially the village tanks are the source of irrigation. They are characterized by their comparatively smaller command area a cluster of 3-4 villages at the most. This study is focused on a particular type of village tanks called the MajiMalguzari tanks (the MM tanks). The MM tanks have distinct community based management history. This study is an attempt to understand the change in community based management over the period of last 100 years as a result of certain policy initiatives at national level. The MM tanks are a classic case of changes at policy level leading to changes at operational level. This study argues that two policy initiatives in India, one related to land redistribution and the other to increasing productivity of the biomass based rural society , have resulted in disintegration of community based management of the MM tanks. However, the paper also sheds light on the positive externality of the policy initiatives.*

*In the past, when there was effective community based management of the MM tanks, it was founded on social inequity built in caste based hierarchical society. The policy initiative helped a disadvantaged section of the society in establishing itself as a competent user group. Management implication of these changes is that it will be a limited view to base the MM tank management only on the irrigation aspect. The paper concludes that to be realistic it is necessary that in the planning of MM tanks fishery should be integrated.*
**Keyword:** *MM tanks, Traditional Water Management Systems.*

## Introduction

Traditional systems are specific responses to ecology and culture of the region in which they evolved. Traditional systems have benefited from collective human experience since time immemorial and in this lies their biggest strength. Tradition of water management system has been in practice since ancient times (ChalantikaLaha and Dr. SunandoBandyapadhyay, 2013, Bisen D.K and Kudnar N.S.,2013 a,Zode R., at el. 2014). Man has made improvements in it according to his needs. Evidences of improved system of irrigation in India have been found in the Puranas, Mahabharata, Ramayana as well as in Buddhists and Jain scriptures. Descriptions of canals, tanks, dams, and wells are also found in them. Traditional systems of water management are found in different regions of India (Kudnar, N. S., 2015, Vijay Paranjpye, 2013Zode R., at el. 2016). The techniques used in these systems, the reasons for choosing that particular technique, resources utilized for building the structures, rules and regulations of using the system, decentralization of decision making and integrated approach for management of the resource, are

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some important aspects. One such traditional system of water management exists in the eastern part of Vidarbha, known as Zadipatti. We have been observing that water is valuable for the area of scarcity and people of those areas design such systems of wise use of this precious resource. The Zadipatti region receives 1200-1500 mm rainfall & yet, people here developed an intricate management system which is being used effectively even today(Kudnar, N.S. &Rajasekhar, M, 2019, Day, P.,2007, Anderson, K., & Martin, W., 2008).

**Study Area:**

Gondia district is situated on north-eastern side of Maharashtra State and share the state borders with Madhya Pradesh on north and Chattisgarh in east. It covers an area of about 5859 sq.km and lies between 20°39 and 21°38 north latitudes and 79° 52' to 80°42 east longitudes. The adjoining districts to Gondia are on northern side Balaghat district of Madhya Pradesh State and on eastern side Rajnandgaon district of Chhatisgarh State. To the south and west are Chandrapur district and Bhandara district respectively of Maharashtra. The total population of the district is about 12,00,151 and the population density is 247 per sq.km as per 2001 census. The literacy rate of district is about 68%. Basically district is divided into eight talukas namely Gondia, Goregaon, Tiroda, ArjuniMoregaon, Deori, Amgaon, Salekasa, SadakArjuni and eight PanchayatSamiti. Only two Municipalities exist at Gondia and Tiroda. The district falls under the Wainganga basin with rivers like Bagh, Chulbandh, Gadhavi and Bavanthadi are the tributaries of river Wainganga.

**Study Area:Gondia District**

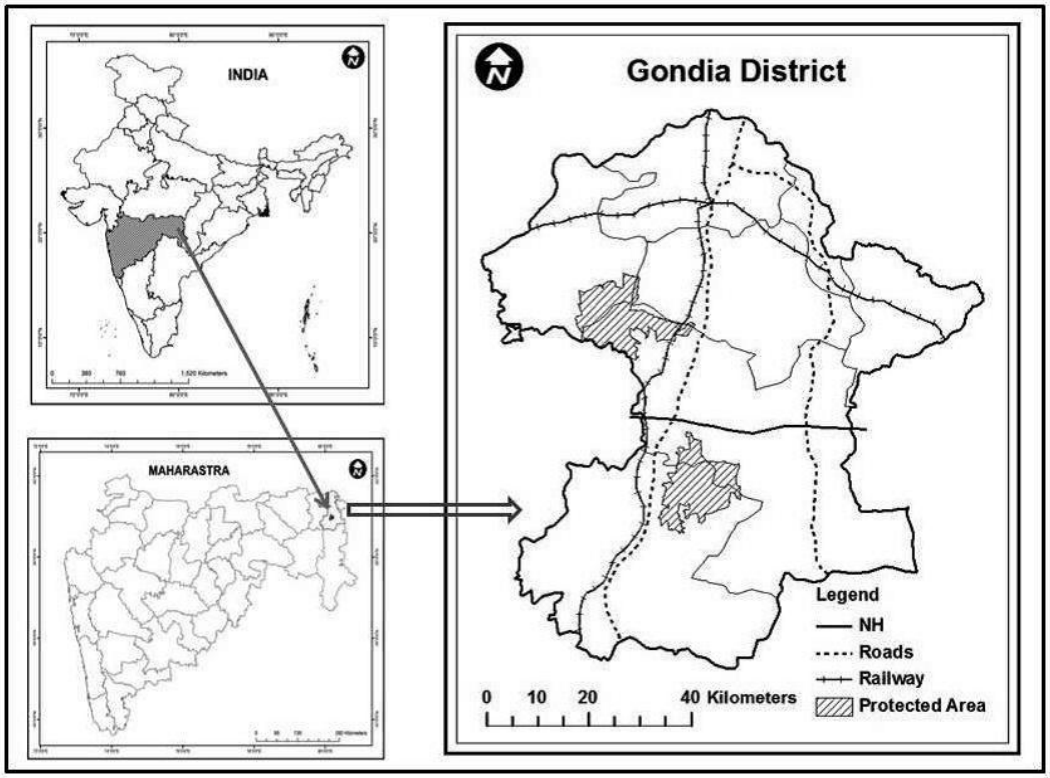


**Fig: I. Study Area**

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**Objectives:**

- "To understand the reasons of disintegration of community based management of the village tanks"

**Database and Methodology**

**Primary Data Collection**

It is essentially based on two techniques - semi structured interview of resource persons and focus group discussion. In addition to these interactive techniques, some village tanks were visited with the community members. Secondary data are collected from the sources like district gazetteers and district socio economic review.

**Secondary Data Collection**

Case studies on irrigation aspect of the tank management by some earlier researchers have been used to substantiate the limited coverage of irrigation aspect in the present study. These case studies conducted in 2010 essentially cover self-initiated community based irrigation management in two villages in adjoining Bhandara district. Gondia district shares a lot of similarity with Bhandara district. In fact it was carved out of Bhandara district in 1999.

**Climate:**

The climate of the Gondia district is generally hot and dry. Summer (middle of February to middle of June), monsoon (mid-June to October) and winter (November to Mid-February) are three main seasons. The high daytime temperature during April and May becomes rather unbearable due to hot winds and dryness of the atmosphere. The average annual rainfall is about 1200 mm. Major part of the rainfall is obtained from the Southwest monsoons during June to September. Maximum rainfall is received during July and August. Wind is generally light to moderate, but the velocity increases during later part of the summer and the monsoon months (Bisen D.K and Kudnar N.S., 2013,).

**Rainfall**

Gondia district receives rainfall from South- Western winds mainly in the months of June, July, August and September. July and August are the months during which the maximum rainfall as well as maximum continuous rainfall occurs.

The following table shows ,taluka-wise average rainfall statement for the last 4 years.

**Table I:Rainfall**

| Sr. No. | Name of Taluka | Average Rainfall During Last 4 Years (in mm) | | | |
|---|---|---|---|---|---|
| | | 2008 | 2009 | 2010 | 2011 |
| 1 | Gondia | 1551.6 | 933.1 | 1227.6 | 1049.0 |

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| | | | | | |
|---|---|---|---|---|---|
| 2 | Goregaon | 1107.6 | 905.0 | 1299.4 | 1106.9 |
| 3 | Tirora | 1263.6 | 867.6 | 1320.8 | 1003.4 |
| 4 | ArjuniMoregaon | 1203.2 | 890.4 | 1954.2 | 1653.1 |
| 5 | Deori | 1051.9 | 870.0 | 1213.0 | 917.3 |
| 6 | Amgaon | 1352.3 | 845.0 | 1371.0 | 1274.0 |
| 7 | Salekasa | 1412.8 | 947.6 | 1384.5 | 1375.6 |
| 8 | SadakArjuni | 1373.4 | 1108.2 | 1819.3 | 1142.5 |
| Total | | 10316.5 | 7366.9 | 11589.8 | 9521.8 |
| *Average* | | *1289.5* | *920.8* | *1448.7* | *1190.2* |

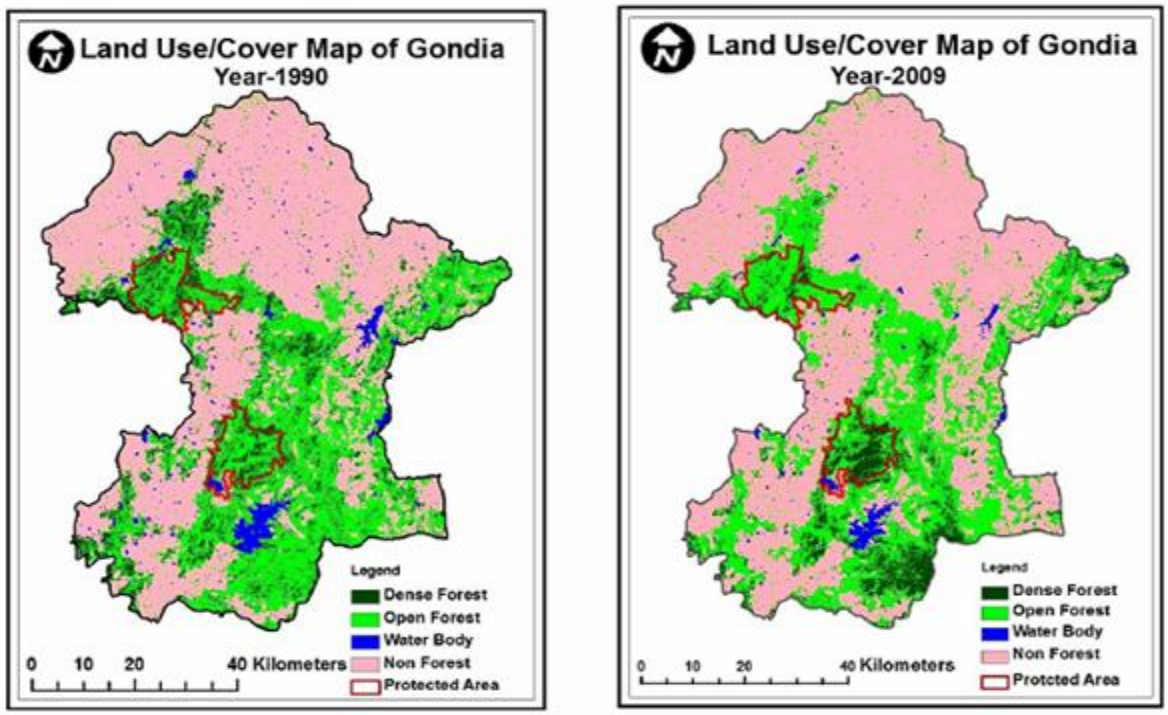


**Fig: II. Land Use Map**

**Importance of the Traditional Tank Irrigation System**

The traditional tanks built by the Kohlis can be found from the Balaghat district of Madhya Pradesh, to the Drugwada district of Andhra Pradesh and almost till Sironcha in Gadchiroli District of Maharashtra. This region was part of the Central Provinces and Berar division during the British regime and a survey of traditional tanks of the region is available in the Gazetteers published in 1908(Bisen D.K and Kudnar N.S., 2013 b,Zode R., Chaturvedi, 2014)

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Apart from the tanks, the Madia tribes had developed a system of harnessing the water of perennial stream in the hills, which were guided into the tanks for 'Jhilan cultivation'. Due to the construction of tanks and for tapping the springs in every tehsil of the region, the proportion of irrigated area was considerably higher as compared to the rest of Maharashtra during the pre-colonial and colonial era46. Even today, the impact of tanks is such that the region has the largest proportion of land irrigated by tanks in Maharashtra, where 78% of net irrigated area in the region depends on 43,381 tanks in all (Kudnar, N. S., 2015, Zode R). The district proportions of lesser value crops are very low and those of the "richer" crops like rice, tur wheat etc. are much higher as compared to the rest of the averages for the state. The area of Bhandara, Gondia, Gadchiroli, Chandrapur and partially Nagpur districts is known as Zadipatti. This area is part of the broader area known as Gondwana. The area was under the reign of Gond Kingdom. Historically the area of zadipatti was divided in three kingdom of Gonds; Deogarh, Mandla&Chanda.

As per the name of area, there was dense forest in the region. But for generating revenue and maintain a kingdom, it was essential that the area had human habitation and agricultural lands. A Gond King, Hirshah of 16th century issued two Farmans (orders). One was, “a person who clears the forest and sets up a village will receive a title of Sardar of the village” and the other was, “a person who builds a tank will get all the land irrigated by that tank, as khudkast (reward)”. These orders led to setting up of prosperous villages dotted with hundreds of tanks in the region(Bisen D.K and Kudnar N.S., 2013 c, Zode R., at el. 2018).

There are two reasons to select Gondia district as the study area. First is the prior acquaintance of the researcher with the study area. In 2008 and 2009, this researcher was involved in formulation of community based aquatic biodiversity conservation project in Bhandara and Gondia districts. At that time, the researcher was involved in conducting community level consultations along with BNSAM1 to understand problems related to aquatic biodiversity conservation, in particular local fish diversity and the migratory birds. In these consultations and subsequent field visit to some village tanks, local community’s perception that ‘MajiMalguzari tanks, a particular category of the village tanks with a unique history of community based management are in rapid deterioration state’ was noticed. The local claim of deterioration of the village tanks is also substantiated in the report of the fact finding team of the Planning Commission of Government of India (Planning Commission, Government of India, 2006:26). The report mentions that it is necessary to ‘restore’ the MajiMalguzari tanks to augment the existing water potential of Vidarbha region (Gondia district is a part of the Vidarbha region).

Second reason to select Gondia district as the study area is the highest density of village tanks. On an average each village in Gondia district has 8 tanks It is the highest among all districts in Maharashtra state. Gondia and neighboring Bhandara district are called lake districts of Maharashtra (Bhandara District Gazetteer 1979).

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**Irrigation**

Total area under irrigation is 98560 H. Out of this, 67049 H is irrigated through surface irrigation sources (ibid: 7). In 2001-02, the latest count of wells in the district, it is reported that the number of wells is 6978(R. Bhavani, 2013, Zode R., at el. 2019).

In the Gondia District Socio Economic Review (2010) the irrigation sources are reported under the major irrigation projects, minor irrigation project under the state government and minor irrigation projects under the ZillaParishad. It is under the last category – minor projects under the ZillaParishad, the MM tanks are categories (Kudnar, N. S., 2018,Vijay Paranjpye, 2011). However in the socio economic review, number of minor projects constructed by the ZillaParishad only is reported. It is 181. In the calculation of the irrigation by canal the MM tanks are most likely not included. The last category in the table 3, irrigation through other means belongs to the MM tanks, which is 12300 H (12% of net irrigation in the district). The irrigation potential of the MMtanks has drastically reduced. In 1971-72, the irrigation potential of the tanks was reported to be 38459 H.

**Table II: Irrigation Details (2009-10)**

| **Particulars** | **Area irrigated (H)** | **%** |
|---|---|---|
| Area under irrigation | 98560 | 61 (of total cultivable area in the district) |
| Irrigation through canal | 67049 | 67 (of total area under irrigation) |
| Irrigation through Well | 31500 | 31 |
| Irrigation through other means | 12300 | 12 |

Source: Gondia District Social and Economic Review 2010

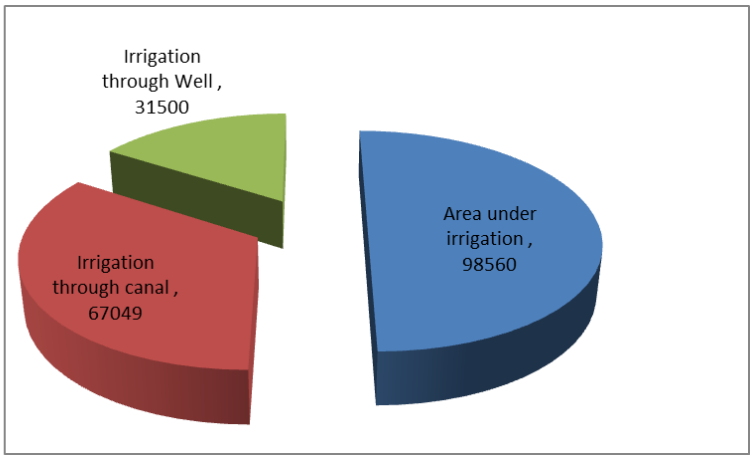


**Fig: III. Irrigation Details (2009-10)**

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**The Village Tanks in Gondia District:**

In general there are two classes of village tanks (Rusell 1908): (a) those constructed by a bund across a narrow valley between two hills spurs to intercept its drainage and (b) those constructed by a long low bund across the broad shallow drainage lines of the plain country. In tanks of first kind, the catchment area is of considerable size and it varies from 5 to 50 sq.km. In tanks of second kind, the catchment area is comparatively smaller sizing a few hectors.

Legally the State is the owner of all tanks. For administrative purpose, the tanks with irrigation potential above 250 H are under the State Irrigation Department where as those with irrigation potential below 250 H are under the State Rural Development and Water Conservation Department (Kudnar, N.S. &Rajasekhar, M, 2019). The tanks with irrigation potential below 100 H are under the Minor Irrigation Department of ZillaParishad (Irrigation Status Report, Maharashtra State 2002-03). The tanks with irrigation potential above 250 H are categorized as Major irrigation projects where as those with irrigation potential below 250 H are called minor irrigation projects.

In Gondia district there are four major irrigation tanks, seven medium irrigation projects (looked after by the State Irrigation Department) and 19 minor irrigation tanks looked after by the State Rural Development and Water Conservation Department. Put together these tanks irrigate 223000 H area in the district (Gondia District Social and Economic Review 2010:17, Vijay Paranjpye,2013). There are 181 tanks with irrigation potential below 100 H looked after by the Minor Irrigation Department of GondiaZillaParishad (the ZillaParishad or ZP tanks in official terminology). These tanks irrigate 10384 H area (ZillaParishadGondia Website). In addition to all these, there are more than 1300 MajiMalgujari tanks whose construction dates back to historic period. Usually they serve a cluster of 2-3 villages at the most. In other terms, they are the village tanks(Raghunandan A. Velankar, 2011, Zode R., at el. 2015, Kudnar, N. S., 2019 ).

**Table III: Distinction between the ZP Tanks and the MM Tanks**

| **Aspect** | **ZP tanks** | **The MM Tanks** |
|---|---|---|
| Period/Time of construction | After 1950 | Before 1950 or record unknown |
| Physical and technological aspects | Masonry structure with shutter type metal sluice gates | Earthen structures with plug and socket type water outlets called *Tudum* |
| Coomunity aspect - Nistar 3 | No | Yes |

Source: Primary Data

**Water Management**

Water Management and Biodiversity Ecosystems supported by the tanks have been a lifeline of not only the local communities, but numerous other species as well. It has been observed by the

 

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locals that tanks where lotus (Nelumbo, powan in local language) grows in abandon has cooler waters and in summers, small fish congregate around these louts tangles to seek protection from larger fish and birds like kingfishers, ibis and ducks(Kudnar, N. S., 2018,Vijay Paranjpye,2011).

Traditionally, when vetiver grass growing on the tanks banks was harvested, two parallel layers of vetiver were always maintained in order to bind the soil together and avoid erosion. There are numerous such examples wherein locals have very ingeniously used links between plants and their relation with water management.

**Conclusion:**

This research paper is an attempt to understand the community based management of the MM tanks. In the contemporary research on the village tanks in India as common property resources, generally the tanks are described as failure of community based management system. The often cited causal factor of the failure is vesting of the ownership of the tanks in the state which in turn determines rights of various user groups to water. The change in ownership, representing a form of change in property rights regime, from the community to the state has impacted community control over the resource. This paper in a way confirms the observation of the earlier researchers.

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