

Water, Water Lords, and Caste: A Village Study from Gujarat, India

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Introduction

Access to and distribution of water is deeply intertwined with structures of power. Strategies of accumulation by dispossession have acquired sustained significance under contemporary regimes of global capitalism (Harvey 2003; Swyngedouw 2005). Water politics tends to involve a range of interaction patterns in water management, including negotiation, struggle, and also less explicit and longer-term disputes and controversies (Mollinga 2008). At the level of the state, water shapes national economies and determines geopolitical boundaries (Mosse 1999; Wade 1987; Wittfogel 1957). Similarly, at the heart of water governance and management challenges, in particular those related to social equity and justice in most developing countries, is the question of access to and control of water, which is often hampered by exclusionary political and economic practices (Ioris 2007).

In South Asia, as elsewhere, inequities are socially embedded and ecologically shaped. At the local level, structures of power tend to be embodied in class, caste, ethnicity, gender, and/or religion (Ahmed and Zwartveen 2012). In Mathnaa, a village in northeastern Gujarat which is the case study of this paper, access to water is determined by caste.¹ The upper caste status of Mathnaa's 'water

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The empirical material presented in this paper draws from my earlier work (Naz 2014), published by Orient Blackswan, and was funded by DAAD (German Academic Exchange Service). An earlier version of this paper was presented at the "Asian Ecologies: Capitalism, Modernity and the Environment" conference, held at Lahore University of Management Studies in April 2013. The author acknowledges the comments received from the participants of the conference. I am also grateful to Ali Nobil Ahmad and Hasan Karrar for their helpful comments and editorial suggestions. I also wish to thank the three anonymous reviewers for their thoughtful and challenging remarks.

¹ I have changed the names of the village and participants for anonymity purposes, as per the participants' wishes. The paper is based on qualitative and quantitative research conducted in northeast Gujarat, India. In total, 99 semi-structured

lords' allows them to wield influence over lower castes as well as control the groundwater market.² Water, though a 'natural' resource with economic value, also has powerful symbolic, cultural, and religious meanings attached to it. Its usage is highly differentiated within the local contexts (Mehta 2005, 2007).

I approach the Mathnaas water market through political ecology, a framework which relates nature to political economy, and links local processes with larger social structures and macro-economic processes (Blaikie 1985; Blaikie and Brookfield 1987; Bryant 1998; Moore 1993; Peet and Watts 1996). Political ecology emphasises the significance of history, social relations of production, and transnational capitalism (Redclift 1993; Sneddon 2000), including the uneven impact of environmental degradation based upon class (Blaikie 1985; Blaikie and Brookfield 1987). In this paper I take the definition of access by Ribot and Peluso (2003, 153) "as the ability to benefit from things including material objects, persons, institutions, and symbols," which leads to conceive of access as a "bundle of power" rather than necessarily a "bundle of rights." Access analysis is the process of identifying and mapping the mechanisms by which access is gained, maintained, and controlled (Ribot and Peluso 2003). Thus, the framework of access helps to understand why some people or institutions in Mathnaa benefit from the groundwater market while others lose.

Power has both a hegemonic and coercive dimension, encompassing the disciplining of agents, their self-disciplining (i.e., acceptance of relations of inequality), and the reproduction of power through daily acts and relationships (Kesby 2005). This paper explores how power is expressed within

interviews and nine focus group discussions were conducted to get a broad understanding on water issues, groundwater market, and gender relations, and to identify the actors' strategies to manage water in the study area. Apart from this I conducted a household survey covering 200 households. This was done to generate quantitative evidence on the characteristics of rural households in terms of caste and tribe ratio, kinship lineage, gender, caste, class control, and access to natural resources and level and scope of knowledge about the watershed project.

² Caste is a pan-Indian phenomenon. Castes are endogamous and segmentary, all divided into sub-caste. The social hierarchy of the caste system in Hindu society allegedly originated from the four-fold class system (Das 1982; Fuller 2003; Murray 1994). The word caste is sometimes used to translate *varna* denoting the four 'classes' of the Hindu society with the *Brahmins*, the priestly class; *Kshatriyas*, the warrior class; *Vaishya*, the merchant class; *Sudras*, the service class; and finally, the Untouchables (also known as *Harijans*, *Dalits*, or the Scheduled Caste, their official designation) are the social bottom and are outside the four-class system, an object of extreme stigmatisation. The *Rig-Veda* hymn 'the *Purusha Sukta*' describes how from the *Purusha* (primeval man) body the four *varnas* originated, i.e., from his mouth came the *Brahmins*, his arms the *Kshatriyas*, his thighs the *Vaishya*, and from his feet the *Sudras* (Fuller 2003).

multiple micro-realities, embroiling a myriad of social actors among whom it is distributed in complex configurations (Foucault 1980).

The paper is divided into two parts. In the first, I explore water scarcity in Gujarat, a region that witnessed negligible efforts in colonial and post-colonial times to develop irrigation. I next discuss groundwater markets in India, and in Gujarat specifically, illustrating how private control over a finite public resource creates scarcity. The second section is a case study of Mathnaa, Gujarat, where I undertook ethnographic fieldwork in 2008-2009 and in 2012-13. Here I explore the appropriation of resources by privileged castes, concluding with a discussion of how notions of caste purity and pollution consolidate water hegemony in the groundwater market by the ‘water lords.’

Water and “Scarcity”: The Making of a Market

Gujarat has a population of 60.3 million, covering 5.96 percent of India’s landmass (Government of Gujarat 2013); it only has 2.28 percent of India’s freshwater reserves which are further constrained by imbalances in intra-state distribution (see Figure 1) (Gupta 2012).³ Around 61 percent of the geographical area of Gujarat is under cultivation, of which 64 percent is un-irrigated (Government of Gujarat 2010). The state also suffers from water scarcity due to uneven rainfall, receiving less than approximately 40 inches annually, mostly during the monsoons. Additionally, about 78 percent of Gujarat suffers from large-scale soil erosion, reducing land productivity over the years (Hardiman 2007; Rani 2004). About twice every five years the state experiences drought. Except for Narmada, Tapi, Mahi, and Purna in southern Gujarat, the rivers are seasonal and dry outside the monsoons (Rani 2004). At 815 miles’ length, the Narmada is and the longest in central Asia, the fifth longest river in south Asia, and the longest Indian river flowing in central India. The ecology of the estuaries of the rivers in India has changed due to the construction of multiple dams (Singh 2000). The most controversial of those has been the Narmada Valley Development Project (NVDP), a multi-purpose river valley development scheme, with planned construction of thirty large dams, 135 medium and 3,000 small dams on the Narmada River (Parasuraman, Upadhyaya, and

³ The northern part of the state is dry and arid, whereas in the southern region moist weather predominates, owing to the region’s proximity to the Arabian Sea and Gulf of Cambay. Gujarat districts have been divided into four agrarian socio-ecologies. These four regions differ from each other socio-economically, culturally, hydrologically, geologically, and institutionally, and this division helps one understand how various regions of Gujarat interplay. For more details see Naz 2014.

Balasubramanian 2010). Like any large river valley development project, the NVDP has led to large-scale submergence of land and displacement of communities for whom this land provided habitat, livelihood, and lifeworld.⁴

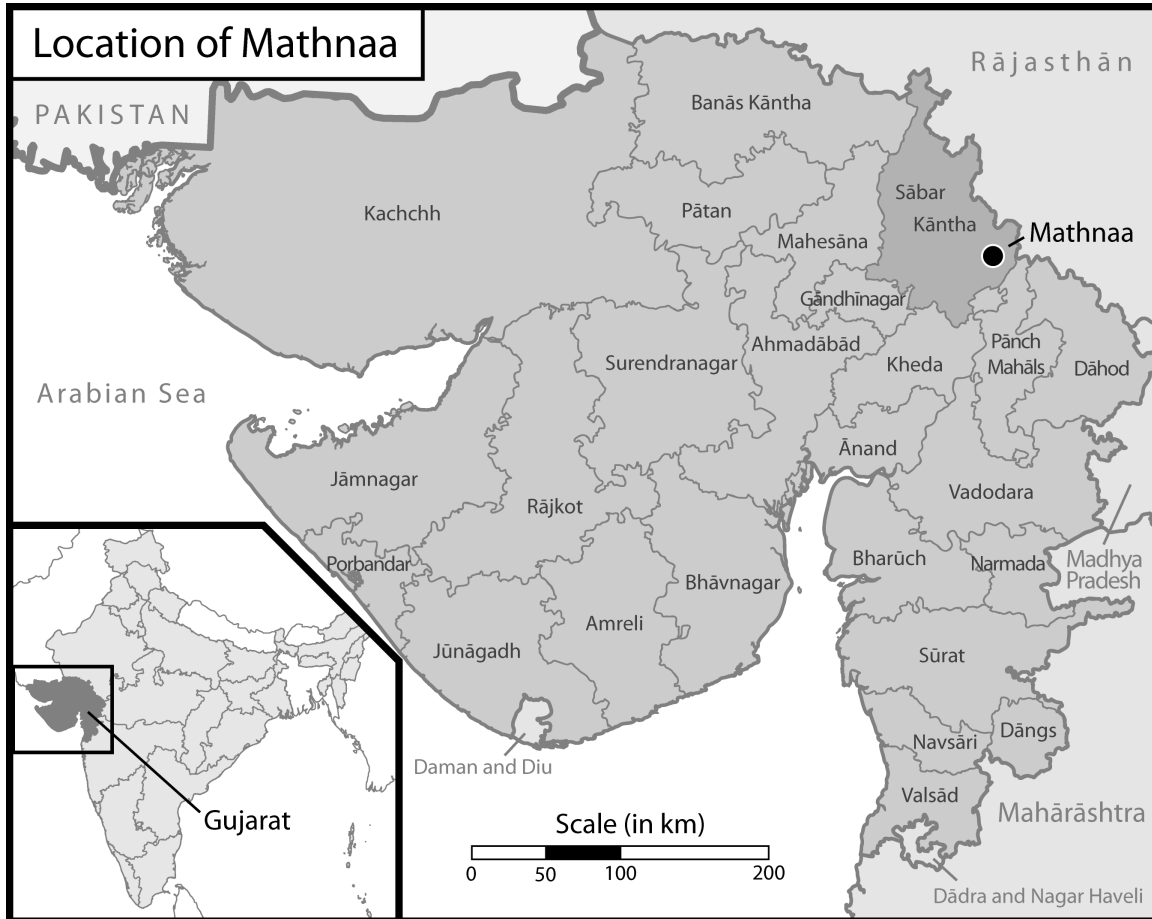


Figure 1. The location of Mathnaa in Gujarat, India. Map prepared by Carl Sack.

In most of northern Gujarat, Saurashtra, and Kachchh, there are no perennial rivers of much importance, and irrigation has depended either on wells or channels taken from the reservoirs formed by small-scale dams or embankments (Singh 2000). The agriculture of the region has relied on the ability to harvest water during the dry months of the year, and over the last thirty years this ability has come under increasing threat. The primary sources of irrigation in Gujarat (71 percent) are open wells and electrically operated borewells, with an additional 14 per cent canal irrigation and 15 per cent from other sources (Government of Gujarat 2010). Extraction of groundwater from

⁴ For details on this see Baviskar's (2004) work on the tribals living in the Narmada valley, the issues of development, tribal reality, the relationship of the tribals with nature, and the question of representation.

wells in many areas of Gujarat has surpassed natural replenishment in the subsoil, leading to an alarming fall in the water table (Rani 2004). Indeed, groundwater development in Gujarat has taken off with such speed that it has left behind state intervention in terms of public tubewells and canals; this has significantly affected groundwater resources in the state (Naz 2014). In 2009, 31 blocks (sub-district revenue divisions) in Gujarat were declared ‘over-exploited,’ twelve as ‘dark’ (critical), and 69 as ‘grey’ (semi-critical) (Government of India 2009).⁵

All this makes well irrigation in Gujarat critical. But unlike in the Punjab, historically no canal irrigation projects were undertaken under colonialism in Gujarat. In the 1930s about 78 percent of the irrigated area of British Gujarat was irrigated by wells and only ten percent by canals (Desai 1948). The colonial government found the cost of building irrigation infrastructure prohibitively high, leaving agriculture at the mercy of the rain and groundwater irrigation. In regions like central and southern Gujarat, which were more prosperous, village elites from leading castes had complete ownership of the wells. This is termed ‘community control,’ but in actuality it benefitted only a small clutch of elite villagers (Hardiman 1998, 2007).

Tubewell partnerships are formed around caste affiliations, and often “caste is the glue that binds the partners together,” leaving lower castes disadvantaged. Their inability to form tubewell partnerships on a large scale removes them from the groundwater market (Dubash 2002). Similarly, Hardiman’s (2007) study on water scarcity in Gujarat illustrates how Patidars (the well owners) operate on capitalist principles when they sell water to their subordinates, and in the process reinforce caste domination and social inequality. Therefore, the groundwater markets in India—most of which are monopolies (Anderson 2005; Sekhri 2012) have emerged across rural India in the past few decades (see Aggarwal 1999; Dubash 2002; Janakarajan 1993, 1994; Mukherji 2007; Pant 1992; Prakash 2005; Shah and Ballabh 1997; Tiwary 2010; Wood 1995). These groundwater markets have become a critical water source for irrigation, operating—crucially—under a private property regime.

⁵ The Central Ground Water Board (CGWB) categories the groundwater blocks according to the decline in water level and the stage of groundwater use (the latter is the annual groundwater draft expressed as a percentage of net annual groundwater availability): (i) semi-critical or grey (stage > 70 per cent and < 100 percent: significant long-term decline in pre- or post-monsoonal water level); (ii) critical or dark (stage > 90 percent and < 100 percent: significant long-term decline in both pre- and post-monsoonal water levels); and overexploited (stage > 100 percent: significant long-term decline in pre or post-monsoonal water level or both).

Groundwater appears as an open-access good of which anybody can extract as much as they want from the ground below, since there is no social authority that defines and enforces the rights of individuals or a group to use open access resources. Therefore, each resource user ignores the consequences of his behavior on others (Bromley 1992). However, the open access nature of groundwater is restricted due to the fact that land owners are able to gain access only if they have the means to invest in the necessary infrastructure required for the extraction of water. Consequently, in reality, groundwater open access is a ‘restricted’ or ‘skewed’ open access regime.

The groundwater markets are informal. Transactions between water sellers and water buyers are carried out without legal sanction or regulation. The markets are also localised, as water vending is made to fellow villagers (Shah 1993; Foster and Sekhri 2008). The water in the groundwater markets is transported from the seller’s well to the buyer’s field by lined or unlined field channels or underground pipe networks (Foster and Sekhri 2008). The payments for the water transactions are in cash or kind, and different types of contracts like output sharing, labours contracts, and input-output sharing have emerged (Shah 1993).

In terms of depth and conditions of access, physical characteristics of groundwater have a strong connotation with patterns of agrarian differentiation (Prakash 2005). Private ownership and unregulated extraction in northern Gujarat have led to competitive well-deepening, forcing larger farmers to struggle to maintain access to dwindling water resources through negotiations in the political space. Capital investment in groundwater pumping equipment is high, which frequently results in the control of groundwater by wealthy farmers. In the Banaskantha and Mehsana districts ‘tubewell companies’ have emerged. Operating like joint companies, these ventures result from adjoining farmers’ pooling capital and sharing water based on investment. Individually owned tubewells are rare because of extensive investment and risk of failure associated with installing deep tubewells. Cooperative investment mitigates the risk (Shah and Bhattacharya 1993).

Hence, groundwater is appropriated by large-scale landholding farmers with the capital to invest, whereas poorer farmers are locked in a relationship of dependency on wealthy tubewell owners (Bhatia 1992; Dubash 2002; Mukherji 2006; Prakash 2005). Tubewell partnerships are formed around caste affiliations between landholders belonging to the same caste; as so often happens in rural India, the plots are contiguous with same caste and ethnic backgrounds (Naz 2014).⁶ Prakash’s

⁶ For more detail, see the work of Dubash (2002), Hardiman (2007), Prakash (2005), and Sekhri (2012).

(2005) study explains how inequity in access to groundwater has also led to marginal farmers becoming sharecroppers, favouring landlords who also control groundwater. Many small and marginal farmers tend to sell their land and become sharecroppers, increasing their vulnerability. The farmers' lobby comprises mostly of large landholding farmers, also called "bullock capitalists" who are organised on caste basis to safeguard their interests (Rudolph and Rudolph 1987),⁷ with little regard for the concerns of small and marginal farmers or agricultural labourers. In managing water, indirect measures like limiting institutional credit, electricity access, and pricing have made little impact and have proven impossible to implement successfully. Wealthy farmers are usually able to bypass regulations, obtain credit from their social networks and private credit cooperatives, or get access to electricity.

Case Study: "Mathnaa's" Gujarat

Mathnaa is located in Sabarkantha district, in northeast Gujarat. It is an agricultural village, where primarily two crops are sown—*kharif* and *rabi*.⁸ Due to erratic rainfall and water scarcity, it is not possible to plant major crops during the summer months, except fodder or seasonal vegetables for subsistence. The village, divided along caste, tribe, gender, and wealth, has a population of 1,150, with Hindus predominating and "tribes"/*adivasi*⁹ also constitute a significant proportion of the inhabitants. Caste determines living space and frames social interaction over water. The village has several clusters of settlements along the lines of caste or *was* ("residential abodes" in Gujarati language). There are eight *Jadeja* (*Rajputs*) households, and they occupy the highest status in Mathnaa. These households consider themselves superior to other castes, trace their origin back to *Sambha*,

⁷ These bullock capitalists are the newly hegemonic large landholding farmers in the Indian country side, as they are identified as the carriers of the agrarian capitalism in India. In the case of Gujarat, they are mostly the *Patels* or *Patidars*, who also happen to have a strong hold on rural politics and lobbying in the state government.

⁸ *Kharif*, or rainfed, crops are sown in June and July, and are harvested in September-October. In Mathnaa, they consist of maize, millet, pulses, castor, and cotton. *Rabi*, or irrigated, crops are sown in October-November and harvested in February-March. *Rabi* crops grown in Mathnaa are wheat, mustard, gram, potatoes, and turmeric.

⁹ *Adivasi* literally means "original/earliest settler." This term is used to designate the indigenous people of India who are officially known as 'Scheduled Tribes' (ST) and who make up around 8 percent of the Indian population. Scheduled Tribes comprise a list of marginalised indigenous (tribal) people, including different ethnic sub-groups. In this paper I use the word *Adivasi* instead of their tribe name, as the term *Adivasi* is widely used in the village to address them.

son of Lord Krishna, and believe to have ruled Sabarkantha and driven away tribes to the forest (Mukherjee 2003). The households legally own around 113 hectares of land legally, but also control encroachments on village *gauchar* (pasture) apart from that. *Jadejas'* social standing is also visible through their big concrete houses, tractors, motorcycles, and the use of big brass utensils (a symbol of social status) while others in the village use earthen pots for storing water.

Next in the hierarchy are *Thakores*, constituting 100 households. *Thakores* claim descent from the *Rajputs*, and are an agriculture caste. In Mathnaa, about 137 hectares of land is owned by these hundred households. There are also 56 *Dungri Garasia* households, who are *Adivasis*, an indigenous population. In total, 122 hectares of land is owned by *Adavasi* households. At the bottom of the caste hierarchy are 36 *Dalit* households. Formerly known as *Harijans* or 'Untouchables'—'untouchability' having formally been abolished in India—they are still discriminated against informally. There is also intra- *Dalit* hierarchy, and those living in Mathnaa come from the group of *chamars*. While their original occupation was skinning the hides of dead animals, in Mathnaa they practice agriculture. *Dalits* do not have any control of Mathnaa's common lands and live on the periphery of the village. Nor are they allowed to fetch water from the village common wells during times of scarcity, even in summers. Water, unlike earth, is a standard by which we can measure how deeply the essence of caste has penetrated and perverted social relations (Guru 2009).

Note that the *Jadejas* and *Thakores*—or 69 percent of large farmers—own more than 250 hectares of land in Mathnaa. Previously, the main source of irrigation in Mathnaa was open-dug wells, operated by a by diesel or electric motor. There were approximately 50 open-dug wells 60 to 75 feet deep before 1999 (all have dried up since). In the 1980s the *Jadejas* had ushered in an ecological shift by securing a diesel engine, installing it next to a well, and using the water for irrigation. At the same time the others remained dependent on rain but they soon followed suite. In the words of Jethusingh Jadeja, whose father was the first person in Mathnaa to use a motor for an open well:

My father introduced the engines to everyone in Mathnaa in the late 1980s. Many in Mathnaa had open dug wells but were not using any motor on them, due to lack of information about such motors and also because diesel was expensive. The majority of people in Mathnaa practiced only rainfed agriculture. Later with rural electrification, which came at a subsidised rate, people got motors. Electricity was cheap and people could afford it, although the electricity supply was not regular. (Interview with author, October 15, 2008)

Many farmers had embraced mechanisation by the late 1980s. Water was found in abundance at short depths below the surface. Then, in the year 2000, a member of the *Jadeja* family introduced borewell technology. In the words of Daljeetsingh Jadeja:

My family brought this technology to Mathnaa, just as my uncle Jethusingh had introduced the electric motor into open dug well operation in the late '80s. Once we got the borewells installed, others also slowly started getting the borewells on their fields. When they saw the borewell water pumping capacity, many others were inspired to have one of their own. (Interview with author, November 20, 2008)

The number of borewells in Mathnaa increased thereafter. By 2013 there were about 24 borewells 200-250 feet deep and owned by different caste groups (*Jadejas* 4, *Thakore* 11, *Dalits* 2, *Adivasi* 7). In Mathnaa, borewells are collectively owned by a group of relatives who are often the wealthiest amongst their own caste groups. Unlike the 'tubewell companies' in Banaskantha and Mehsana districts of northern Gujarat—resulting as noted earlier from capital accumulation by rich farmers—farmers in Mathnaa have small and fragmented landholdings, which leads them to assume kinship-based collective ownership of smaller bore and tubewells. As one farmer explained, it was essential to switch to other means:

The rate at which water was sold has changed. Now the majority of the people's wells have dried up. Few people in Mathnaa have borewells and buying water is turning out to be expensive due to the new electricity scheme. Moreover, the rains have not been very good for the past few years, so the viable option is to own a borewell collectively. (Interview with author, October 6, 2008)

Wells are bored on private land, as a result of which no one can stop the construction of private wells or borewells. Regulations set minimum distances between borewells, but these are not followed.¹⁰ For drinking water, Mathnaa has 22 government-owned hand pumps under the village *panchayat* (elected council) supervision, located in each caste quarter in the village. Out of these, only ten were in working order in 2013, which led to drinking water scarcity.

¹⁰ Gujarat was the first Indian state to pass groundwater legislation in the year 1976 to deal with the regulation and licensing of tubewell construction and to control the use of groundwater. But its implementation proved to be very difficult as the regulation was usually bypassed.

Irrigation is a resource of ‘unusual social power,’ as argued by Hunt and Hunt (1976), contributing to better harvests and poverty reduction, but it can also increase social inequality (Epstein 1973). There is clear inequality around landholdings and access to water in Mathnaa. This can be observed in the context of irrigation facilities and ownership patterns of borewells, which intensify social inequality in my case study. Thus, privatisation and inequality in landholding leads to inequity in access to groundwater, as poor farmers are unable to invest in the required technology, and as a consequence remain excluded from beneficial groundwater extraction. This in turn further perpetrates inequality along caste lines.

Mathnaa’s Groundwater Market: Power Dynamics

Mathnaa did not have an extensive water market before the year 2000, as irrigation was organised through open-dug wells running on electric motors and rain-fed irrigation. Then, as I noted, three factors led to the emergence of the groundwater market: (1) borewell technology came to the village in the year 2000; (2) the majority of the dug wells had dried, no longer meeting the agricultural water demand (although subsistence agriculture continued to be practiced); and (3) check dams were constructed near the borewells as part of the watershed project.¹¹

There was no standardised price for water. Instead, the price-point was determined by the caste affiliation of buyers and sellers, ranging initially from Indian Rupees (INR) 15 to 25 per hour of water supplied for irrigation.¹² After 2005 the price of water escalated and now a uniform water price for irrigation is prevalent, irrespective of the caste affiliations of the borewell owners. As I have described elsewhere (Naz 2014), this is a result of the newly introduced *Jyotigram* Scheme (JGS),

¹¹ Check dams are low cemented or earthen barriers made to capture monsoon run-off in empty streambeds, creating a series of small reservoirs which percolate to nearby wells and recharge the groundwater aquifers. The watershed development project in Mathnaa was started under the Integrated Wastelands Development Programme (IWDP) in 1999 by a local NGO, under the Common Guidelines of 1994. For more detail see Naz 2014.

¹² 1 Indian Rupee is equal to 0.016 USD, therefore 15 INR = 0.24 USD and 25 INR = 0.41 USD, respectively.

which makes electricity no longer available at a low flat rate.¹³ In response, Mathnaa's water lords increased prices. 80 percent of water buyers and 64 percent of water sellers noted that prices had increased in the informal groundwater market due to the *Jyotirgram* Scheme (Naz 2014). Although all of them agreed that the electricity supply had improved greatly, they blamed the JGS for the increase in water prices. Then, in 2008-2009, whilst I was in the field, water prices further increased from 65 to an unprecedented 75 Indian Rupees.¹⁴ Different reasons were cited, including less rainfall, depleting water resources, rising electricity cost, along with the extortion of rents by the castes controlling water. In addition, one-third share of the crop, or *trijo bhag panino*, may be paid in kind lieu of cash. As a result of increase in water prices, the lower castes have turned into sharecroppers and often participate in off-farm activities such as working as daily labourers or doing casual labour on construction sites in nearby towns.

Whilst location determines transactions over water for irrigation, drinking water may be purchased from anyone who is above one's caste. Drinking water rates are determined by the individual water sellers of each caste. In village and Hindu cosmology, water is sacred, possessing cleansing and purifying qualities. Caste and tradition have clear stipulations as to purity and pollution regarding water which may or may not be drunk. Such views are endorsed by all the residents of Mathnaa, irrespective of caste. For example, *Thakores* do not buy drinking water from *Dalit* or *Adivasis*, as their water is considered polluted and unfit to be placed in pots next to the idols of gods and goddesses, as practiced in other households. As one person put it:

Our *samaj* [community] cannot buy drinking water from the *Harijans*, as it will put us in *paap* [sin] and we will get impure. So there's no question of us buying (drinking) water from 'untouchable' borewell owners. But we will certainly buy it for irrigation. (Interview with author, September 19, 2008)

Here it is the purpose for which water is used and not the source of the water (borewell) that is the critical factor for villagers buying water. Water, which is an everyday, commonplace, utilitarian

¹³ Under the *Jyotirgram* (Lighted Village) Scheme (JGS), a separate electricity supply is provided to domestic and agriculture-related activities in villages. The scheme was initially launched as a pilot project in eight districts of Gujarat, but by November 2004 it was extended to the entire state, assuring 24-hour supply for domestic use and 8 hours for agriculture. This has helped in curtailing the overexploitation of groundwater pumping through illegal means, and is described by the government of Gujarat as a win-win solution (Shah et al. 2008).

¹⁴ 65 INR = 1.06 USD and 75 INR = 1.22 USD, respectively.

and mundane aspect of life in its profane sense, acquires a sacred meaning when kept next to religious iconography, evoking principles of reverence, respect, mystery, awe and honor (Durkheim 1965). Hence, the concept of Durkheim's sacred and profane is prevalent in the water context in India. Water becomes a metaphor expressive of differences (Mehta 2007). In line with political ecology's insistence that power structures access to natural resources, water politics in Mathnaa illustrate the hegemonic control of upper-caste water lords.

Conclusion

The upper castes take their cue from *Manu's* repressive code and use water for creating a perpetual division, rendering some bodies ritually 'pure' and others everlastingly 'impure' (Guru 2009).¹⁵ This bias is exploited by upper-caste water lords to prevent the lower castes from actively participating in the groundwater market. Ideas of caste purity construct the hierarchy of a vertical system. Put another way, upper-caste water lords use the social barriers of caste within a larger realm of sacredness and profanity to limit the possibility of the water exchange in the groundwater market. The water lords are using the control of water exchange for profit as well as for maintaining their hegemony over the water resources in Mathnaa.

Caste as source of identity, form of social organization, and basis for staking claims in resource build-up and authority is critical in Mathnaa, a region where inequalities in landholding and caste are directly related. The higher the caste status, the larger the landholding. Government institutions add to the inequity by ignoring the power relations underlying social and economic hierarchies. Caste is the ultimate determinant in landholding, ownership of borewells, access to technology, and shaping the groundwater market. The need of the hour in Gujarat is to have strong institutional reforms in the water sector. This could be done if the government carefully took into consideration the size of the village population and installed more public hand pumps and tubewells/borewells to enhance access to and promote careful use of drinking and irrigation water. Furthermore, the local block administration should be made accountable for the maintenance of the hand pumps and borewells. This may not be an easy task, as the resource-rich caste groups in Gujarat constitute the strongest political influence in state policies (Mehta 2007) and the government

¹⁵ *Manusmriti* (The Laws of Manu) is the foundation of Hindu religious law and social conduct written by Manu, and is popularly known as the *Manu* code.

will not want to alienate a farming community that forms the core of their vote bank-politics (Mukherji 2007; Naz 2014).

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