

Whose scarcity? Whose property? The case of water in western India [☆]

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Abstract

Water scarcity is usually portrayed in absolute or volumetric terms. But do most analyses of scarcity focus on how the ‘problem’ of scarcity is constructed, the need to disaggregate users and their entitlements and the imperative to look at the politics of distribution and technology choice within a frame of political economy? By taking the case of water scarcity in Kutch, western India which is supposed to benefit from the controversial Sardar Sarovar Narmada Project (SSP), the paper demonstrates how scarcity has emerged as a ‘meta-narrative’ that justifies controversial schemes such as large dams, allows for simplistic portrayals of property rights and resource conflicts and also ignores the cultural and symbolic dimensions of resources such as water. Moreover, water scarcity tends to be naturalised and its anthropogenic dimensions are whitewashed. It is thus necessary to distinguish between the biophysical aspects of scarcity that are lived and experienced differently by different people and its ‘constructed’ aspects. The paper draws on a wide range of conceptual approaches such as political ecology, common property resource theory and post-institutional approaches to highlight that scarcity is not a natural condition. Instead, it is usually socially mediated and the result of socio-political and institutional processes. It also argues that while institutional perspectives have played a key role in moving away from alarmist portrayals of scarcity and property rights by demonstrating how local people can manage and live with scarcity, they need to be complemented by analyses that locate property rights within wider historical, cultural and socio-political processes that combine both discursive and materialist analyses.

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Unpacking problematic notions of scarcity

Water scarcity has emerged as one of the most pressing problems in the 21st century. It is estimated that 2.7 billion people will face water scarcity by 2025 (UN, 2003). Against a growing alarmism of ‘water wars’ (e.g., Shiva, 2002), several global agencies, national governments and NGOs have been concerned with emerging water ‘crises’ and potential water conflicts (e.g., UN, 2003; FAO, 2003). For

example, projections of water supply and population growth rates are predicting a dark scenario of the future: while the average per capita supply of water will decrease by one-third by 2025, water use will increase by about 50% during the same period (Vision 21, 2000).

But most academic and policy portrayals of water scarcity largely focus on the finite nature of water supplies (e.g., Shiklomanov, 1998). Countries are also classified according to a ‘water stress index’ on the basis of their annual water resources and population (see Falkenmark and Widstrand, 1992), and water scarcity scenarios are created for groupings of countries or regions based on projections of future water demands and needs (e.g., Rosengrant et al., 2002). While there is some acknowledgement of the differences between water shortages—which refer to physical amounts—and water scarcity—which could be a social construct or the result of affluence, lifestyle choices and expectations (see for example Winpenny, n.d.)—largely most of the literature focuses on volumetric and physical measures, especially with respect to both a

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growing population and competing demands for water. More nuances are provided by a political science and international relations literature that teases out differences in the ‘orders’ of scarcity ranging from physical (first-order scarcity) to second-order or socio-economic scarcity (referring to the lack of ability to adapt to the problem of physical scarcity) to third-order scarcity that refers to the socio-political, technological and cultural changes that a society must undertake to deal with scarcity (see for example, Wolfe and Brooks, 2003; Ohlsson and Turton, 2000; Allan, 1998). But even these debates fail to distinguish adequately between the socially constructed and biophysical aspects of scarcity. They also lack a focus on how the ‘problem’ of scarcity is constructed and how a problematic framing might exacerbate scarcity conditions, on the need to disaggregate users and their entitlements and to look at the politics of distribution within a frame of political economy. Neither do they focus upfront on the politics underlying how technology choices are made.

Why does it matter? Three, important implications arise through these conventional and sometimes problematic framings of scarcity. One, the scarcity of essential goods is often used to argue for the need for organising and allocating property. Modern economics, for example, is built on the assumption that an increase in human needs leads to scarcity of goods and markets or institutions or both are needed to mediate the transactions of scarce or ‘economic goods’ (such as water and land), which are made the objects of property (Xenos, 1987). In the water sector, this line of thinking was endorsed at the Dublin conference in 1992, where water was recognised as having an economic value in its competing uses. Through the 1990s, thus, water reform processes have instituted controversial pricing and cost recovery mechanisms as well as the institutionalisation of formal tradable rights to water, in order to facilitate the emergence of water markets. These debates however highlight the economic aspects of water, rather than focus on symbolic and cultural aspects. However, the declaration of water as an economic good still remains highly controversial in the water domain because it blanks out the multi-faceted nature of water which my study demonstrates (see also Mehta, 2004).

Two, scarcity underpins much thinking around conflicts arising through competing claims around scarce property rights/resources. In the water domain, the popular assertion of global water wars is well known. More generally, in the 1990s, there was a surge of literature positing links between natural resource scarcity and violent conflict. For example, work by Thomas Homer-Dixon (1994) has argued, for example, that declining environmental resources such as clean water accompanied by large-scale movements of people and the resultant economic deprivation would all lead to conflicts and resource wars. By drawing on a series of case studies from around the world, this work demonstrates that environmental scarcity plays an independent role in causing conflict. Even though other factors such as ideology, power relations, unequal property

rights matter too, they are subordinate to environmental scarcity which is the main causal factor. Examples where, despite scarcity, cooperation rather than conflict occurred are largely ignored. The focus on environmental scarcity as a causal variable tends to ignore other explanatory variables (see Peluso and Watts, 2001). Scarcity is not seen as the result of powerful actors getting away with resource appropriation and thus enhancing degradation. Moreover, ‘the politics of distribution disappear into the environmental scarcity concept’ (Hauge and Ellingsen, 1998).

Three, ways in which scarcity can encourage cooperation are neglected. This has already been well argued in a large body of approaches grounded in Common Property Resources (CPR) theory, which has links with New Institutional Economics (NIE). The works by writers such as Ostrom (1990); Bromley and Cernea (1989); Wade (1988) and Berkes (1989) have contributed significantly to establishing that institutions matter and that local people, as well as state governments, can successfully manage resources through property regimes varying in scale and space. They have also succeeded admirably in directing attention away from simplistic neo-Malthusian equations concerning population, resource availability and environmental degradation. In addition, common property scholars have shown how Hobbesian notions of anarchy — where states, regions, and people engage in non-cooperative strategies and fight over scarce resources — may not be an accurate or predictable scenario.

Finally, scarcity is a concept that can provide meta-level explanations for a wide range of phenomena over which humans ostensibly have no control and science and technology are evoked as the panaceas. For example, most policy interventions in developing countries still focus on supply solutions for dealing with increased water demand. These include large dams, the extra-basin transfer of water along with small-scale solutions such as rainwater harvesting.

This paper takes the view that it is important to link scarcity debates with socio-political perspectives that engage with discourses and contestations around scarcity. Socio-political perspectives of scarcity draw on a variety of disciplinary approaches including political ecology (Blaikie and Brookfield, 1987; Bryant, 1992; Peet and Watts, 1996; Forsyth, 2003) and Foucauldian discourse analysis. They ask questions about how environmental problems are perceived by different actors and the extent to which the definition is context-bound. They also explore the nature of relations of power and production at global and local levels, and how access to and control over resources or property rights are defined and contested in a wide range of areas: the household, community, state and world. Within this approach, contestations take place at two levels: first, over meaning and text in the very conception of environmental problems and second, in competing claims and conflicts over resources. The former emphasises the need to understand how environmental phenomena are constructed discursively and are perceived by a host of actors;

the latter stresses the need to understand the intricate web of power and social relations governing access to and control over natural resources at the macro and micro levels.

By drawing on water scarcity in Kutch, India, the paper argues that scarcity is not a natural condition. Instead, it is usually socially mediated and the result of socio-political processes. Often water scarcity tends to be naturalised and its anthropogenic dimensions are whitewashed. The paper argues that it is wrong to conceive of water scarcity only in absolute or volumetric terms. Instead there is an urgent need to link water scarcity with wider socio-political and institutional processes. It is also important to distinguish between the biophysical aspects of scarcity that are lived and experienced differently by different people and its 'constructed' aspects. The following analysis now attempts to do this through the case of Kutch in western India. It concludes by offering policy recommendations as well as some conceptual reflections on alternative ways to view water scarcity as well as institutions managing scarce resources.

The case of Kutch

The crescent-shaped peninsula of Kutch is the largest district in Gujarat and has an area of 45,612 km² constituting 23% of the state. Kutch is like an island as it is bound by the sea in the South and West and by the Ranns (salt marshlands) in the East and North. Apart from its very heterogeneous social and ethnic composition, the region has nine ecological zones (Gujarat Ecology Commission, 1994).

Kutch has an arid to semi-arid type of climate. Temperature ranges from 45 °C in the summer to 2 °C in winter. Humidity and evapotranspiration are high throughout the year. In some areas, groundwater supplies are abundant, but increasingly the levels are dropping. Overexploitation of the aquifer combined with sea water ingress has led to salinity in the water and soils and a sinking water table. The groundwater table sinks at a rate of a metre a year and in two taluks in the district fall under the over-exploitation category (Gujarat Ecology Commission, 1994, p. 14).

Rainfall is erratic and variable and averages about 350–370 mm. There is high regional variation, ranging from 440 in southern Kutch to 338 mm in western Kutch (Raju, 1995, p. 10). It only rains a few days a year, (15 on an average) with significant intra-district variations. In official discourse, Kutch is considered drought-prone, with droughts taking place every 2–3 years. Scarcity conditions in Kutch are often attributed to dwindling rainfall (see Mehta, 2005 for local level debates of scarcity). However, hydrologists have shown that this is a myth in many parts of the world (cf. Falkenmark et al., 1990) rainfall data of the past 60 years prior to 1997 indicates that while there have been erratic variations in the quantity of rainfall, there is no evidence to suggest that precipitation rates have

changed. A *t*-test, comparing the rainfall in Kutch over 30 years (1968–97) with the previous 30 years period (1938–67), revealed no significant difference ($t_{\text{obt}} = -0.28$, $p > 0.05_{2\text{-tail}}$, see Sinclair, 1998). Inference tests using rainfall data for the *taluks* of Abrasa, Bhuj and Rapar over a longer period (120 years) were conducted to compare rainfall differences existed between four 30-year periods (1878–1907, 1908–37, 1938–67 and 1968–97). A repeated measures analysis of variance revealed no significant differences over these periods (Sinclair, 1998).

Kutchi identity is moulded around water, or the lack of it. Villagers across the length and breadth of the district say that the lack of water is the cause of their misery, the depopulated villages and mass migration out of Kutch. Water scarcity is attributed to low rainfall, ever-decreasing rainfall and perennial droughts. There is a widespread belief in Kutch that due to the harsh climate, erratic water supply, declining groundwater sources and frequent droughts, the only solution is to get water from the rivers of Gujarat (Kutch Development Forum, 1993). That is why all hopes are often pinned on the controversial Sardar Sarovar Project (SSP) under construction on the River Narmada in Gujarat. The planned 163 m high dam is part of the ambitious Narmada Project, which comprises two mega and several large dams. The SSP is also made out to be Gujarat's lifeline (see Raj, 1991) and is also made out by many to be *the* only hope for Kutch.¹ At the time of writing, the dam's height is at about 117 m. Its construction has been very slow owing to cost and time overruns and due to a highly dynamic protest movement that has been highlighting, among other things, the severe problems concerning resettling and rehabilitating the communities affected by the dam.

The politics of scarcity: Kutch and the SSP

Plans to provide water for Kutch from the river Narmada have a long history and are no less complicated than the history of the Sardar Sarovar dam itself. Though the project was conceived almost a century ago, actual work has been stalled due to inter-state conflicts such as the height of the dam, the extent of submergence and the sharing of benefits. Different committees were set up to resolve all these inter-state conflicts such as the Narmada Water Disputes Tribunal of 1979. Kutchis maintain that the state of Gujarat did not represent their interests adequately and were biased in favour of obtaining benefits for Central Gujarat, which has far better water endowments. As a result, during the course of several rounds of negotiations, Kutch successively lost out. From an original plan of three canals, the Narmada Water Disputes Tribunal sanctioned only the canal along the coast in

¹For reasons of space, it is impossible to provide all the details on the project (see Mehta (2005) for more details on Kutch and the SSP and Morse and Berger (1992) and Fischer (1995) for details on the Narmada project and its controversies).

1979. Instead of allowing for the irrigation of 3.82 lakh ha of land (one lakh = 100,000), only 38,445 ha of land were to get irrigation (Kutch Development Forum, 1993). In this way less than 2% of Kutch's area stands to benefit from the Kutch Branch Canal. Largely, all over Kutch and other parts of Gujarat it is large farmers and the agro-industrial lobbies that stand to gain the most, especially in Central Gujarat (see Mehta, 2005). By contrast, as I discuss soon, the interests of poorer groups, such as dryland cultivators and pastoralists, are neglected.

The present plan envisages a canal of 200 km in Kutch passing through a tiny coastal strip in Eastern and Southern Kutch. Not all of this area is considered to be drought-prone. Much of this strip is rich in groundwater endowments and is part of the belt that has experienced the green revolution in Kutch. The industrial belt of Kutch situated in the Kandla–Gandhidham area is also located in the command area. Thus, the needs of industrial residents and rich farmers may be met more than those of needy farmers in other drought-prone areas. It is ironic that water-hungry Kutch should be used by the dam proponents to justify the project, especially as it does not appear as though Kutch is likely to benefit significantly from the project. Recently a drinking water pipeline brought Narmada water to Samakhiyari village in Kutch, some 600 km northwest of the Sardar Sarovar dam in Gujarat State. This is the Narmada Pipeline Project designated to deliver safe drinking water to roughly 20 million people in more than 8000 villages in Gujarat. Preliminary studies suggest that the results so far have been mixed. Water regularity has been a problem in the villages surveyed, often the raw water provided has led to health problems and people were concerned about user fees (Talati et al., 2004).

Largely, the propaganda machinery used by the state as well as decades of political promises have succeeded in 'manufacturing' perceptions or myths that reinforce the bounty that is supposed to be the SSP. Here I borrow Herman and Chomsky's (1994) concept of 'Manufacturing Consent'. In a book titled by the same name they describe the role of the media in 'manufacturing' consent and describe how support is mobilised for special interests that dominate the state activity. In Gujarat, the state has 'manufactured' one dominant perception of water, namely, the Narmada project as the single solution. In doing so, political and business interests all over the state are being served.² The project is also legitimised in the name of the water-hungry in drought-prone Gujarat and Kutch. Additionally, the discourse on water resources management is hegemonised by this one project. The focus on externally supplied water has prevented water-harvesting

schemes from gaining wide-spread acceptance in Gujarat. Officials of the Gujarat State Land Development Corporation (GSLDC) feel that their work is marginalised in water resources departments in Kutch and Gandhinagar. Their efforts are stymied due to the state-wide obsession with the Narmada project and feel that their work is not taken seriously (Mehta, 2005). Villagers in the research village also echo these sentiments. Every year they watch helplessly as water flows unchecked into the Rann due to Kutch's topography. Thus it is necessary that water be sufficiently tapped through rainwater harvesting and catchment area treatment instead of all the attention being focussed on a large dam project.

In the late 1990s, Kutchis had largely bought into the grand narrative of this 'water wonder' of the SSP. They felt that it would solve all their problems and make up for the injustices of climate and history since the people felt betrayed that they have constantly had to live with a series of broken promises. The widespread 'manufactured' nature of debates around the SSP also helped obscure and whitewash the anthropogenic nature of scarcity to which I now turn.

The anthropogenic dimensions of scarcity

While the actual volume of water bestowed by the Rain God might not have changed, the severity of drought or scarcity is felt more acutely today than in the past. This manifests itself in concrete and biophysical dimensions. Scientists and local people maintain that the intensity of drought has increased (cf. Murishwar and Fernandes, 1988). There are several factors at play. The first factor is increasing *devegetation*, which has certainly taken place due to an increase in commercial logging activities in the last 5 decades. Prior to 1948, areas known as *Rakhals* were set aside, where tree cutting and grazing were prohibited. Despite their elitist nature, the *Rakhals* were successful in experiments concerning the types of trees suitable for Kutch's unique requirements and considerable forest cover was created (Rushbrook Williams, 1958, p. 29). After 1948, these institutional restrictions ceased to exist and there was a boom in unchecked logging. This has had serious repercussions on the vegetational cover of Kutch. The wild growth of *Prosopis juliflora* has also led to loss of grass cover and the undermining of indigenous tree species. Moreover, it is believed that *P. juliflora* neither attracts rain nor gives moisture to the soil even though it might conserve water within its own system. Bad water management practices have also played a role in vegetational reduction. The world famous grasslands in northern Kutch, for example, have suffered considerably due to the damming of Kutch's northern rivers. The damming stopped the annual inundation and natural fertilisation by the silt traditionally brought by the rivers. The grasslands are now dependent only on rainfall for their rejuvenation (Ferroukhi and Lyes, 1994, p. 41).

²For example, the Gujarat government has been promoting industries coming up along the 'Golden Corridor', largely situated in the SSP's command in Central Gujarat. It has attracted investments worth several hundred million rupees for this purpose (for further details see Mehta, 2005).

Another dimension to anthropogenic scarcity is the *overexploitation of groundwater aquifers*. Access to and control over groundwater in Kutch is marked by tremendous inequality. In my research village, ‘higher castes’ such as the Rajputs and Jadejas comprise less than 30% of the population but they control about 65% of the land. They also own most of the wells in the village. Well ownership goes hand in hand with land ownership. Those who have access to land, control the water below them. The rich irrigators in rural areas (popularly known as ‘water lords’) are often responsible for depleting vast amounts of groundwater resources. These water lords overcome groundwater constraints by their willingness and financial ability to invest in yearly or even monthly well digging, broadening and deepening operations. They are also successful at circumventing laws and making the best of institutional loopholes. The groundwater crisis, hence, is not just one of dwindling water levels, but instead a crisis of access and control over scarce resources.

However, in popular discourses promoted in the media and by politicians, the anthropogenic dimension of water scarcity is obscured (Mehta, 2005). The culpability of large farmers, bad water management practices and state policies is denied. The story of ‘dwindling rainfall’ obscures the fact that water has been misused and legislation is constantly circumvented. The power of the water lords remains unquestioned and their greed is exonerated. The water problem is seen as ‘natural’, something beyond human agency, even though rainfall and drought patterns are characterised by high uncertainty and variability. Projects such as the SSP are evoked as the only solution to set right what nature has ostensibly disturbed.

Local experiences of scarcity

I now turn to village-level experiences of water scarcity by drawing on findings from a village which I call Merka in eastern Kutch.³ The village is situated in the potential command area of the SSP. It has been declared a ‘no source’ village by the state, which means that existing water supplies in the village are not sufficient to provide water to its population. Water is, thus, supplied by the Gujarat Water Supply and Sewage Board either by tanker or by pipeline.

Merka is a multi-caste village. Caste is the basis for most social interactions and also plays a crucial role in local water resources management practices. Merka’s castes range from the erstwhile feudal lords (*Jadejas*) to *Rajputs* (warrior castes), pastoralists (*Rabaris*, *Bharvads*) and the *Dalits* (formerly known as Harijans or ‘untouchables’). Sources of water comprise tanks around the village where rainwater is collected, wells with groundwater and *viridas*, holes in the riverbed.

³I have chosen this pseudonym to protect the identity of those who participated in my research and because my friends in the village did not want the name of the village to be known to the public.

Institutional arrangements around water

In Hindu and village cosmology, water is considered pure and holy. It is considered to have a cleansing and purifying effect and is revered by all. Religious- and caste-based institutions provide rules of purity and pollution dictating whose water can be drunk, whose should be avoided and who should fetch the water. Water is used as a metaphor to accentuate differences and social distance between the groups in the village. Declarations of difference between communities are based on whether *the other’s* water can be drunk or not. Even though state-based institutions prohibit water-based discrimination, the ‘higher’ castes still insist on discriminatory practices. However, these rules and restrictions are often bent or even totally dropped under certain circumstances. For example, during drought periods ‘higher’ castes do not hesitate to drink water from *Dalit* wells. Thus even caste-based institutions display a certain degree of flexibility during times of drought. High caste villagers explain this in the following way: sub-terrain water is the same everywhere; it becomes differentiated only when it acquires the attributes of the user. Thus, according to village logic water in a well used by *Dalits* is not impure, but the water in a *Dalit’s* house is. This perception allows for flexibility in the otherwise strict caste-based water institutions.

This discussion reveals that water as a natural resource has symbolic, cultural and spiritual dimensions and is highly differentiated in its use in local contexts. Even though water is used as a metaphor to express difference, water-related rules and practices are sometimes bent and dropped. Official water resources management discourses (such as those endorsed in the 1992 Dublin principles) tend to focus on the material values of water. But merely viewing water through an economic lens can undermine its embeddedness in the everyday symbolic, cultural and social contexts within which people live their lives. In doing so, water is robbed of its multi-faceted meanings.

Merka’s social fabric is very heterogeneous and differentiated. Dominant castes still enjoy most control over the village’s natural resources. Most of the land is under the control of the *Jadejas* and the *Rajputs*. One *Rajput* clan owns over half the irrigated land. Even though their former glory may have declined, the erstwhile feudal chiefs, the *Jadejas*, exercise de facto control over the village commons, even though these lands officially come under the jurisdiction of the state.

Formal institutional arrangements, which are created by the state or by extension workers tend to neglect the differentiated nature of community. Water-directed interventions in Merka are usually directed towards and brokered by a few dominant elites, usually male leaders from the high castes. They are the ones who benefit from irrigation schemes, drought-relief programmes and other state-directed interventions. It is assumed that these leaders will speak with one voice for the whole village and that they are interested in collective benefits for all.

Traditional power structures sometimes override the more recent state-driven institutions, which aim to create an equitable use of land and water resources. For example, it is the uncodified customary arrangements that tend to prevail over state tenure arrangements in land arrangements. High caste families still continue to own vast hectares of land in the village despite state-introduced ceiling acts. Often formal institutional arrangements tend to reinforce the position of the traditional elites. For example, drought relief schemes encourage the rent-seeking activities of the elites. They ensure that the power status quo remains unchallenged. Planners often assume a homogeneous village, forgetting the different goals and priorities of the different village members.

In Merka, institutions governing water use are highly differentiated and often serve to reinforce dominant power and social relations. In some parts of the village, tanks are often the only water sources and are central to the lives of the people. They are used for bathing, drinking, watering livestock and, in some cases, irrigation. Until recently, tank management was the responsibility of the rich and powerful who would pay for their upkeep. Tank management went hand in hand with the notions of blessing and benediction. Hence, tank cleaning and management activities are considered to generate, an important form of symbolic capital (cf. Bourdieu, 1977) in the community. The gains arising out of tank management are therefore not just material but also symbolic, such as reward in the after-life and prosperity for one's descendants. By enhancing the power and status of tank benefactors, indigenous institutions thus reinforce the power and prestige of the rich and powerful in the community. In the past few decades, state-sponsored drought relief programmes have increasingly assumed responsibility for tank maintenance with the aim of drought proofing the area and eliminating water scarcity. Contrary to the popular view that these have displaced local initiatives, informal arrangements to manage tanks still exist. As and when the need arises local collections are initiated and tanks are de-silted. These activities do not proceed according to fixed rules, but instead have an ad hoc character and are rooted in religious practices and beliefs, instead of merely in natural resource management practices.

Living with scarcity

In rural Kutch, the outcome of every year is uncertain. Periods of abundance are interspersed with periods of dearth and impoverishment. Rainfall is largely characterised by uncertainty and can be seen to be 'regularly irregular'. What are the institutional arrangements that deal with this uncertainty and scarcity? Livelihood strategies display a high degree of flexibility. Let me begin with dryland agriculture and pastoralism and the links between the two.

Dryland agriculture employs a wide range of risk minimisation strategies such as the spreading of land assets

over different land parcels distributed over a variety of soil types. Decision-making regarding field preparation is often an innovative response to an ever-changing environment. For example, if villagers sense a lean year, they are likely to plant drought-hardy crops. If the year appears promising they invest in cotton. Crop-related decisions are not just dependent on exogenous factors such as the rainfall. Personal need, practicalities and collegiality towards field neighbours are also important factors. Thus, agricultural practices are flexible responses to situations at a given time and given place. They are adaptations to the year, particular soil conditions and to highly specific contingencies arising within the social world. For example, it is usual to confer with field neighbours and collectively negotiate on crops to be grown in a particular vicinity. To borrow Paul Richard's useful analogy, all these factors make agriculture in Kutch an ongoing performance which is a 'sequential adjustment to unpredictable conditions' (Richards, 1989, p. 41). Clearly of course, not all cultivators have uniform strategies. Large landowners with irrigation facilities enjoy the maximum buffer against uncertainty. By contrast, dryland cultivators and marginal farmers face the knocks of scarcity more.

The same resource base is also used by herders, given that the livestock-based economy has always been one of the most important sources of livelihood in Kutch. Kutch's semi-arid to arid type of climate encourages a vegetation of short annual grasses ideal for livestock rearing. The pastoralists are usually sedentary but during lean year's migration is a necessity given the uncertainty of rainfall and forage availability in the village environs. Those with large herds can afford to migrate for about 400 km. Migration thus allows pastoralists with large herds to adapt to a variable and heterogeneous environment. Due to this mobility they can exploit and access different social and ecological patches across the range. One always hopes, quite literally, that the grass is greener on the other side. The institutional arrangements need to be highly flexible and adaptable and entail constant decisions and responses to 'here' and now contingencies. Each site has its own set of forage opportunities and restrictions. The water situation is always different, as is the reception from the host community. Survival is only possible due to constant adaptation and ad hoc arrangements. Those with fewer animals (under 100) cannot afford to migrate and have to make do with locally available grasses.⁴

Migratory pastoralism is possible only due to the wide support and social networks spread out over a wide area, indicating the embeddedness of institutions in wider social structures. These social networks include kinship ties among other pastoralists but also reciprocal relationships

⁴Merka's pastoralists belong to the Rabari and Bharvad communities and comprise about 17% of the village population. About 70% of them claim to be landless, making livestock their chief form of wealth and property. Together they own only about 7% of Merka's land (see Mehta, 2005 for more details).

with farmers that have been built with farmers over several generations. The relationship between cultivators and pastoralists, who use the same resource base, has largely been synergistic. Landowners appreciated the manure provided by the pastoralists and they were allowed to pitch camp on fallow or harvested fields during their migratory routes. Recently, however, changes in agricultural patterns have made the relationships less symbiotic, with pastoralists losing out. State policies and interventions have tended to offer agricultural subventions to cultivators and have led to the introduction of double and triple cropping. The migration of pastoralists is actively discouraged with pastoralists being fined or areas being sealed off. There are no state policies in Kutch directed towards pastoralists or for the protection of common-pool resources (CPRs). This has led to a general lack of appreciation of the diverse ways in which different resource users use the same land and CPR resources. It has also led to a general undermining of the institutional flexibility displayed by cultivators and pastoralists as they adapt their livelihoods to deal with uncertainty and led to a general worsening of ties between the two groups.

Of course, the livelihood strategies in drought-prone Merka are not only very diverse. They also depend on people's occupational status and wealth assets. Rich irrigator families have the financial clout to dig wells and grow fodder crops that ensure fresh feed for their cattle, sometimes in the most extreme drought conditions. They do not suffer tremendously due to the hardships of drought. There is no change in their diet and milk continues to be drunk by all members, including women and girls. Drought for this family means fewer yields and fewer profits, which mean not having flowing cash which they would use to build a house or celebrate a wedding. In no way does drought entail misery or loss.

By contrast, drought means debt, hardship and a somewhat reduced intake of milk and milk products for poorer households who earn most of their money through seasonal labour and share-cropping. A poor *Dalit* family in 2000–01 reported how the failure of rains meant falling into the pernicious trap of being indebted to the money-lender. The intake of milk produce is drastically decreased and the dependence on casual labour and state-sponsored relief measures is strong. They also could not irrigate one of their fields near the dam because the rich irrigators had used up all the water in the tank. Since their relationship with them was one of patronage and dependence, they could not be overtly critical of them. Thus, scarcity and drought mean different things to different resource users and their experiences and perceptions are largely linked with people's wealth, assets and social positioning.

I experienced drought in Merka in 1995–96, which was a semi-scarcity year and in 2000, at the end of the 3-year drought cycle. In 2000 Merka's rainfall was better than the Kutchi or even Rapar average—it was about 263 mm (as opposed to 195 in Rapar) and those with irrigation facilities were not doing too badly. But the three years of

drought had visible manifestations: Unlike in 1995–96, people clearly seemed to be weighed down by fodder scarcity, low agricultural yields, debts and problems with *P. juliflora*. They also complained about the lack of flowing cash money and few or no off-farm employment facilities.

But, the relative normalcy of drought, no matter how difficult and hard, was also evident. In response to my questions about drought, people would laugh:

We are used to drought. Two years are bad and one year is good. This is our life. When it's bad we disappear away from the village. When the rains come, we race back. This is our home and we are happy here.

But this acceptance of the cyclical nature of drought and scarcity may not always persist. Even the highly adapted, flexible and diverse livelihood strategies of both cultivators and pastoralists will not always be able to withstand the problems of dwindling groundwater aquifers, devegetation, soil degradation and the lack of grass cover. There are limits to local resilience. I do not want to overly glorify 'adapting to and living with scarcity and uncertainty'. However understanding their dynamics will help planners and policy-makers overcome their 'dryland blindness' and promote interventions that contribute to mitigating scarcity, instead of naturalising it.

Largely, planners have not built on local people's coping strategies vis-à-vis scarcity. Instead of promoting dryland agriculture or agro-pastoralist occupations they have neglected them. They do not view scarcity as a temporally bound phenomenon. Instead, Kutch is made out to be permanently drought-prone and cursed by scarcity. State-sponsored water interventions have not succeeded in mitigating scarcity. In fact, some of them have exacerbated the water problems in certain areas, making scarcity indeed ever present and all pervasive. Planners also have idealised views of local communities and local institutions. These flawed interventions arise because of the prevailing world-views and experiences of policy-makers and their dryland blindness and because of institutional weaknesses in water management programmes. As long as this situation persists, scarcity and its accompanying 'scarcity industry' will remain an all-pervasive feature of life in Kutch.

Discussion

This paper has argued that scarcity is not necessarily 'natural'. Instead, it refers to a concrete period of dearth either of water, milk or fodder, which is felt acutely by the human and livestock population in rural areas. Several strategies, rooted in local knowledge systems and practices, exist to cope with seasonality and uncertainty and rural livelihoods have adapted to the variable and uncertain nature of Kutch's rainfall. The coping strategies against scarcity are highly differentiated. The wealthy of the village tend to have the most options and can resort to a wider range of coping strategies than the poor. To a certain

extent, social forms of differentiation such as caste, historical legacies and gender legitimise the unequal access to and control over scarce resources. These are the ‘lived and experienced’ aspects of scarcity.

Powerful discourses of scarcity in have largely served the interests of powerful people (e.g., politicians, business constituencies and irrigators). They have obscured the fact that there is highly unequal access to and control over land and water resources in Kutch. They also succeed in essentialising scarcity in Kutch and making it seem as ‘natural’, thus ignoring its anthropogenic nature. Scarcity is also used to legitimise the controversial SSP by evoking notions of its bounty and potential contribution to Gujarat’s development. But this consensus has largely been ‘manufactured’ due to the socio-political processes discussed. These are the ‘constructed’ or ‘manufactured’ aspects of scarcity. Thus, there emerges the need to analyse water scarcity at two levels: one, at the discursive level where scarcity is ‘constructed’ and two, at the material level as a biophysical problem where it is lived and experienced differently by different people.

The case study highlights several wider lessons for property rights debates. One, there are problems in merely focussing on the use or material values of resources or property. As demonstrated, water in Kutch has symbolic and cultural meanings that are not captured in policy debates. Two, technological ‘solutions’ to scarcity such as large dams are not neutral. Instead, they are contested as the SSP case demonstrates. Three, conflicts around property rights/resources may not be merely due to ‘scarcity’. Instead, conflicts emerge due to unequal access to and control over resources. This is because local ‘users’ have diverse and sometimes conflicting interests over property and resources (cf. Leach et al., 1997; Li, 1996; Mosse, 1997) as was demonstrated in the Kutch case. Four, the study also adds to a recent literature that has been concerned with advancing understandings of institutions managing common property. As discussed earlier, CPR debates have made very important contributions in highlighting the importance of informal institutions (e.g., Wade, 1988; Berkes, 1989; Ostrom, 1990, etc.). But the resulting policy prescriptions have focused largely on purposive and formal institutions. There is the assumption that institutions can be designed or crafted (cf. Ostrom, 1990) to serve certain natural resources management functions and enhance collective action. CPR theory, thus, focuses on establishing the conditions under which these institutions will work best, including clear resource boundaries, relative socio-economic homogeneity among users, sanctions, rules, monitoring and so on (for example, Ostrom, 1990; Wade, 1988). But a variety of empirical cases indicate that these conditions are not so easy to re-create or indeed, as the Kutch case shows, institutions may not be solely designed for natural resources management purposes. Moreover, CPR theory often assumes ‘disinterested technical planners whereas projects such as the SSP demonstrate otherwise.

Moreover, a range of work that could be termed as ‘post-institutionalism’⁵ (e.g., Mosse, 1997; Cleaver, 1998; Mehta et al., 2001) is shying away from viewing property and institutions in functionalist, managerialist and static terms. Instead, it stresses the rootedness of institutions in the specifics of local history and sociality (Mosse, 1997; Mehta et al., 2001; Cleaver, 1998; Potanski and Adams, 1998). Thus, issues concerning a wider political economy and history emerge as important and indeed the multiple understandings of property rights in everyday life. Property rights are viewed as inextricably linked with people’s cultures, beliefs and life-worlds. Institutions managing property are seen as social practices, as argued by a growing constituency of authors interested in natural resources management issues (Mosse, 1997; Cleaver, 1998; Berry, 1987; Li, 1996; Leach et al., 1997), attention is directed to how institutions are socially differentiated. They come to be seen as sites of negotiations and attention is paid to how people draw on a wide range of social and political institutions in order to claim or defend access to a particular resource (Berry, 1989). Thus negotiating access to resources has both material and symbolic outcomes. The case of Merka shows how one’s access to resources is also determined by one’s social and institutional positioning in wider social networks, most of which are unrelated to natural resources management (e.g., how pastoralists survive during migration due to wider social networks or how poor people’s wellbeing is linked to powerful patrons).

Finally, as discussed in the introduction the case study highlights how scarcity can be examined through socio-political perspectives that engage with discourses and contestations around scarcity. Thus, socio-political perspectives of scarcity focus on an analysis that is both discursive *and* materialist (cf. Escobar, 1996 and Yapa, 1995) where the nexus of power, ideas and social relations is the centrepiece of enquiry. Such an analysis tries to combine an ecological phenomenon (i.e., a shortage of food/water, etc.) with political economy. For example, Yapa talks of ‘discursive materialism’ (Yapa 1995, 1996) where the focus is not just on the social or material or discursive but on all three. The historian Ross (Ross, 1996) distinguishes between socially generated scarcity (insufficient necessities for some people and not others) v/s absolute scarcity (insufficient resources, no matter from equitably distributed). Similarly, my work has distinguished between ‘lived or experienced’ scarcity (something that local people experience cyclically due the biophysical shortage of food, water, fodder, etc.) and ‘constructed’ scarcity (something that is manufactured through socio-political processes to suit the interests of powerful players (in this case the dam-building lobby and the interests of rich irrigators and agro-industrialists). I also demonstrated

⁵I owe this term to David Mosse’s discussant commentary at a workshop on ‘Institutions and Uncertainty’ held at the Institute of Development Studies at the University of Sussex in November 2000. See also Mehta et al. (2001).

how the discursive nature of manufactured scarcity often exacerbates biophysical scarcity. Clearly there is the constructivist dilemma. To cast everything as ‘socially and politically constructed’ could in some ways deny the existence of a ‘real’ ecological crisis around water, food, land and so on. Constructivists could be accused of fiddling while Rome burns (Ross, 1996). This can be overcome if the materialist basis of the analysis is maintained and if the focus remains on how resource shortages and ecological degradation are primarily a result of the uneven social measures that manufacture scarcity all over the world for the economic and political gain of powerful interests.

Alternatives to the SSP

Given that water scarcity in arid areas arises due to the complex interplay of rain, soil, vegetation, human interventions and socio-political processes, holistic and long-term measures are required to tackle the problems of scarcity. Some of them include: the reduction of the run-off of rainwater into the sea through the creation of impediments along slopes so as to help the water to percolate into the soil and sub-soil strata; soil and water conservation within rather than on the surface of the land; restoration of vegetative cover; checking soil erosion; waste-land development; replenishment of groundwater resources; and upstream catchment area treatment so as to check reservoir siltation. The ‘dryland blindness’ of planners (cf. Mehta, 2005) has led to investments in surface water schemes and groundwater developments that do not perform well in Kutch due to its extreme climate and erratic and variable rainfall.

As discussed, the focus on externally supplied water has prevented water-harvesting schemes from gaining widespread acceptance in Gujarat. Due to the sharp gradient, all the 97 rivers and streams of Kutch are non-perennial and have a high run-off rate. Whatever little rain that falls is washed away and flows off in several streams and rivulets into the sea or into the Ranns. Thus is necessary that water is sufficiently tapped through rainwater harvesting and catchment area treatment. Institutional reform is also required which includes greater inter-agency cooperation and the introduction of demand driven approaches that do not tax the poor but curb wasteful consumption of water by industry and rich irrigators. Vigilance is also required to ensure that politicians and ministers do not sanction and implement schemes that are technically inviolable, economically unfeasible and largely serve vested interests. Moreover, if Narmada water ever reaches Kutch, rather than providing irrigation to a small area, it should be used to augment locally-available water and energy resources generated from rainwater harvesting techniques, watershed and biomass development and provide respite during drought years.

All this calls for democratising the debate on water resource management in Gujarat. Whether any of this is

possible in the present climate of Gujarat, which has been the site of growing religious and ideological intolerance is another matter. Considerable state resources continue to be invested in legitimising the project as Gujarat’s lifeline and even today anti-dam activists are seen to be enemies of the state and have often been confronted with state-sponsored violence. Thus, any discussion of the alternatives has not been possible.

Conclusion

I have used the case of Kutch to highlight the multifaceted nature of scarcity and how it is socially and politically constructed to meet certain ends. By taking the case of water, the paper questioned conventional understandings of water scarcity. It argued that water scarcity is not necessarily a given, but instead has both ‘lived/experienced’ as well as ‘constructed’ elements. Institutional perspectives have played in a key role in moving away from alarmist portrayals of scarcity and property rights by demonstrating how local people can manage and live with scarcity. Still, to be true to women and men’s everyday realities, they need to be complemented by analyses that locate property rights within wider historical, cultural and socio-political processes that combine both discursive and materialist analyses.

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