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RANGELANDS

Land tenure security and governance dynamics in Gujarat, India: Pastoral women's perspectives

RESEARCH REPORT 5

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Land tenure security and governance dynamics in Gujarat, India: Pastoral women's perspectives

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MARAG and ILRI teams

ACRONYMS

FES	Foundation for Ecological Security
FGD	Focus group discussion
HH	Household
ILRI	International Livestock Research Institute
MARAG	Maldhari Rural Action Group
NGO	Non-governmental organization
OBC	Other backward classes
PIM	Policies, Institutions and Markets
Rs	Rupees
SLM	Sustainable land management
UNEP	United Nations Environment Programme

EXECUTIVE SUMMARY

Common or communal grazing lands in India are a key resource for pastoralism and are managed through rich and diverse traditions of local communities and their indigenous knowledge. However, these commons are steadily disappearing due to development, legal and illegal land acquisition, 'land grabbing,' growing privatization and tremendous land speculation. The loss of the commons has forced significant changes in migratory routes and grazing patterns of pastoralists. Pastoralists are being forced out of pastoralism and/or to change their livelihood patterns and practices. So far, government policy has failed to address the impacts of these changes, and in many cases, policies unsuited to the livelihood practices and patterns of pastoralists have served to aggravate the situation. Many pastoralists have become destitute, which has decreased their social status and lowered their self-esteem.

Women can be more vulnerable than men to these land use changes. Traditionally, pastoral women were the primary economic actors in the pastoral community, sharing responsibilities with men such as managing the commons as needed and were strongly involved in decision-making processes. However, with less secure access to the commons women's roles have been diminished. The entire discourse of women and land in India is around individual land rights promoted by both government and non-governmental organizations (NGOs). There is little understanding and/or appreciation of the rights that women currently have in the commons and how these rights are protected through customary practices, rules and regulations. These common rights are threatened by individualization and privatization processes, and the latter do not necessarily offer women sufficient and/or the right kind of protection in the face of new and developing challenges.

This research attempts to improve the understanding of the sociopolitical, environmental and economic changes taking place in pastoral areas of Gujarat State from a pastoral women's perspective. The research was undertaken by researchers from a local NGO, MARAG (Maldhari Rural Action Group), who has been working with the community, especially women, for many years. Only women were interviewed in this study, which not only enabled women's insights and contributions to be central to the study, but also boosted their self-esteem and paved the way for women to continue engaging on these issues in the local community. A survey of 300 pastoralist women from different households was undertaken, together with focus group discussions and key informant interviews.

Pastoralist women in Gujarat State are able to access and use the commons in the same way as men. In fact, for pastoralism to work effectively, women and men need to work together with complimentary roles and responsibilities. However, increasingly this access and use is being challenged due to the rapid encroachment and loss of the commons together with their conversion to other uses. Commons, and particularly common grasslands, do not receive the same legal protection as forests, and even where a degree of protection may exist on paper, this is rarely put into practice.

One of the most important findings of the survey is the high dependence on the use of individual cropping lands for grazing in winter and summer seasons as more than 80% of pastoralists in Gujarat graze their livestock on the remains of crops (crop stubble). In the monsoon the dependence on cropping land is less but still substantial for 43% of families. The access to cropping land or grazing is governed by informal agreements between farmers and pastoralists, which are built on relations that the two actors have maintained over generations in many cases. However, the nature of these relationships is changing from social or in-kind, to monetary transactions.

As a result of such socio-economic changes taking place, the status of women in pastoral communities is reducing, and among other challenges, it is now more difficult for them to access money required to purchase what they and their household needs. Whereas women have a wealth of knowledge and skills about livestock, it clearly emerged that women do not have the same knowledge and skills about crop farming as men and, as a result, crop management decisions are made by men.

A meeting of pastoral women from 31 countries across the world that was held in Gujarat in 2010 clearly articulated what pastoral women need. However, little has changed in the last 10 years and women (and men) have continued to rapidly lose their access to the commons, as well as their social status and other benefits associated with these resources.

In this context women do not feel tenure secure to grazing lands and are not investing in land improvements or resource management. Women feel greater security to individual cropping lands that are becoming increasingly important in the more integrated crop-livestock systems that are developing. However, as more land is turned to crop land, more grasslands are being ploughed up. There is little investment in sustainable land management practices though there are some traditional methods of doing this in which women play a significant role. If the rangelands of Gujarat are to be protected and reach their full potential, then pastoralists should be given assistance in expanding these practices and investing more in rangeland management and restoration activities. A process such as participatory rangeland management (PRM), would be a strong framework for developing and implementing this (see Flintan and Cullis 2010).

In addition to the challenges that pastoralists in general are facing in terms of accessing land and resources, they also suffer from lack of government support and investments in areas such as veterinary services or markets for products such as wool, lack of economic opportunities, and insecurity during migrations etc. The majority of pastoralists, both men and women, want to continue the pastoralist way of life. In Gujarat, pastoralism provides women with clear roles and responsibilities and status, as well as control over resources such as finances and a voice in household decision-making. This should be the starting point for any support to women pastoralists, based on a good understanding of the local context and the changes taking place.

1.0 BACKGROUND TO THE STUDY

1.1 Context

1.1.1 General

Pastoralism is a way of life for many communities across the globe whilst also supporting conservation of natural resources and biodiversity and contributing significantly to national economies (UNEP 2019). Common or communal grazing lands are a key resource for pastoralism and are managed through rich and diverse traditions of indigenous knowledge of local communities providing fuel, fodder, water, fruits and grazing to both primary and secondary users.

In India, colonial laws criminalized several hunting and grazing groups, with the government considering pastoralism detrimental to its interests, particularly with regard to forests. The colonial state introduced the term 'wasteland' as a formal administrative category—a medieval English term for lands from which the government could not collect tax. Communities practising pastoralism and grazing have shared a long and difficult relationship with the colonial and the modern state. The innocuous sounding Cattle Trespass Act 1871 was one of the early laws that reflected the tensions between pastoralists and settled agriculture. It facilitated the establishment of pounds for stray cattle, the idea being to protect the interests of farmers or investors in agriculture who were authorized to impound stray cattle (plus camels, goats and sheep) that damaged their land. The Act was also meant to protect against damage from cattle to public roads, canals and embankments. This Act is still in force in many states of the country (FES 2010; Forest Survey of India 2011).

Following independence of India, the implementation of land reform laws of the 1950s resulted in a decline in the availability of common lands. Government officials found it more convenient to distribute common grazing lands as private land 'pattas' or landholdings to the landless, rather than deal with the problems of powerful landlords. Millions of hectares of lands classified as 'wastelands', which were largely submarginal lands unsuitable for cultivation, were distributed and became privatized, 49–86% of which ended up in the hands of the non-poor (FES 2010).

Those commons that survived have been steadily disappearing due to development, legal and illegal land acquisition, land grabbing,' growing privatization and tremendous land speculation (India Environment Portal 2006; Sharma et al. undated; Köhler-Rollefson 2017; Mahaptra 2012). In India, common land has deteriorated by about half over the past five decades because of encroachments, insecure tenure rights for local communities, and a lack of trust in communities in managing them, according to data from FES (Foundation of Ecological Studies). Many were classified as 'wastelands' or government land and diverted for quarrying, biofuel cultivation, mines, and other commercial purposes, displacing and depriving local communities. About half the country's rural households rely on forests and common land for their livelihood activities, and the loss of commons has hurt farmers, weavers, and potters, and triggered migration to the cities for jobs (Chandran 2017).

The loss of the commons has forced significant changes in migratory routes and grazing patterns of pastoralists. There is no clear definition of commons in government documents: commons are defined and categorized in many ways including grazing land, pasture land, forest commons, non-forest commons, or wasteland. Without a clear definition

of commons, it has been easy to change their land use, whilst it is also difficult for pastoralists and other land users to make a claim on them. In India the jurisdiction over commons differs, with pasture land jurisdiction vested in the 'Gram Panchayats' (the decision-making body of all the adult population of a village) but revenue wasteland under the custody of the Revenue Department. Though 'Panchayat Raj' (local self-governance) could be an advantage for local communities, the Panchayats are not clearly mandated about their responsibilities under any commons policy and thus these are often left to be defined according to the interests of individuals.

For the most part, pastoralists get included as an afterthought in any discussion on policy, livelihoods or environment. The voluminous Farmers Commission Report (PRS Legislative Research 2006) for instance has but two pages on pastoralists (Section 1.7.2). While the suggestions made in these two pages are sympathetic and considered, they stand quite isolated from the rest of the report (Kavoori 2010). There is no national policy on pastoralism or mobility. The National Livestock Policy (Government of India 2013) refers only to farmers and does not include the word pastoralism. There are no official statistics about the number of pastoralists in the country. This is despite the fact that and estimated 70% of India's meat and more than 50% of its milk is produced in extensive grazing systems (Köhler-Rollefson 2016).

But forests and the rights of those who use them are better protected. The Forest Rights Act of 2006 is a very progressive and powerful pro-people act, that gives stronger security of rights to forest communities dwelling in the and/or dependent on them, including community forest rights. However, still here the implementation of the Act has had numerous challenges, including for pastoralists trying to access the forests (FES 2010). For example, the Act requires the provision of proof of 75 years of dependency on a forest for the community to claim it. For pastoralists, showing this use, particularly where they have migrated, is highly challenging if not impossible.

Though there have been some efforts to improve security of local communities to the commons, schemes to intensify fodder and feed supplies for livestock by establishing pasture plots or irrigation fodder production since the 1970s, for example, have largely failed (Kavoori 2010). Following a court case in 2011[1] concerning some evictions from common land, the Supreme Court of India concluded that all states must prepare schemes to restore land wrongly taken from 'Gram Sabha' (village councils) or Gram Panchayat for the common use of villagers. In line with this, some state governments and courts have issued orders for safeguarding the commons. The Government of Rajasthan was the first state government that prepared a draft policy on common land where it placed the entire responsibility of identifying, developing and managing the commons with Gram Panchayat and Gram Sabha. One significant part of the policy is to identify common land area for grazing based on the calculation that 1/8 of a hectare is required for each cow. This implied that more grazing land was required to match the increase of livestock that has happened over the years. However, in reality grazing land has been decreasing, coupled with increasing restriction on pastoralists to stay within state borders.[2]

With restricted mobility and rapidly shrinking common property resources and restrictions on movement, conflict with and/or dependence on farmers, forests and/or the government is increasing. Pastoralists are being forced out of pastoralism and/or to change their livelihood patterns and practices. So far, government policy has failed to address the impacts of these changes, and in many cases, policies unsuited to the livelihood practices and patterns of pastoralists have served to aggravate the situation. Many pastoralists have become destitute, and their social status and self-esteem has decreased. Due to the specificity of their skills and lack of formal education, when pastoralists are forced to give up livestock rearing they find it difficult to find alternative employment. Those that do find work tend to end up becoming wage labourers at construction sites or similar low-paid insecure jobs. And it not only men that are forced into hard labour—there is also a growing trend of pastoralist women taking up jobs as housemaids in cities and towns. Some pastoralists have managed to connect and mobilize themselves, campaigning for their rights to land and other resources, however examples of this are scattered.

[1] October 2011 case of Jaspal Singh & Others vs. the state of Punjab in Supreme Court.

[2] MARAG is drafting a national policy on the commons from the perspective of pastoralists – it remains to be seen if this will be taken up by government.

1.1.2 Impacts on women more specifically

Women can be more vulnerable than men to changes in land use rights, often because they are more reliant on the use of natural resources than men as well as having fewer social and economic development options open to them. Indeed, the impacts of the above rapid socio-cultural and socio-economic changes have been heavily felt by women, often with negative consequences. Traditionally, pastoral women were primary economic actors in the pastoral community sharing responsibilities with men including managing the commons as needed and were strongly involved in decision-making processes. However, with less secure access to the commons, women's role has been diminished as well as their connection with nature and their culture, resulting in a poorly defined self-identity and a loss of self-worth, confidence and respect. Women are increasingly left alone with responsibility for the children and older members of the family as men migrate to find pastures or work. Women's roles are often not recognized in the current neo-liberal development discourse.

The entire discourse of women and land is around individual land rights promoted by both government and NGOs. There is little understanding and/or appreciation of the rights that women currently have in commons and how these are protected through customary practices, rules and regulations. These common rights are threatened by individualization and privatization processes, and the latter do not necessarily offer women sufficient and/or the right kind of protection in the face of new and developing challenges. This means that overall, women can be worse off and more vulnerable than men (as discussed by Köhler-Rollefson 2017). Indeed, women are now more likely to lose access to land and resources as the commons are privatized, with men usually the ones given land titles.

1.1.3 Gujarat State

Gujarat State in northeastern India has in the past attracted pastoralists due to its rich grasslands and its proximity to markets in towns. A popular pastoralist saying about the Panchal region for example goes thus:

> 'Khad pani ane khakhra nahi panano paar, chau paga charta fare na aave dukaad, vagar dive vadu kare pad joao Panchal.' (The land of Panchal region is such that one will find enough fodder, water, trees and rocks and where the animals can freely graze without any occurrence of famine, and the people do not need a lantern to get their food) (Venkatasubramanian and Ramnarain 2018).

Pastoralists have had customary rights over the commons. In times past, the Raj of the area gave pastoral communities the rights to access and use the commons in the immediate vicinity. A few of these allocations were properly documented, but the demarcation of most of them has relied on word-of-mouth. Because of this, there is conflict among the pastoralists and other communities dependent on these lands.

According to the policies of the state government of Gujarat, at least 40 acres need to be demarcated for every 100 animals that pastorals own but this rule has not been followed. However, the 'Management of Grazing Land Policy' or 'Gaucharni zameen na vyavasthapan karwa angeni niti' (Government of India 2015) does not support pastoralism, and rather promotes the privatization of land by fencing as exclosures, for cultivation and the growing and sale of grasses. It also promotes stall-feeding. Further, it sanctions land acquisition for development projects, with little room for public consultation. Moreover, the policy does not mention the role of women in local livelihoods including pastoralism, their use of commons, and completely ignores the traditional knowledge of women in developing and conserving the commons. Unsurprisingly women are not in any of the committees responsible for monitoring the implementation of the policy.

Silica sand mining is rampant in the Vagad region of Gujarat. Thousands of acres of land have been acquired both legally and illegally, and encroached upon by the government and more affluent, powerful community members. This has forced some pastoralists to sedentarize, many of them working as labourers in the mining firms. Other examples of companies taking significant amount of pastoralist lands (mainly common land) include Solar Parks in Gujarat, the development of economic zones and the Narmada Dam (see Hemalatha 2019; Waikar 2019).

According to one estimate from a MARAG survey of grazing land in Kutch, Surendranagar and Patan, up to 65% of common land in villages have been acquired for various uses (Venkatasubramanian and Ramnarain 2018). This stopped or changed migrations, with resulting reduction in livestock numbers as livestock management has become more expensive. A study by Venkatasubramanian and Ramnarain (2018), showed how Maldhari women describe a changing landscape that has impacted traditional pastoralism: several migration routes had now become busy state highways where fast-moving traffic poses risk of accidents for small animals. With no insurance for small stock, their injury or death receives no compensation. Due to the canal and more irrigated agriculture, seasonal cropping patterns and location of farms have changed and farmers, who once invited pastorals with their livestock for weeding and manure, now burn weeds, to keep away pastoralists.

1.1.4 Gujarati women

As described by Köhler-Rollefson (2017), for the Rabari (or Raika) women in Rajasthan, pastoralism is a family operation and dependent in equal parts on the contribution of women and men. Traditionally, women have had key roles in maintaining the biodiversity, and preserving the integrity, of the commons, and thus have participated in decision-making processes related to them. For example, women can control the cutting of plants and trees for fodder or fuel—the types that can be cut and when, where and how much is cut. For example, traditionally, a neem tree will never be cut during summer as it will dry out; it is cut in the rainy season when it flourishes. Cow dung collection has also been managed by women and their calculation of where and how much cow dung can be collected depends on the availability and the need for cow dung in a specific part of the rangeland. Sometimes children collect the dung under women's supervision, which is also a mechanism for passing on indigenous knowledge to the next generation.

Normally, women accompany men during migrations with livestock. While some Rabari (Raika) women opt to live in urban areas, many women pastoralists prefer moving with livestock in search of pasture to staying in the villages because migration lowers their workloads; nevertheless they are concerned about security and the dangers of nomadism.[3] Women have tremendous indigenous knowledge on livestock, milk management and animal health, as well as breeding practices. Traditionally, women in Rajasthan manage livestock, make value-added milk products and sell them in the market, negotiate the price, and manage the income from livestock products. However, with the advent of the 'white revolution' (so called due to cross-breeding local and exotic breeds for more milk) women's role in livestock management is reducing as men take over the management of the resulting more commercialized and intensive production system. Specific grasses are required to feed these hybrid cows, which has promoted agriculture and a more settled way of living with knock-on negative impacts for those that try to remain mobile. It has been indicated that women pastoralists who settle down soon lose their knowledge, as well as status and clear roles and responsibilities in livestock and land management (Köhler-Rollefson, 2017).

In the 1970s, the Government of Gujarat distributed land to landless people. 'Gopalak mandali' (pastoral committees) were formed in many pastoral areas giving pastoralists the management rights over the commons. However, none of these committees had women representatives and most of them are now defunct. A perverse shift to large stock requiring more care and the increased difficulty of migration that traditionally provided access to resources is now common in pastoral areas of the state. These processes have exacerbated work burdens of women pastoralists and increased anxieties related to livelihoods and nutritional security for pastoral families (Ramnarain 2019).

However, though these general trends have been documented over the past few years, there has been little attempt to dig deeper into the lives of pastoralist women and understand the impacts of the changes on their lives and livelihoods including in relation to tenure security, and the use, access and management of the commons.

[3] Similar concerns were given by Maldhari women in a study by Venkatasubramanian and Ramnarain (2018), who described practical difficulties added to women's anxiety during migration: keeping watch with little to no sleep in hostile terrain, cooking in the open on windy days (and domestic violence if food preparation was delayed due to these circumstances) or finding a secure place to sleep at night.

1.2 A pastoral women's perspective

This research attempts to improve the understanding of the sociopolitical, environmental and economic changes taking place in pastoral areas of Gujarat State from a pastoral women's perspective. It is anticipated that understanding how pastoral women access land and resources today, together with their perceptions of land and resource tenure security, and what implications this land security has on their relationship with land and resources, will result in better targeted land- and pastoral-related policies, legislation and development strategies.

The research aims to understand the role and contribution of pastoral women in accessing, managing, preserving and sustaining rangelands. Key questions for the research were:

1 What are pastoral women's rights to access and use the commons, especially rangelands?

2 What is pastoral women's role in pasture land management, preservation and sustenance, and their contributions, roles and responsibilities?

3 What are the different types and degrees of tenure security that women experience and at what point do pastoral women feel 'tenure secure'?

4 Once pastoral women feel tenure secure, what investments (if any) do they make in land and resources to, for example, improve productivity.

In addition, the research aimed to build understanding of land and natural resource management and governance issues in communities as the research is undertaken, and to strengthen the capacity of pastoral women in land and resource management.

The research was undertaken by researchers from a local NGO, Maldhari Rural Action Group (MARAG), who have been working with women in the community for several years. The trust that the NGO has built with the community made respondents feel comfortable to share their views and were thus more willing to speak freely. The MARAG team was supported by ILRI researchers in the planning of the research and analysing its findings. Only women were interviewed in this study, which not only gave room for women's insight and made their contribution central to the study, but also boosted their self-esteem and paved the way for women to continue engaging on these issues in the local community.

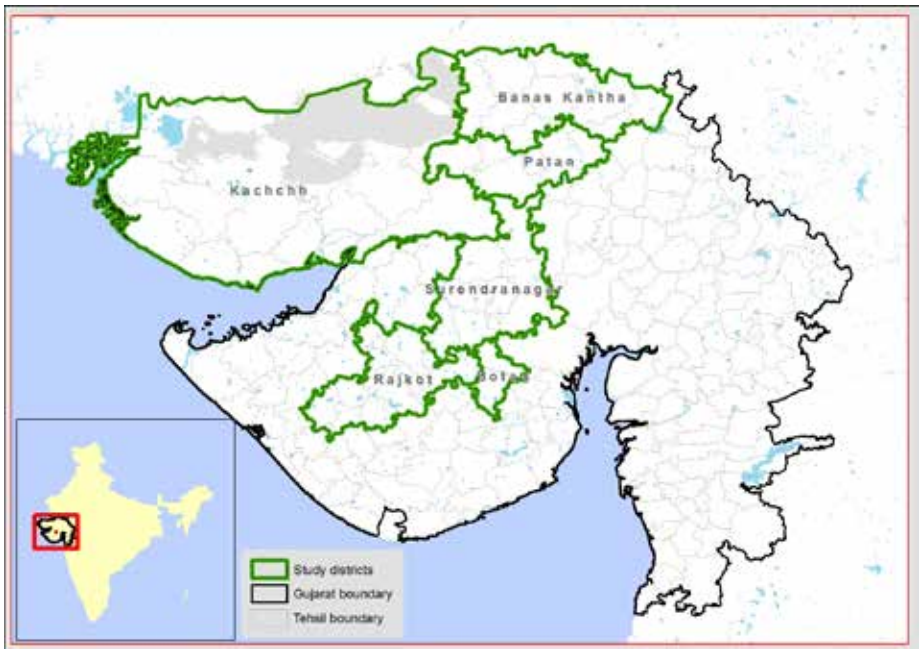
The research in India is part of a cross-country study in Ethiopia, Tanzania and India on pastoral women and land tenure and governance, contributing to the CGIAR Research Program on Policies, Institutions, and Markets (PIM) Flagship 5 on natural resource governance and tenure and the Environment Flagship of the Livestock CRP.

1.3 Research methods and tools

The research was conducted using a combination of qualitative and quantitative methods. The major tools for data collection were a household survey, focus group discussions (FGDs), interviews and on-site observation.

A survey of 300 pastoralist 'households' was undertaken to obtain information on the demographics of local populations, pastoral systems and changes in these, access to land and resources, decision-making processes and gender issues and land management investments. A household was defined as 'a group of people eating from the same kitchen.' The questionnaire covered topics such as household characteristics, income, livestock holdings, livelihoods, land and water access and investments in sustainable land management (SLM). Pastoralism exists across Gujarat, but it dominates in certain regions and this was where the study took place. The districts selected were Kutch, Patan, Rajkot, Botad, Banaskantha and Surendranagar (see Figure 1).

Figure 1. The research study areas.



The state of Gujarat is divided into 33 districts with each district further subdivided into blocks, and blocks divided into villages. The study took place in six districts, 15 blocks and within these, 56 villages. Thirty-nine per cent of respondents came from Kutch, 26% from Patan, 17% from Rajkot, 7% from Botad, 6% from Banaskantha and 5% from Surendranagar. The blocks percentage of those who came from each village were Bhachau (19%), Sami (18%), Vinchhiya (14%), Bhuj (12%), Santalpur (7%), Botad (7%), Danta (6%), Sayla (5%), Rapar (4%), Jasdan (3%), Lakhpat (2%), Nakhatrana (2%), Shankheshwar (2%), Dasada (0.3%), Patdi (0.3%) and other (0.4%).

Research was carried out in areas where all forms of pastoralism are found including those based on sheep, goat, cow, buffalo and camel production. The villages and the timing of the research were selected in order to have the greatest chance of finding pastoralists back from their migrations. Households were selected according to who was available at the time of the research.[4] Over 95% of interviews were conducted at the residence villages[5], with the remaining 5% carried out at the place of migration. Most pastoralists return to the residence villages from migration after the onset of monsoon rains in July/August and then restart with the winter migration in late October or early November after 'Dusshera' (a Hindu festival). The total migration period is usually around nine months.[6]

The focus of the study was on pastoralists who still practice pastoralism (rather than agro-pastoralism or those that had 'dropped-out' or were 'transitioning out' of pastoralism), though the sample also includes 16 households who no longer keep livestock but are dependent on alternative livelihoods. In total, 300 women were interviewed in the survey. The decision was made to only interview women to ensure that their perspective was fully captured.[7] Over 26% of those interviewed were 15–35 years old, 60% were 36–59 years old, and 14% were aged 60 years and above. Amongst the respondents, 95.7% were married, 3.7% were single women (widow), and 0.6% unmarried. All those married had moved to the current place of residence after marriage. Those that were not married were young and were born in the place of interview.

[4] This was because it was impossible to know who was available or not due to some families still being on migration, meaning that random sampling (e.g. from a village listing of households) would have been difficult.

[5] That is at the villages where pastoralist households (or the core of the households) spend the majority of the year as opposed to temporary villages established during migration.

[6] Venkatasubramanian and Ramnarain (2018) describe how in the case of migration by Maldharis, the routes and stops along the route are usually fixed in advance. Pastoralists in the Sayla-Chotila block of Surendranagar District migrate periodically when the need arises, usually to greener pastures in parts of South Gujarat, such as to Kheda and Vadodara districts. Small stock keepers are able to migrate further to other states such as Andhra Pradesh, Maharashtra and Chhattisgarh. Pastoralists' decisions to migrate depend upon the need, capacity, willingness, opportunities and costs.

[7] Normally when a husband and wife are interviewed together the husband dominates the conversation and the wife has little chance of sharing her perspective. As such the researchers made the purposeful choice of only interviewing women to overcome this challenge.

In addition, over 25 FGDs were conducted with pastoral women, men, community leaders and others to understand different views on the role of pastoral women in maintaining the pastoral way of life, access to land and resources, and investments in land and resources management etc. Interviews with government officials were also undertaken. The majority of FGDs were conducted as mixed group FGDs as men and women prefer to discuss together, but on seven occasions it was considered more appropriate to have separate male and female ones. During the FGDs, women who no longer migrate or keep livestock were involved in the discussions. The FGDs provided a space for dialogue with and between men and women and gave good insights into the dynamics and influences of gender on livestock management.

A team of 10 MARAG staff (mostly pastoralist themselves) were involved in the data collection supervised by a field coordinator to ensure quality data was collected. The survey was prepared with the help of ILRI. Data cleaning and entry was outsourced. Data analysis was carried out jointly by MARAG and ILRI. The team was aware of the biases that could come from they themselves conducting interviews and discussions with respondents due to their long association with the community. However, it was felt that the added value of them having good rapport and trust with the community was more beneficial than having outsiders carry out the data collection. The team was trained to avoid the potential biases, and several mock exercises were carried out with the team to practice framing and asking questions. The data was collected from August 2018 to early 2019 to catch the pastoralists after their return from the summer migration. The following sections provide the key results of this data collection, a discussion of the results and the study's conclusions.

2.0 SOCIO-ECONOMICS OF THE HOUSEHOLDS

2.1 Caste and community

The people interviewed comprised the Rabari (66%), Bharwad (32%) and Jat (2%) communities. All three are traditional pastoralist communities of Gujarat. The pastoralist communities in Gujarat are referred to as 'other backward classes' (OBC). The OBC is an official classification for castes and communities that are said to be educationally and socially disadvantaged. There are no official population estimates of pastoralist communities in Gujarat (or indeed for any pastoralist groups in any other state in India). However, it is known that the Rabari are the largest pastoral group in Gujarat followed by Bharwad, with both being found all over the district. Jat pastoralists are more concentrated in the Banni region of Kutch and are found in small numbers in the Bhachau block of Gujarat. The study included four Jat families from the Bhachau block.

2.2 Position in the household and the community

The average household (HH) size is approximately five (see Table 1). The respondents were asked the question: Who is the head of the household? This is a contentious question in the patriarchal social set-up that exists in India. Despite this, 40% of women said that they are the head of the household, even though they were married. Interestingly, 56% of Bharwad women said they are the head of the household whereas only 32% Rabari women said this (Table 2). But conventionally, Bharwad women are considered more vocal and bolder compared to women from other communities in Gujarat. In the remaining 60% of households, the majority of respondents said that the household head is the husband and in a few cases a brother (2%) or father-in-law (1%). Not surprisingly, all the 'single' women said that they were the head of the household.

Table 1. Household composition in study areas

Age composition	Sex	Mean	Min	Max
0–6 years	Girl	1.28	1	3
	Boy	1.15	1	2
6–15 years	Girl	1.52	1	5
	Boy	1.42	1	4
15–30 years	Female	1.49	1	5
	Male	1.67	1	6
30–64 years	Female	1.11	1	8
	Male	1.07	1	3
Over 64 years	Female	1.00	1	1
	Male	1.14	1	2
Total members	Female	2.53	1	8
	Male	2.76	1	7
Average HH size		5.26	1	14

Table 2. Percentage of women interviewed who named themselves 'head of household'

Per cent women as head of the household	
Bharwad	55.8
Rabari	32.2
Overall	39.5

The respondents were asked if they held an official position in the village, and only four respondents answered positively: one woman is currently the 'sarpanch'[8] of her village and three others were village panchayat members. This low number reflects the marginalization of the pastoralists generally from positions of status and power in the communities, and particularly of women pastoralists.

Table 3. Do you have an official position in the village or district?

Responses	N	Per cent
Yes	4	1.3
No	296	98.7
Total	300	100.0

2.3 Education, occupation and housing

According to the survey, the majority (96%) of women are illiterate, with only 3.7% saying that they can read and write, and only one out of the sample of 300 saying that she had studied to 10th grade. In all villages, primary school exists up to 5th or 7th grade, but no secondary school. According to the last population census in 2011 by the Government of India[9], the total Gujarat State rural female literacy rate is 61% and male literacy rate is 82%, which is higher than the national rural female literacy rate of 58% and male literacy rate of 77%. The extremely low literacy rate in the study areas could be a result of the double marginalization of pastoralist women, that is, being a pastoralist and being a woman.

The majority (63%) of families in the sample were 'pastoralists' or 'agro-pastoralists' (37%). In this study, 'pastoralists' mean households who rely solely on livestock for their livelihoods and do not own land for crop farming. Agro-pastoralists depend on both crop farming and animal husbandry. Sixteen households interviewed do not own any livestock – not a single goat, which is unusual for households in the area. Thirteen of these households are involved

[8] A 'sarpanch' is an elected head of the village level statutory institution of local self-government called the gram panchayat (village government). The sarpanch, together with other elected 'pancha' (members), constitute the gram panchayat.

[9] MOPSI (2015).

in the business of providing tractor rental services to farmers (or other large machinery such as a digger or plough). Indeed, there is an increasing, albeit still limited, trend in the region of households selling all their livestock to buy a tractor/digger. This trend started 10–15 years ago, mainly due to challenges faced in access to and availability of grazing areas. Ex-pastoralists[10] now migrate with a tractor or a JCB digger to find work, just like they had migrated with livestock in the past. A further three households rely on salaried work such as driving or wage labour on large crop farms.

Ninety per cent of families live in their own houses (in the resident village), with the remaining two per cent in rented houses. When they go on migration, the houses are locked-up and left empty, though sometimes elderly parents remain behind and take care of the house. Around half (49.0%) of respondents have roofs made of ceramic tiles, locally called 'naliya'; cemented (22.3%); corrugated metal sheet (8.0%); stone (1.0%); thatch (1.0%); mud or sand (1.3%); and other materials (14.3%). The floor is normally made of cement (63.0%), with some mud floors (25.7%), ceramic tiles (10.3%), and other materials (1.0%).

The type of roof and floor is an indication of the income levels of the family. A roof or floor made of mud, metal sheet, or thatch indicates low income levels. Ten per cent of families had spent money on house construction or renovations in the last one year ranging from Rs100 (USD1.42) to Rs500,000 (USD7,142). Over 13 families spent more than Rs100,000 (USD1,428) on house construction and renovations reflecting a trend in spending any extra income on housing improvements.

[10] Despite not owning livestock, these 'pastoralists' still see themselves as pastoralists culturally and socially.

3.0 PASTORALISM, LIVESTOCK AND ALTERNATIVE LIVELIHOODS

3.1 Livestock numbers and type

Ninety-five per cent of families interviewed own livestock. The sample included sheep, goat, cow, buffalo and camel owners. There is no ownership of bulls and very few cross-bred cows. The bulls are not sold, they are either sent to 'panjrapole' (animal shelters) or given away to the 'vaghri' community who in turn, castrate them and set them to work on farms. Some pastoralists could exchange a good quality bull for cows or other livestock with other family members.

Table 4. Does the HH own livestock?

Responses	N	Per cent
Yes	284	94.7
No	16	5.3
Total	300	100.0

The majority of the pastoralists keep a herd of mixed species of livestock having greater numbers of one or other of the small or large ruminant types. The type of dominant species depends on the region and geo-cultural preferences. Bharwad pastoralists primarily keep cows, goats and sheep whereas Rabaris primarily keep goats, sheep, buffalos and camels. Interestingly, the Bharwad all over Gujarat do not keep camels, and rather they use donkeys for transportation purposes. The Rabari primarily keep camels for transportation and some of them also have donkeys, although in the Vagad region the Rabari do not keep donkeys. A reason for these preferences was not identified. Some people suggested that the migration pattern of Rabari is more long-distance than that of the Bharwad and hence they keep camels rather than other livestock. However, there are some Bharwad who also migrate long distances but rely on their donkeys. There is also folklore around these preferences: according to one of the popular beliefs, the Bharwad are more devoted to the goddess Momai who is depicted riding a camel; in reverence to this, the Bharwad do not herd camels. Though the Rabari also worship the goddess, she is not as highly revered as among the Bharwad.

Local breeds kept by pastoralists in the sample include 'kankrej' and 'gir' cow, the native breeds of Gujarat; 'patanwadi' (also known as 'desi', 'kutchi' or 'vadhiyari') and 'marwari' sheep; 'zalawadi' and other domestic breeds of goat; 'mehsani' (domestic) buffalo; and 'kharai' and kutchi camel. Only a few households keep Holstein Friesian cows (locally known as 'shankar').

Table 5 shows the ownership of animals in the sample households. Goats and cows are preferred by almost half of the sample. Pastoralists said that it is easier to feed goats than sheep because goats can feed on more diverse plant material including leaves of bushes. Both goats and cows are preferred for milk, which is used mainly for domestic consumption. In the sample, 156 families herd goats and 131 herd sheep, with 109 families having both sheep and goats. There was one household in the sample with all types of animals—300 sheep, 100 goats, 2 cows, 2 buffalos and 2 camels. With this relatively high number of livestock, the household is considered to be 'rich'.

As can be seen in Table 5 the pastoralists interviewed have a strong preference for sheep, with 133 households saying that they own sheep totaling 17,767 grown females and only 736 males. Though a greater number of households said they own goats and cows, the number held per HH is much smaller. As can be seen, very few people hold onto bulls and instead, as indicated above, give them away. Buffalos are shown to be important, with camels, donkeys and cross-breed cows less so. The few HHs that owned these less popular animals had a relatively high number of them.

Table 5. Mean number of livestock owned per HH

Types of livestock	No. of HHs who owns livestock	Mean (SD)		
		Male	Female	Kid
Oxen/bulls	0	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Local cows	156	1.80 (0.84)	12.43 (10.54)	4.60 (3.51)
Crossbred cows	16	2.13 (0.88)	0.13 (0.34)	1.06 (0.77)
Sheep	133	14.72 (14.62)	135.63 (129.74)	25.02 (21.05)
Goats	160	3.20 (2.94)	31.97 (25.52)	10.85 (9.83)
Equines (donkeys, horses)	8	6.88 (13.42)	3.00 (0.00)	5.00 (0.00)
Camels	22	4.87 (10.18)	17.11 (27.45)	12.40 (9.81)
Buffalo	84	1.55 (0.69)	5.29 (4.92)	2.56 (1.75)

No. = No of households that answered positively to owning the different types of livestock

Table 6 shows the maximum herd size, average herd size and total livestock population by members of the community interviewed. As explained above, the Rabari herd more sheep, buffalo and camels than other groups; the Bharwad prefer cows. The average herd size of sheep for a Rabari is 141. In total, 113 Rabari HHs keep sheep showing that some herds are very large totalling up to 600, and some are very small. The group discussions revealed that herd size is decreasing because of reduced availability and access to grazing. Another significant reason is that increasingly, young children are sent to school and hence there is a lack of manpower for herding livestock during migrations. It was said that one man can take care of 100–150 sheep and goats thus limiting herd size to this number in many cases.

All the families interviewed migrate in groups of 4–5 families including women and children. When the families reach a place that has grazing available all the family will help set up the hut. Once this is completed, then typically, the men go for herding and the women take care of household chores, and young and sick animals. The milking is done by both women and men but in HHs practising migration, it is normal for the women to sell the milk. Some families also hire herders, but only in the case of a household holding a large herd justifying the extra expense. Hired labour costs around Rs10,000 (USD141) per month, in addition to food, clothes, shoes, and any other expenses paid for during migration.

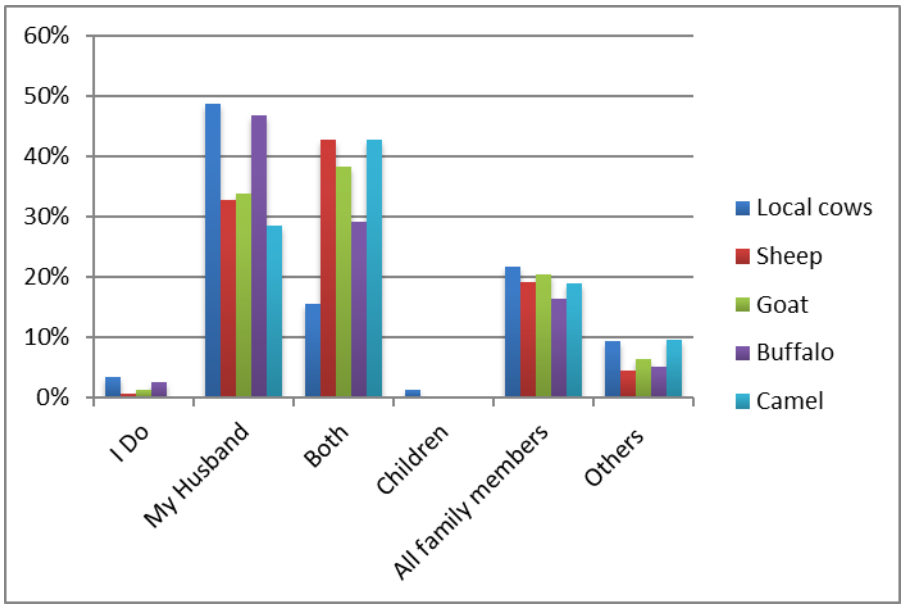
Table 6. Maximum herd size, average herd size and total livestock population by community

	Rabari			Bharwad		
Animal type	No. of HHs with this type of livestock	Maximum no. of livestock per HH	Average livestock per HH	No. of HHs with this type of livestock	Maximum no. of livestock per HH	Average livestock per HH
Local cows – male	5	3	2	0	0	0
Local cows – female	63	25	8	89	70	16
Local cows – calves	47	10	3	78	30	5
Sheep – male	50	75	15	0	0	0
Sheep – female	113	600	141	17	800	105
Sheep – lambs	82	100	26	11	40	17
Goats – male	47	10	4	7	2	1
Goats – female	119	120	33	36	80	31
Goats – kid	88	72	10	29	50	12
Donkeys – male	4	3	2	3	4	3
Camels – male	6	30	6	0	0	0
Camels – female	16	85	16	0	0	0
Camels – calf	4	25	15	0	0	0
Buffalo – male	8	2	2	2	1	1
Buffalo – female	44	20	7	36	11	3
Buffalo – calf	31	10	3	12	3	2

3.2 'Ownership' of livestock

Livestock is the main asset for the pastoralists; however, 'ownership' is sometimes unclear. During FGDs when asked 'who owns the livestock?' the answers oscillated between 'man [husband] is the owner' (most common answer) and 'both [husband and wife] are owners.' To clear any doubt on ownership of livestock amongst the FGD participants, the following question was most helpful: 'If you point out and ask who owns that piece of land, what response will you get? Similarly, if a herd of sheep is passing by and you ask who owns that herd, what is the answer you get?' The answer given then was that the man owns the land and livestock. The concluding sentiment during majority of FGDs was: 'Maliki ben ni che pan ben bhagdaar che,' which means 'Ownership (of livestock) is with men but women are partners.' This was backed up by information from the household survey, where the majority of respondents said that the husband 'owned' the livestock, though a significant number said both husband and wife do (see Figure 2). Very few said women alone own the livestock.

Figure 2. Who owns the livestock?



Though there was some confusion in the responses, what is clear is that women did not claim their sole ownership of the family herd. Amongst the Rabari and Bharwad in Gujarat, girls are given livestock as '*dhamena*'. Dhamena is given to the bride by her parents as part of a marriage ritual known as '*jiyana*', which is when a girl goes to her husband's house after the birth of their first child. She will take her dhamena livestock with her during that visit. The tradition of child marriage continues among the Rabari and Bharwad. A girl can be married to a man as early as the age of 7 years but is only sent to the husband's home after their first baby is born. Until then, she will stay with her parents.[11] Dhamena generally comprises of sheep, goats, local cows or buffalo depending on the livestock herd composition of the bride's parents. These days, cash is increasingly used instead of livestock, particularly where the household does not own livestock.

Women own the livestock received as dhamena and the decision to sell these livestock is theirs and/or taken only after consultation with them. The average number of livestock owned by women alone is given in Table 7. The majority if not all the livestock listed here would have been received as dhamena. Dhamena is believed to be one of

[11] This is similar to the Rabari (Raika) of Rajasthan, as described by Köhler-Rollefson (2017), where social repression of Raika women is clearly evident with regard to marriage customs. As is the case throughout traditional Hindu society all marriages in Raika society are arranged by parents and/or close relatives usually when girls are very young. The ceremony that confirms the agreement between the families is called 'viva'. There is a tradition of 'mass-marriages' in which all unmarried girls of a village are betrothed at the same time, with girls ranging in age from a few months to 18 years or so. However, the marriage is not consummated at that time, and before the couple starts living together there is another ceremony held, which is known as 'ana' or 'muklava'. This takes place when the girl is around 20 years old.

the ways to conserve breeds – the best breed with the purest trait is given to the daughter. It is also supposed to ensure the food security of the daughters.

Table 7. Livestock owned by women

Animal Type	No. of women who owned this livestock type	Range in number of livestock owned
Sheep	59	1-320
Goats	38	1-120
Local cows	31	1-77
Buffalo	4	1-2
Cross-bred cows	2	1-25
Camels	2	10-20

Note: Women may also own a mix of the above livestock.

3.3 Alternative livelihoods

Only a small number of respondents (n = 14) said that their HH participated in alternative income generation activities during the last year (Table 8). The decision to seek alternative livelihoods was either by the husband, the respondent or both together (Table 9).

Table 8. In the last year did you or any other member of the HH earn from any other income generating activity?

	Frequency	Per cent	Valid per cent
Yes	14	4.7	4.7
No	286	95.3	95.3
Total	300	100.0	100.0

Table 9. Who made the decision to engage in this activity?

	Frequency	Per cent	Valid per cent
I Do	2	0.7	14.3
My husband/wife	5	1.7	35.7
I and my husband/wife both	3	1.0	21.4
Children	4	1.3	28.6
Total	14	4.7	100.0
	300	100.0	

4.0 HOUSEHOLD MANAGEMENT AND DECISION-MAKING

4.1 Livestock management and related decision-making

Figures 3, 4 and 5 show the management and decision-making patterns for sheep (i.e. the dominant livestock type found in the area) and a summary of further details on sheep management is found in Table 10. Pastoralism is labour intensive with specific roles and responsibilities for women, men and children in the household. Indeed, pastoralism needs men and women to be equally involved and will not work well without this. Women are primarily responsible for the household chores, taking care of the young, newborn and sick animals, and also market-related transactions. The market related transactions are mainly the selling of the livestock products such milk, '*mawa*' (condensed milk) and *ghee* (clarified butter). The herding of livestock is mainly a man's responsibility. Milking is done jointly between women and men.

Over 47% women said that the management of sheep is undertaken by both wife and husband, 39% women said it is done by their husbands, and 10% women said it is done by themselves. Children tend to assist with the herding duties. The selling of livestock is mainly a man's responsibility, though, often, women will be consulted before animals are sold. In general, both husband and wife decide on how the money is spent from livestock including sheep sales. Overall, and including all types of livestock, around 50% of respondents said that the husband makes most decisions about livestock, and around 50% said it was both husband and wife; only a minority said that it was the wife only. Selling and buying of camels is particularly dominated by men (though not entirely).

Figure 3. Who manages the sheep?

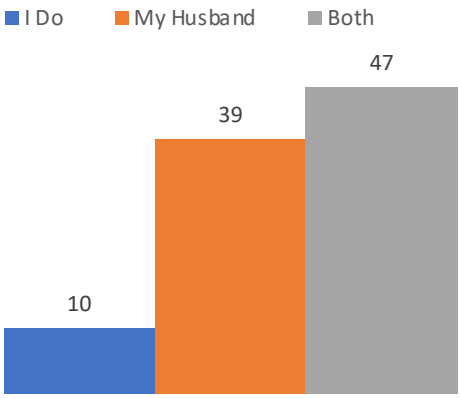


Figure 4. Who decides about selling and buying of sheep?

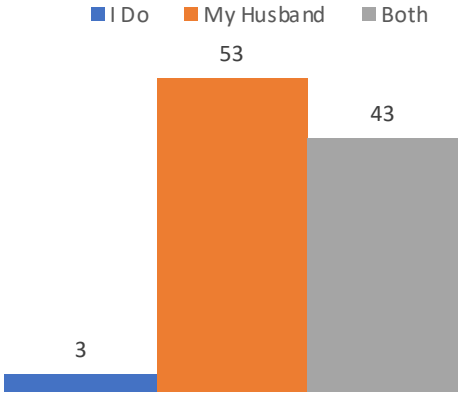


Figure 5. Who decides what to do with the money from selling sheep?

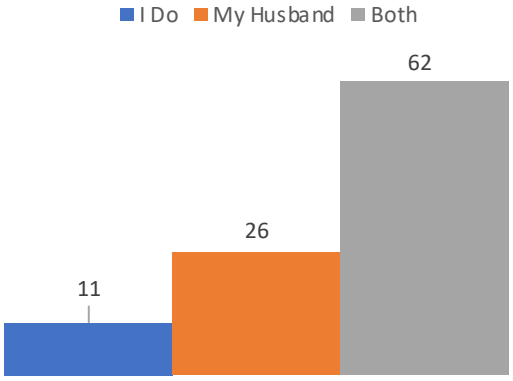


Table 10. Summary of questions showing livestock-related management and other decision-making

	Answers (% of respondents)		
Question	I Do% age	My husband % age	Both % age
Who manages the local cows?	27	37	28
Who decides about selling and buying of local cows?	16	49	31
Who decides what to do with the money from selling local cows?	24	39	35
Who manages the sheep?	10	39	47
Who decides about selling and buying of sheep?	3	53	43
Who decides what to do with the money from selling sheep?	11	26	62
Who manages the goats?	13	40	41
Who decides about selling and buying of goats?	5	53	41
Who decides what to do with the money from selling goats?	13	31	54
Who manages the camels?	5	50	45
Who decides about selling and buying of camels?		73	27
Who decides what to do with the money from selling camels?	5	36	59
Who manages the buffalo?	30	36	26
Who decides about selling and buying of buffalo?	12	49	35
Who decides what to do with the money from selling buffalo?	20	42	36

There was also general agreement amongst both women and men during FGDs that the decision to buy and sell livestock products and services is taken by men, but usually after consultation with women. On the other hand, *vahivat ben paase che* (management of money is with women). The words *vahivat* (management) and *vyavhar* (cash transactions related to social customs and business) invariably came up in all discussions and interviews. Traditionally the household cash is kept and managed by pastoralist women because men go herding during the day and it may not be safe to carry it. This is why Rabari and Bharwad women in Gujarat, like the Rabari (or Raika) women in Rajasthan (see Köhler-Rollefson 2017), are referred to as 'household finance ministers' illustrated by the following responses:

> 'Men will go grazing; we manage all cash transactions and other negotiations during the day.' FGD, Rabari women, Chaadvada village, Kutch District.

> 'Earlier, even the shoes of our husbands were repaired by us, so that they can continue to go on grazing.' FGD, Rabari women, Ratadki village, Surendranagar District.

However, while it is agreed that conventionally pastoralist women keep and manage cash, generally they do not make decisions alone on how to spend it and rather, this follows a joint decision between husbands and wives. As one FGD respondent said:

> 'Bhaiyon ne to poochvupade (We have to ask our husbands)!' FGD, Bharwad women, Chandroni village, Kutch District.

> 'Maliki bhai ni che, vahivat ben paase che.' (The ownership of livestock belongs to men, but management of money is with women). FGD, Bharwad women, Chandroni village, Kutch District.

In summary, the study found decisions regarding selling and buying of livestock products and services are primarily taken by men but in consultation with women.

4.2 Decision-making in HHs with diversified and/or alternative livelihoods

Thirty-six per cent of families interviewed own land for cropping. During interviews and discussions with women, it emerged that women do not have the same wealth of knowledge and skills about crop farming as they do about livestock keeping—they do not understand seeds, what variety is better than another, how much agricultural inputs cost and so on. This indicates that they are not as involved in activities and decision-making processes related to crop farming as they are in livestock-keeping – verified in the HH survey (see Table 11, Figures 6-9). The household survey shows that in 64% of HHs, men alone decide what crops to grow (Figure 6); and in only 27% of HHs do both men and women decide. Similarly, in 61% of households, men decide about selling of crops and in only 30% of HHs do both men and women decide. As for money from selling the crops, in 49% of cases men decide, and in 37% cases both men and women decide.

Table 11. Who gave the HH permission to use the land for cropping?

	N	Per cent
Self-buy	8	7.4
Clan or customary leader	41	38.0
Without permission	1	0.9
Parents	51	47.2
Others	7	6.5
Total	108	100.0

Figure 6. Who makes decision about what to grow?

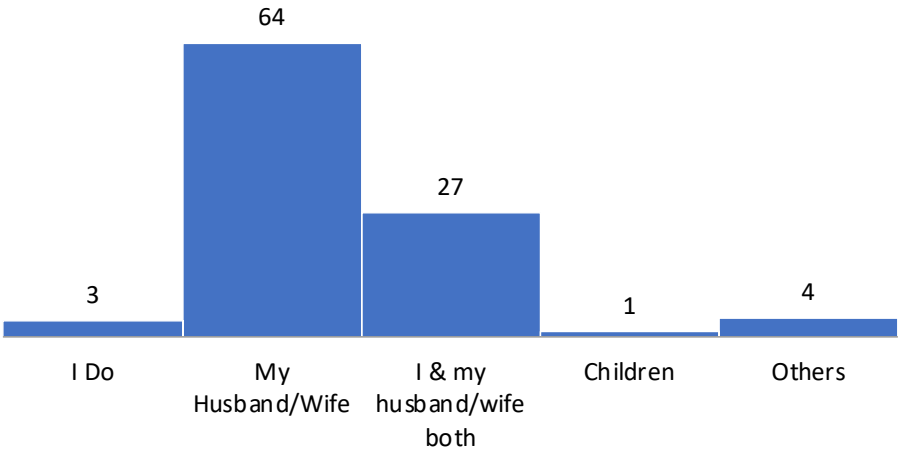


Figure 7. Who decides about selling the crop?

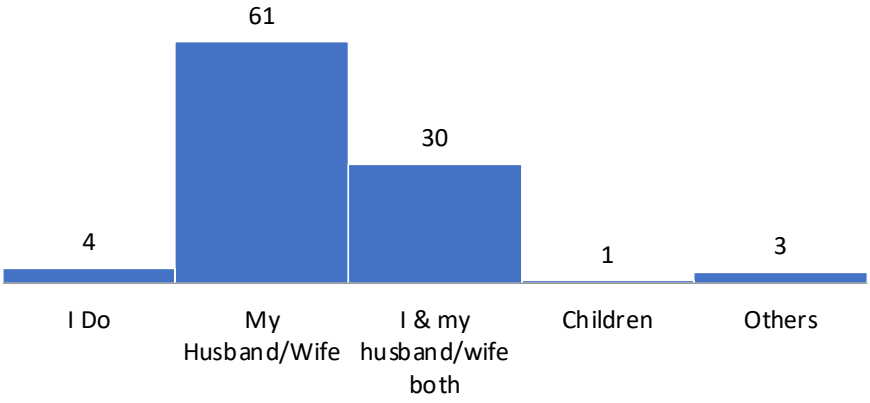


Figure 8. Who makes decision about what to do with the money from selling the crop?

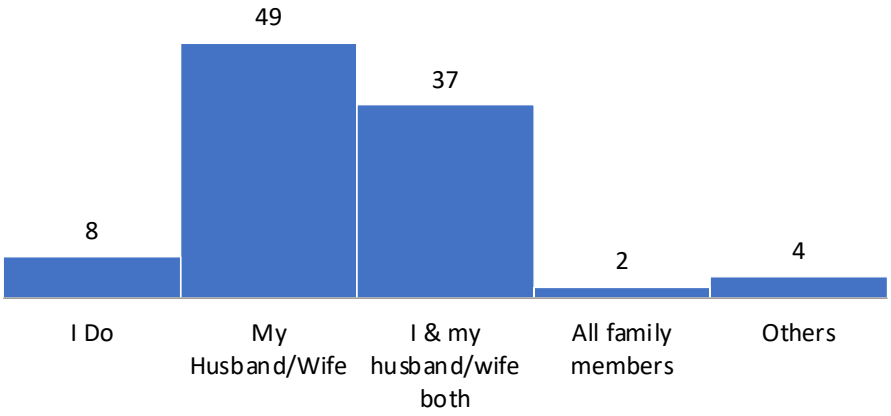
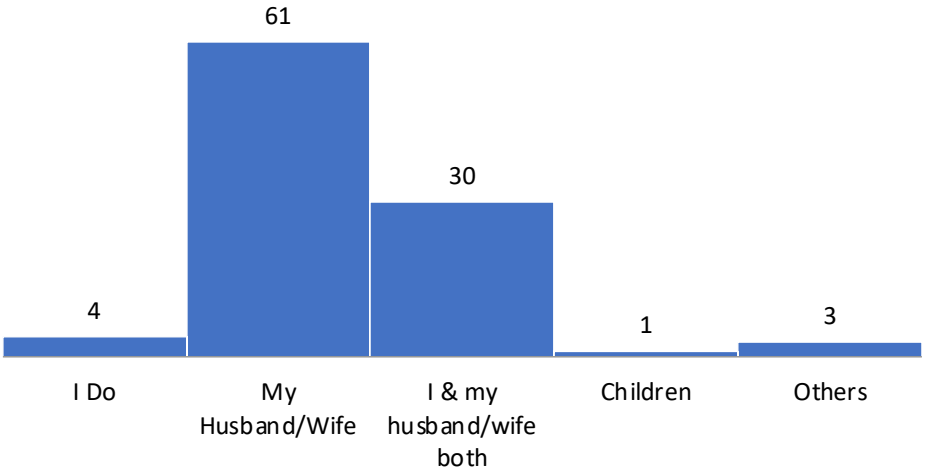


Figure 9: Who makes decision about what to do with the money from selling the crop?



The decision about selling livestock to start an alternative livelihood is also primarily taken by men. Some women opined that herding is a hard and challenging task and hence men have the right to decide to sell livestock and buy a tractor or JCB (digger) or to start another type of business. As one woman explained:

> 'He [her husband] is abused all the time on the road, on farms while herding, and he goes out in search of lost animals, so he can decide to sell livestock and buy tractor.' FGD, Rabari woman, Ratadki village, Surendranagar District.

Out of 13 families involved in alternative livelihoods nine families said that the husband and grown up children took the decision to engage in an alternative livelihood; and 11 families said that the husband and children decide on what to spend the money earned.

In those families that do not migrate now because they have alternative businesses, the social dynamics in the family are changing. Whereas previously women tended to be 'the money managers,' in these families the money now tends to be kept and managed by their husbands. For example, the income from crop farming or from alternate livelihoods such as driving and rental of diggers or tractors, comes directly to the hands of men without passing through women's hands, and men tend to keep it. Men do not need money when herding (and as noted previously, it is unsafe to carry it in migrations) but in agriculture and other livelihoods, men regularly need money to buy seeds or fertilizer or make payments to hire a tractor, get repairs done or buy fuel.

As such, as households have changed to alternative livelihoods and/or men have stopped migrating with livestock, women's authority and responsibility over household finances has diminished. Now it is common for men to undertake market-related transactions and hold on to the money received. Even where women take milk to the dairy on a daily basis, the payment is collected by men every 10 days. During FGDs, some women remarked that this has affected their status in the family.

> 'Vat ochchu thai gayu. Maal bhi gayu, vat bhi gayu. Have behenon koi na pooche' (We lost livestock as well as our status. Now no one gives us importance). FGD, Rabari women who no longer migrate with sheep and goats but do keep a few cows and buffaloes; Sudamda village, Surendranagar District.

> 'In the past we would negotiate for food grains with farmers and sell milk in the village. Now we have to ask men for even small sums of money.' FGD, Rabari women who no longer migrate, Noli village, Surendranagar District.

Further, these changing roles and responsibilities may have greater and far-reaching impacts on the personalities of women as well as their position in the household. There is a common observation that women who used to migrate were not afraid of anyone or anything, unlike the women who never migrated. Not only do women who no longer

migrate feel that their control in household decision-making has reduced, but they also feel that they have lost their distinct relationship with the animals, with milk, with wool, with farmers, with other communities and so on. These relationships are changing, so are the roles of women. Most women no longer process milk and prefer to sell raw milk to wholesalers. Indeed, many women have lost the skill to make ghee or *mawa* (condensed milk).

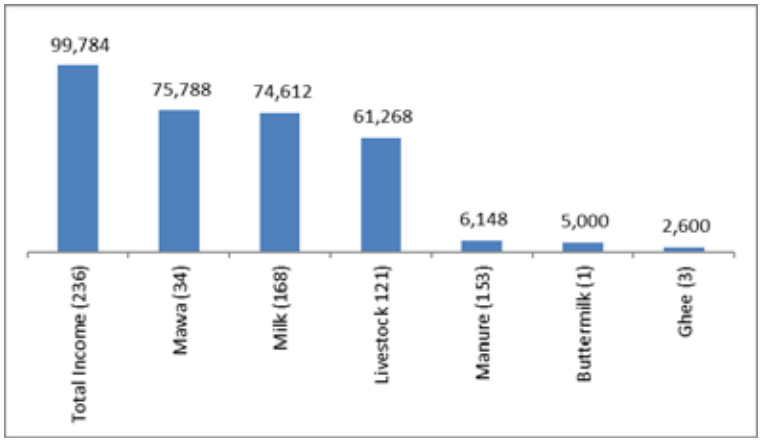
4.3 Income from livestock and other sources

4.3.1 Income from livestock and livestock products

The amount of annual average income received from livestock and livestock products and services is shown in Figure 10. The highest income comes from selling mawa where 34 HHs received an average income of Rs75,788 (USD1,070) per year, compared to the average income per year from raw milk (Rs74,612 or USD1,054) for 168 HHs. Livestock raised Rs61,268 (USD865) for 121 HHs, and small amounts were raised from sale of manure, buttermilk and ghee.

Though mawa appears to be the most profitable product, only 34 women in the sample make it. Mawa or 'khoya' is used as a base for a variety of Indian sweets. One woman from Motamatra village has been making mawa for the last 18 years while on migration. She says 'roj naya gaon, roj naya chulha' (everyday a new village, everyday a new fireplace [to make mawa]). Five litres of milk is used for one kilogram of mawa, which sells for Rs170–180 per kilogram, whereas one litre of raw milk sells at Rs30 per kilogram. The women said she has the option to sell raw milk, but she prefers to make mawa. There are other families who prefer to make mawa only while on migration. Overall, however, the income from livestock products per year made by the pastoralists in the study is small highlighting the subsistence nature of their livelihoods.

Figure 10. Average annual Income per household from different livestock products and services.



Note: The number in brackets indicates the number of households that responded positively to making the livestock product. The number above the column indicates the average amount received in Rs per household per year.

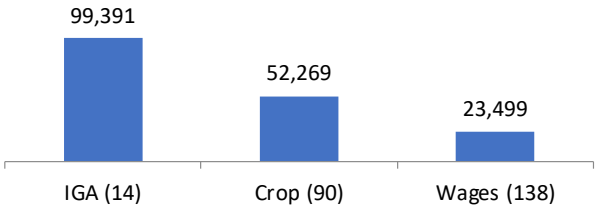
It should be noted that wool does not generate any income for the households. In fact, the wool is thrown away, with herders having to pay Rs 8–10 per sheep for shearing. In the past, wool was a major source of income – during the 1990s black sheep wool earned Rs1100 (USD15) for 20 kg, and white wool Rs800 (USD11) for 20 kg. But today the market has been flooded with cheaper alternatives such as synthetics, and there's no demand for wool. Almost every respondent requested the researchers to find a way to restart the wool market and to find some use of the wool. Without a wool market, and with an increasing need for meat, the livestock breeds kept are changing; instead of traditional wool breeds, now mixed breeds that produce more meat are reared. Gujarat recorded a decline of 15% in the population of indigenous sheep as compared to an 85% increase in the population of exotic/cross-bred sheep between 2007 and 2012 (Directorate of Animal Husbandry 2012).

Because most pastoralist communities in Gujarat, including the Rabari and Bharwad, are vegetarian they do not eat meat and traditionally never sold the milk from their animals, only the wool. Hardly any Bharwad or Rabari livestock keeper will openly admit selling sheep or goats for meat, because it is a taboo. There are families who say they quit livestock keeping because they did not want to send their livestock to the slaughterhouse for income. However, driven by the collapse of the wool market, some pastoralists sell livestock knowing that it will be slaughtered and eaten. Where livestock is sold, pastoralists prefer to sell during migration and not in their own villages, so that they are not seen to be selling the livestock by those who know them.

4.3.2 Income from agriculture, wages and other livelihoods

Increasingly, household income originates from sources other than livestock. Overall, the majority income comes from alternative sources including the renting of tractors or diggers (JCBs). Eight families involved in the JCB/tractor business have invested money ranging from Rs25,000–600,000 (USD335–8050) and two families have taken a loan from a bank/microfinance institution to start the business.

Figure 11. Average income per household from agriculture, wages and other livelihoods.



Note: The number above the column indicates the average amount received in Rs per household per year, and the figure below the column is the number of HHs that answered positively to the question concerning alternative non-livestock income sources.

Land is increasingly being used for cropping with 110 families (37%) owning land used for growing crops. In addition, three families practise sharecropping. Eighty per cent (80%) of those growing crops sold part of their crop during the previous year. Main crops sold were cotton (60%), sorghum (42%), cumin (12%), pearl millet (12%), pulses (12%), groundnut and castor (6.5%), and wheat (3%).

Forty-six per cent (46%) of households interviewed earned income from wage labour, out of which three-quarters (103 families) had a family member working as a farm labourer, 14 families had someone in skilled labour such as a driver, tailor, etc. and 10 families had a member working in professional employment such as teaching or other jobs.

5.0 LAND: GOVERNANCE, ACCESS AND MANAGEMENT

5.1 Land uses in Gujarat

Gujarat State covers 19,602,000 hectares of land which is 5.97% of the country's area. Under all the land use categories, net sown area (area sown with crops or fruit trees) dominates at 54% of land area covering 10,302,000 ha. In Table 12 'current fallow' is the name given to cropping land kept fallow (unused) over the current year. Other than current fallow, there are lands not cultivated for at least one year and up to five. Forest cover includes all lands with a tree canopy of over 10%. 'Wasteland' is land that is considered to be lying unused; and/or land which is not being used to its optimum potential due to various constraints; and/or which cannot be used. Wasteland in India consists of two broad classes of land: cultivable wasteland and non-cultivable wasteland. Cultivable wasteland is capable of, or has the potential for, development for agricultural or pastoral purposes or can be afforested. Pasturelands are open grazing land, known as 'gauchar' (permanent grasslands) or protected grasslands called 'vidi' in Saurashtra and 'rakhal' in Kutch (which can also refer to protected forests). Grazing lands cover 851,000 hectares of the surface area of Gujarat.

Table 12. Land use classifications in Gujarat

Land use classification	Area in '000 ha	Percentage
Total area	19,602	
Net sown	10,302	54.03
Current fallow	379	1.99
Fallow other than current fallow	16	0.08
Forests	1,834	9.62
Land under miscellaneous uses (e.g. tree crops and groves)	4	0.02
Cultural wasteland	1,960	10.28
Permanent pastures and other grazing lands	851	4.46
Land not available for cultivation	3,723	19.52
Reported area for land utilization	19,069	100

Source: Ministry of Agriculture (2015).

5.2 Pastures and other grazing lands

5.2.1 Private individual or household grazing areas

Private grazing comprises of grazing on agricultural land after crops are harvested. Grazing of cropping lands post-harvest is important for supplementing the increasingly dwindling grazing lands. In winter and summer, more than 80% of pastoralists depend on the remains of crops (stubble) for grazing their livestock. In the monsoon, the dependence on cropping land is less but still substantial for 43% of families. Table 13 shows the high dependence on cropping land for grazing livestock after (or between) the harvest(s) in winter and monsoon. Cropping land tends to be private, individual land and the remaining categories such as forest, wasteland, gauchar, grass islands, while vidi or rakhal are common land. Only 14 respondents said that sustainable land management (SLM) investments had been made in individual/HH grazing areas in the last three years. The main challenge limiting SLM investments in the individual grazing lands is lack of support from government, community and other stakeholders. A small number (5–8% of respondents) said that the main challenge was lack of cash (Table 14), though on the other hand, 22 respondents (40%) said that having more cash would encourage them to make more investments (Table 15).

Table 13. Have any SLM investments been made in the individual/household grazing area in the last three years by the HH?

	N	Per cent
Yes	14	4.7
No	286	95.3
Total	300	100.0

Table 14. What are the challenges in making SLM investments in individual/household grazing land?

	Responses	
	N	Per cent
No cash	5	7.7%
No/little materials	7	10.8%
I have no one to help me	8	12.3%
The community will not help me	13	20.0%
No/little time	1	1.5%
The government will not help me	25	38.5%
Lack of knowledge	2	3.1%
NGOs will not help me	1	1.5%
We do not think the land belongs to us so will not invest	3	4.6%
Total	65	100.0%

Table 15. What would encourage you to make SLM investments in the individual/household grazing lands?

	Responses	
	N	Per cent
More cash	22	40.0%
More materials	3	5.5%
More assistance from household members	3	5.5%
More skills	1	1.8%
More assistance from community	5	9.1%
More labour	3	5.5%
More assistance from government	7	12.7%
More time	1	1.8%
More assistance from NGOs	3	5.5%
More knowledge	5	9.1%
Stronger feeling that the land is ours	2	3.6%
Total	55	100.0%

5.2.1 Communal grazing lands

The main grazing lands are found on the common lands of gauchar and vidis or rakhals (Table 16). In addition, as explained previously, grazing of cropping lands post-harvest is important for supplementing the increasingly dwindling grazing lands.

Table 16. What is the type of grazing land?

		Winter	Summer
Cropping land	43%	81%	88%
Forest	12%	5%	3%
Wasteland	22%	6%	5%
Gauchar	9%	3%	1%
Islands	4%	2%	1%
Vidi	10%	1%	1%
Others	1%	2%	1%

The increasing privatization and/or individualization of land for growing crops challenges the pastoral way of life and its dependence on the commons. The commons are declining rapidly in Gujarat. These include gauchars, 'padtars' (open wasteland), forests, vidis (protected grassland), and 'bets' (grass islands). As per the state government's own resolution of 1988 on gauchar management, 40 acres of land should be reserved in non-forest areas for every 100 heads of livestock in each village, and 20 acres reserved in the forest areas for every 100 heads of livestock. However this legislation is not implemented and where attempts have been made to implement it, these have resulted in gross irregularities, many of which have been reported in the media. For example, 'In the past three years Gujarat has sold 116,000 square metres of such land for various purposes, leaving 424 villages without any pastoral land. The state has just one-fifth of its required pastoral land' (Mahapatra 2012). Two years later, 'Gujarat recorded more than 11,950 registered encroachments on gauchar lands, of which the majority are more than five years old' (Dave 2014).

The situation of areas categorized as 'wasteland' is the same. They are considered unproductive and unused despite local communities, including pastoralists, clearly using them. Hence, these lands are easily diverted for other purposes such as for construction of roads, factories or hotels and, unsurprisingly, without the consent of the people who depend on them.

Bets are small natural grass islands in the saline desert of the 'Rann' or near the sea. They are a key source of fodder and water for the pastoralists of Gujarat during the monsoon and post-monsoon seasons. Geologically, bets are

small silt depositions brought about by a nearby river or the sea, which makes them a unique ecosystem in the Rann in Gujarat. There are around 74 bets in the Little Rann of Kutch, which is spread over Kutch, Banaskantha, Patan, Surendranagar and Morbi districts. A large portion of it (nearly 5,000 km^2) has been managed as a Wild Ass Sanctuary since 1971. However, it is becoming increasingly difficult for pastoralists to access bets. In the last five years, the Forest Department under the state administration has become more active in trying to block pastoralists' access to these bets saying that they need to be preserved as conservation areas.

Vidis are protected grasslands where grazing is not allowed even though 10% of respondents said that they used them for grazing during the monsoon period. Saurashtra and Kutch regions have open scrub vegetation with a high proportion of graminoids, which is commonly referred to as scrub savanna that also integrates sparsely vegetated grasslands. These grazing lands, locally known as vidi have been used for livestock grazing for centuries. The grasslands in Saurashtra cover a total area of 1,810 km^2 contributing 20 % of the total grassland cover in Gujarat State. Gujarat Forest Statistics (2012–13) (Government of Gujarat 2013) reveal that vidis cover nearly 4% of the land surface in Saurashtra. Before India's independence, the vidis were under the control of former princely states. These grasslands were transferred to the national Forest Department in 1959–60. There are 106 reserved vidis and 434 non-reserved vidis in Gujarat. Grazing is prohibited in both types of vidis but despite this, pastoralists do sometimes take the risk of being caught and use them. There is a third type of vidis, private vidis, which are managed by individual owners. After independence, many vidis came under the control of the Darbar community (a dominant farming caste). The ownership status of vidis remains controversial, and the pastoralists continue to pay grazing fees to access the vidis.

As per the annual 2014 administration report of the Forest and Environment Department, Government of Gujarat (in Mehta 2016) the main issues in grassland management today include encroachment, developmental activities, mining, fragmentation, illegal grazing, invasion of alien species, human-wildlife conflict and poaching. Seven hundred and eighty-nine (789) cases of illegal grazing were recorded in Saurashtra during the year 2012–13 in spite of an area of 3,820.74 square kilometres being kept open for grazing partly or throughout the year.

Vidis are increasingly becoming inaccessible to the pastoralists and livestock, with them being accused of illegal grazing and destroying the vegetative cover in both vidis and bets. For information on grazing fees see Section 5.2.3.

5.2.2 Migrations

The grazing pattern of the pastoralists can be divided into three distinct seasons based on temperature and moisture conditions. Each season is three to four months long. The migratory pattern of pastoralists follows the cropping and harvesting seasons. In general, the whole family migrates together.

The winter migration starts in late October or early November. The pastoralists from Kutch move towards North Gujarat (Patan, Mehsana and Himmatnagar districts) and those from Saurashtra move towards the Bhal Vistar region, which is spread across the districts of Bhavnagar, Ahmedabad and Anand. The winter grazing is mainly done in the cotton fields: the Bt cotton fields are available for grazing from November onwards and indigenous cotton fields are available from February onwards. After March, wheat and castor oil fields are available for grazing.

If it rains on time, people return to their home villages with the onset of the monsoon in June, where they graze livestock in village gauchar, wasteland, hilly areas around villages and vidis. Many families, mainly from Panchal, who keep goats migrate to Kutch District in the monsoon, which has abundant 'wastelands' and also vidis and bets in some regions. The Saurashtra pastoralists, who migrate to Kutch in the monsoon go without the whole family– there are some men who migrate for a whole year to find grazing. As mentioned previously, some also migrate to sell livestock outside their home area so that they are not seen to be engaging in what is considered a taboo.

The year 2018–19 was a drought year (some pockets of land had no rains and other areas had reduced rains), so several pastoralist families in Rajasthan and Gujarat did not return to their village during the monsoon period. Table 17 shows the average seasonal distance travelled by pastoralists interviewed. Pastoralists can cover more than 500 kilometres distance in a year in search of grazing, fodder and water (and to access markets). Nearly three-quarters of

pastoralists move up to 10 kilometres distance during the monsoon and as shown in Table 17, the distances covered in winter and summer seasons are much greater.

Table 17. Distance to grazing land from residence villages

Distance	Monsoon	Winter	Summer
No of HHs	209	162	160
<10 km	72%	43%	17%
10–50 km	23%	7%	20%
51–250 km	5%	39%	47%
251–500 km	-	10%	15%
>500 km	-	-	1%

Note: Data is based on the number and percentage of HHs that responded.

As already mentioned, some pastoralists have given up livestock keeping altogether and invested money in buying machinery such as diggers. The owners also take these on a type of migration around farms looking for jobs – the migration has changed from moving with livestock to diggers (see Box 1).

Box 1. Migrating with diggers not livestock!

In one of the villages during a field visit, it was found that 10 JCBs (diggers) had been bought by families in a month. Each JCB costs Rs25–30 lakhs (USD35,000–45,000). This kind of investment is partly raised by selling off livestock and partly from loans from a money lender, microfinance institutions or local financiers. The migration continues with the JCB but as a single household alone or in a group of two families.

5.2.3 Payment for grazing

Increasingly, livestock keepers pay for their grazing needs and over the last decade these charges have increased significantly. For example, a vidi, which was available for Rs5,000 (USD70) for two months 10 years ago, now costs Rs25,000 (USD357) for the same period. This vidi sustains 100–150 goats and sheep.

There is inconsistency in fees and rampant corruption in the form of bribes to allow grazing in demarcated forest areas, grasslands, vidis and bets despite the fact that pastoralists have been traditionally using these spaces for grazing for centuries. The fee paid to the owner of a vidi is calculated in several ways. It could be per animal – around Rs300 (approx. USD4) for a cow or buffalo, Rs30 (approx. USD0.5) for a goat or sheep; or a fixed lease for an agreed piece of land on an annual basis. For example, Gundanimoti vidi in Anandpur thirty kilometres from Panchawada village, is owned by a Darbar and is spread over 150 'bigha' (in Gujarat 2.5 bigha = 1 acre). It is leased by a Bharwad family with an annual payment of Rs180,000. About 25 cows and buffaloes and five calves graze in this vidi for about six months. They get water from a nearby farm in exchange for manure. Further there are cases where an entire village leases a vidi. During the research, an example was found where a village pays Rs500,000 (approx. USD7,000) for a season for a vidi and its use is divided amongst the herders of the village based on the number of animals grazed.

Pastoralists are paying a grazing fee for grazing on cropping land as well. Many pastoralists take agriculture fields on a lease basis; there is a kind of auction in some places and the payment has exponentially increased in the last few years. In the study area, figures as high as Rs350,000 (USD5,000) have been paid for a season's rental (i.e. for a monsoon, winter or summer season). Table 18 shows the average amount paid by a family for grazing per season to farmers, private vidi owners and bribes to access 'illegal' or 'conserved' grazing.

Table 18. Average amount paid by a HH for grazing in a season

Season	No. of HHs responded	Average amount (Rs)
Monsoon	51	7,383 (USD104)
Winter	26	54,960 (USD775)
Summer	28	43,527 (USD615)

In case of grazing in cropping fields post-harvest, the amount is usually shared by a group of 5–6 families herding together. In a few cases, the cropping land of an entire village is hired or booked by a group of herders on a fixed payment for that year. The herders then camp in different farm plots of the same village every second or third night. Usually these are arranged through verbal contracts. Otherwise, herders keep moving from one farm plot to another and from village to village every second or third night. Though respondents quantified the amount of payment made (see Table 18) the payment is not usually made as cash and rather gets paid in-kind and in terms of the amount of animal dung/manure deposited by the animals (calculated on a nightly basis). At the end of the season any remaining debt is paid in cash, though generally this is not needed. In the past, this was a purely reciprocal relationship – farmers would invite pastoralists to pen their fields and receive milk, and in turn give grain. Though such a system does still exist in some parts, it is declining rapidly and being replaced by more cash-based transactions only.

5.2.4 SLM investments in grazing lands

There were very limited responses to the question on investments related to SLM improvements of grazing land. One of the reasons might be that much of the grazing is done on cropping land where there is not much scope for land improvement particularly because it is another person's land. Of the 32 positive responses (Table 19), the main activities completed were establishing a pond, well or check dam said to be done without input of days or money, and clearance of bush or invasive species (see Table 20 and Figure 12). There was no mention of any customary norms being followed presently for the protection or improvement of common grazing land. Although there was mention that in the past land was usually left fallow for a certain period of time to allow grass to regenerate, this is rarely practised today. As described in Table 21, he main challenges to investing in SLM efforts are not having assistance from government or other players. Further, pastoralists said that more cash would encourage them to make more investments (see Table 22). A minority said that land tenure security (feeling that the land belongs to them) had an influence on SLM.

Table 19. Have any SLM investments been established or made on the common grazing land in the last three years by the HH?

	Frequency	Per cent
Yes	32	10.7
No	268	89.3
Total	300	100.0

Table 20. SLM (land improvement) investments that have been made on common grazing land

Type of SLM implemented	No. of HHs implementing	Person days spent by you Mean (SD)	Person days spent by HH Mean (SD)	Money spent on investment (Rs) Mean (SD)
Pond or well	12	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Levelling	1	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Cleared of stones	1	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
'bandpada' (water point)	0			
Farm bund	0			
Check dam	8	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Drainage ditch	0			
Trenches	0			
Farm pond	0			
Water harvesting	2	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Clearance of bush or invasive species by cutting	20	0.00 (0.00)	0.00 (0.00)	15.00 (23.51)
Clearance of bush or invasive species by fire	10	0.20 (0.63)	0.20 (0.63)	150.00 (241.52)
Planted trees	1	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Rested/fallow with no crops	0			
Constructed a building (e.g. a shed)	0			
Other SLM activities	0			

Figure 12. SLM (land improvement) investments that have been made on common grazing land.

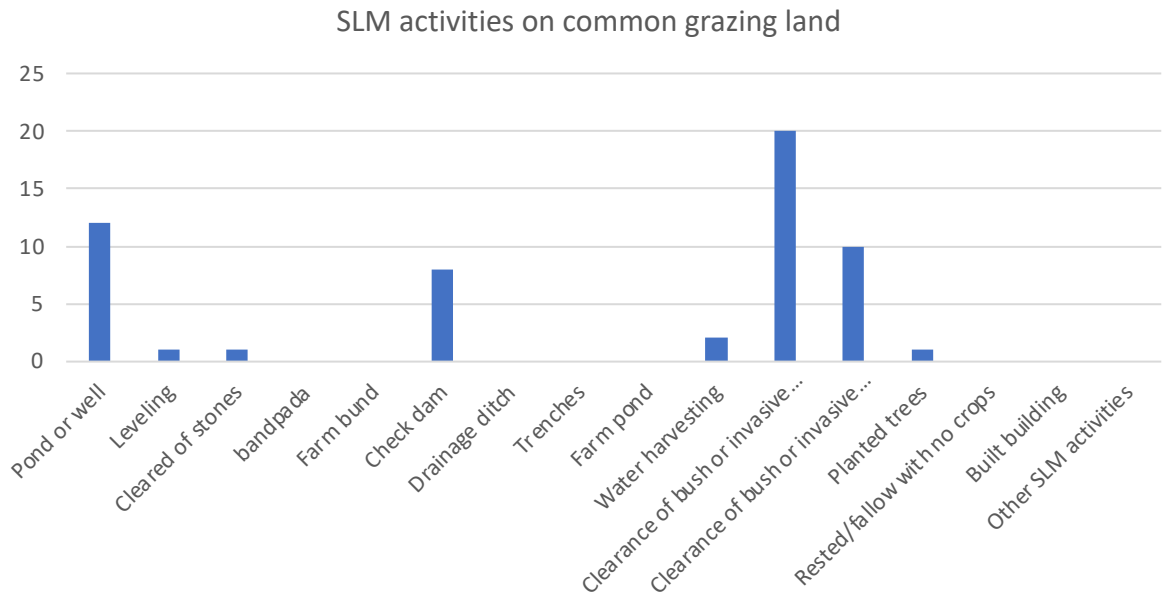


Table 21. What are the challenges in making SLM investments on common grazing land?

	Responses	
	N	Per cent
No cash	5	7.7%
No/little materials	7	10.8%
I have no one to help me	8	12.3%
The community will not help me	13	20.0%
No/little time	1	1.5%
The government will not help me	25	38.5%
Lack of knowledge	2	3.1%
NGOs will not help me	1	1.5%
We do not think the land belongs to us so will not invest	3	4.6%
Total	65	100.0%

Table 22. What would encourage you to make SLM investments on the common grazing lands?

	N	Per cent
More cash	22	40.0%
More materials	3	5.5%
More assistance from household members	3	5.5%
More skills	1	1.8%
More assistance from community	5	9.1%
More labour	3	5.5%
More assistance from government	7	12.7%
More time	1	1.8%
More assistance from NGOs	3	5.5%
More knowledge	5	9.1%
Stronger feeling that the land is ours	2	3.6%
Total	55	100.0%

Though financial investments in the rangelands are rare, participants in the FGDs shared that steps are being taken to protect, conserve and restore the pasture lands. Women have a very significant role to play in this. As described previously, in Gujarat, during the short-route migration, pastoral groups depend on the pasture lands and the open farmlands for stubble after the harvesting. During the long-route migration, the groups depend on large rangelands. In both migratory patterns, pastoralists' unique practices help in restoring and conserving the rangelands. There are specific rules followed by the pastoralists in maintaining the rangelands, which women help to monitor and enforce, including:

- Not allowing anyone to chop the grasses for grazing purposes.
- Allowing grazing only after sown grass seeds have grown.
- Leaving the livestock dung on the ground to fertilize the soil.
- Allowing livestock to browse the living trees rather than cutting them so that they can regrow quickly.

These practices help to keep the land and vegetation healthier and prevent degradation. However, it is sometimes difficult to enforce these practices without security of rights to the land, and clear and agreed roles and responsibilities of the land users.

5.2.5 Challenges in accessing grazing lands

Increasing theft of livestock and associated violence while camping or while on migration is one of the biggest problems faced by pastoralists trying to access grazing lands in recent times. In many areas, there are organized armed gangs that come with pick-up trucks to steal livestock. In the past, such incidents usually happened in the night where thieves would sneak in to steal a few goats and sheep. Now these attacks can happen at any time, which increases security risks for women during the daytime when they are often alone in the camps. Some women said that they protect themselves and their livestock by keeping a pile of stones ready to hurl at the thieves, and always move in groups.

5.3 Urban land

The survey found only three respondents who owned urban land (Table 23) purchased for building a house: otherwise respondents did not own urban land.

Table 23. Does the HH have land in an urban area?

	N	Per cent
Yes	3	1.0
No	297	99.0
Total	300	100.0

5.4 Cropping land

5.4.1 Individual cropping land

Altogether, 115 families (37% of respondents) own individual-held land used for cropping (for communal or collective cropping land see Section 5.4.2 below). Seventeen of these households reported activities like clearing stones and removing *Prosopis juliflora* (an invasive species) from agricultural fields with an expense of an average Rs62,000 (USD830).

As can be seen in Table 24 women in those households that did have cropping land, the clear majority (85.2%) said that they have equal access to the land with their husbands (or other male relative). In most cases the land was accessed through the clan/customary leader or from parents. In a very few cases (8) land was 'owned' (self-buy). Decisions over what to grow and sell and what to spend the money on are made by the female respondent's husband in the majority of cases or are made together by husband and wife. In a much lesser number of cases the decisions are made together, and in a very few cases does the wife/woman make the decision (see Section 3.2).

Table 24. Do you have equal access to the cropping land with your husband or other male members of your HH?

	N	Per cent
Yes	98	85.2
No	17	14.8
Total	115	100.0

The majority of women who said that the HH used land for cropping contributed to the management of the cropping land (Table 25). The majority of respondents said that the land was well managed being of good quality (Table 26 and 27), because they put fertilizer on it and because there was no conflict. An additional reason was given that the cropping land was well managed because women are involved in its management. Those that said it was not well managed (Table 28) said it was because the land was degraded (Table 29).

Table 25. Do you contribute to the management of the cropping land?

	N	Per cent
Yes	97	89.8
No	11	10.2
Total	108	100.0

Table 26. Is the land well managed?

	N	Per cent
Yes	92	85.2
No	16	14.8
Total	108	100.0

Table 27. Why do you say the land is well managed?

Reason	N	Per cent
The land is good quality	70	32.9
Customary institutions are strong	3	1.4
We put fertilizer on the land	39	18.3
Women are involved in the management	43	20.2
Because there is no conflict	39	18.3
Because NGOs are helping us	2	0.9
Because there is strong management	14	6.6
There has been interference of customary institutions	1	0.5
Others	2	0.9
Total	213	100.0

Table 28. Why do you say it is not well managed?

Reason	N	Per cent
The land is degraded	15	65.2
We don't put fertilizer on the land	3	13.0
Women are not involved in the management	1	4.3
Because there is conflict	1	4.3
Because there is weak management	1	4.3
Others	2	8.7
Total	23	100.0

As described above in Section 5.2, there is high dependence on the use of cropping lands for grazing in winter and summer as more than 80% of pastoralists graze their livestock on the remains of crops (stubble). In the monsoon, the dependence on cropping land is less but still substantial for 43% of families. Respondent families depend more on private, individual cropping land of farmers than on common lands. The access to cropping or grazing land is governed by informal agreements between farmers and pastoralists, which are built on relations that the two actors have maintained over generations in many cases. However, the nature of the relationship is changing from social or in-kind, to monetary transactions. The dimensions of tenure security as it applies to customary or common land property does not apply to private cropping land.

Most (83%) of the respondents with cropping land said that they felt that the land belonged to them (Table 29) with almost the same number (82.4%) stating that they have a landholding certificate for this land (Table 39). Having the

landholding certificate helps respondents feel greater ownership over the plot (Table 31). In the majority of cases customary institutions are not involved in protecting the cropping land (Table 32).

Table 29. Do you feel that the HH cropping land belongs to you?

	N	Per cent
Yes	90	83.3
No	18	16.7
Total	108	100.0

Table 30. Does the HH have a landholding certificate for this cropping land?

	N	Per cent
Yes	89	82.4
No	19	17.6
Total	108	100.0

Table 31. Does having a land holding certificate make you feel you have more ownership over the plot?

	N	Per cent
Yes	72	80.9
No	17	19.1
Total	89	100.0

Table 32. Do customary institutions protect your agriculture land for you?

	N	Per cent
Yes	9	8.3
No	99	91.7
Total	108	100.0

Of those with individual cropping land, 56% have carried out land management (improvement) investments during the last three years (Table 33). As seen in Table 34 the most common type of SLM implemented on individual cropping land is bush or invasive species clearing by cutting (or burning). Levelling the ground, enclosure of a water point (bandpada), and clearing of stones were also popular land management methods. The intervention on which most money was spent was the digging of wells for irrigation purposes with 17 being built at an average cost of Rs66,000 (approximately USD900).

The main challenge in making SLM investments is the lack of cash (Table 35). This is followed by the scale of the job/ investment being too great for one person/household to manage, including without government, community or other help. Only 5% of respondents said that they did not make any investment because they felt that the land does not belong to them. Just over half of the respondents (52%) said they would make more SLM investments if they had more cash (Table 36), with others saying that they would do so if they received more assistance and/or knowledge. Twenty-two respondents (11%) said that they would make more investments if they had a stronger feeling that the land was theirs.

Table 33. Have any SLM (land improvement) investments been established or made in your individual cropping land in the last three years?

	N	Per cent
Yes	64	55.7
No	51	44.3
Total	115	100.0

Table 34. SLM (land improvement) investments that have been made on individual cropping land

Type of SLM implemented	No. of HHs implementing	Person days spent by you Mean (SD)	Person days spent by HH Mean (SD)	Money spent on investment (Rs) Mean (SD)
Irrigation well	17	22.94 (35.62)	11.47 (25.72)	65941.18 (53584.59)
Irrigation canal	1	6.00 (0.00)	6.00 (0.00)	30000.00 (0.00)
Pond or well	4	21.75 (31.13)	21.75 (37.13)	16250.00 (8539.13)
Levelling	23	8.70 (21.82)	10.09 (21.53)	44304.35 (90434.66)
Cleared of stones	10	5.30 (7.57)	4.80 (6.66)	21640.00 (29415.91)
Bandpada (enclosed water point)	23	3.17 (4.38)	1.52 (2.37)	15913.04 (11774.06)
Farm bund	7	7.29 (6.52)	4.29 (7.87)	19000.00 (14764.82)
Check dam	0			
Drainage ditch	3	6.00 (3.61)	6.00 (3.61)	6666.67 (11547.01)
Trenches	1	2.00 (0.00)	2.00 (0.00)	15000.00 (0.00)
Farm pond	4	0.50 (1.00)	1.25 (2.50)	17000.00 (17009.80)
Water harvesting	2	0.00 (0.00)	0.00 (0.00)	10000.00 (0.00)
Clearance of bush or invasive species by cutting	27	5.33 (14.61)	4.67 (17.72)	5873.44 (8137.82)
Clearance of bush or invasive species by fire	10	9.40 (23.85)	8.40 (24.14)	8300.00 (10517.71)
Planted trees	0			
Rested/fallow with no crops	1	4.00 (0.00)	4.00 (0.00)	77.00 (0.00)
Constructed a building (e.g. shed)	0			
Others	0			

Table 35. What are the challenges in making SLM investments on your individual cropping land?

	Responses	
	N	Per cent
No cash	54	40.0%
No/little materials	2	1.5%
The job is too big for me alone	21	15.6%
No/little skills	2	1.5%
I have no one to help me	10	7.4%
No/little labour	4	3.0%
The community will not help me	10	7.4%
No/little time	1	0.7%
The government will not help me	16	11.9%
Lack of knowledge	6	4.4%
We do not think the land belongs to us so will not invest	7	5.2%
Other (specify)	2	1.5%
Total	135	100.0%

Table 36. What would encourage you to make SLM investments in the individual cropping lands

	Responses	
	N	Per cent
More cash	104	52.0%
More materials	8	4.0%
More assistance from household members	12	6.0%
More skills	7	3.5%
More assistance from community	1	0.5%
More labour	8	4.0%
More assistance from government	14	7.0%
More time	4	2.0%
More assistance from NGOs	2	1.0%
More knowledge	12	6.0%
Land registration	4	2.0%
Other (specify)	2	1.0%
Stronger feeling that the land is ours	22	11.0%
Total	200	100.0%

5.4.2 Communal cropping land

Twenty-five respondents said that they use communal or collective cropping land (i.e. land managed/used as a group) (Table 37). Though only 8% of respondents said they did this, such communal cropping is fairly unusual and a new situation. The average size of the communal area used is 11 hectares, though the size ranged from 1–70 hectares. Close to half (47%; n = 16) of those that used communal cropping land said that they had carried out SLM activities on it. The main challenge to making investments is that the job is too big for one person or HH alone (Table 38), though 8 respondents (35%) said that if they had more cash, then they would make more investments. Four respondents or 12.5% said that the main challenge is that feel that the land does not belong to them, with 7 respondents (30%) saying that they would invest more in SLM if they had a stronger feeling that the land was theirs (Table 39).

Table 37. Does the HH use communal or communal cropping land?

	N	Per cent
Yes	25	8.3
No	275	91.7
Total	300	100.0

Table 38. What are the challenges in making SLM investments on your communal cropping land?

	Responses	
	N	Per cent
No cash	6	18.8%
The job is too big for me alone	10	31.2%
I have no one to help me	5	15.6%
The community will not help me	2	6.2%
The government will not help me	2	6.2%
NGOs will not help me	3	9.4%
We do not think the land belongs to us so will not invest	4	12.5%
Total	32	100.0%

Table 39. What would encourage you to make SLM investments in the communal cropping land?

	Responses	
	N	Per cent
More cash	8	34.8%
More materials	1	4.3%
More assistance from household members	1	4.3%
More assistance from community	1	4.3%
More labour	2	8.7%
More knowledge	2	8.7%
Land registration	1	4.3%
Stronger feeling that the land is ours	7	30.4%
Total	23	100.0%

6.0 WATER FOR HUMANS AND LIVESTOCK

Most of the time, on migration drinking water for human consumption and for livestock is fetched from the borewell of the farmer who owns the field where the livestock is being grazed and penned. In most villages, the panchayat water tap (and trough) is the most common source of water, followed by borewells. Other common sources of drinking water are 'virda' and 'havada'. Virdas are shallow dug wells that are traditional rain water harvesting structures, and havadas are water tanks for livestock. Virdas are allocated for human and livestock drinking purposes separately.

The main source of water for human consumption is the panchayat water tap. During the winter and summer dry season, people also use private borewells. For livestock, the main water source during the monsoon season are the 'avado' (common water storage tank) (52%) and seasonal ponds (38%). This is much the same all year round, with a few livestock keepers using canals or other water sources during the summer months. Most water sources used are constructed and not natural. The traditional water leader is the one who decides to build the water points, the construction of which some community members contributed to. The majority said that the water point is well managed (see Table 40). A significant proportion of people said that they felt that the water point did not belong to them or the community (see Table 41), mainly because they do not have a certificate of ownership for it (Table 42). Despite this, 31% said that they had made investments to improve the drinking water points (Table 43) and 27% said that they had made investments in improving the livestock water source (Table 44).

Table 40. Is the winter water point well managed?

	N	Per cent
Yes	183	61.0
No	86	28.7
Total	269	89.7
Missing system	31	10.3
Total	300	100.0

Table 41. Do you feel that this water point belongs to you or the community?

	N	Per cent
Yes	101	33.7
No	195	65.0
Total	296	98.7
Missing system	4	1.3
Total	300	100.0

Table 42. If no, why do you think this?

	Responses	
	N	Per cent
Because I think the government will take it away from me	14	7.2%
Because I think the local government will give my water to others in the community	12	6.2%
Because I think a clan member will take away my water	1	0.5%
Because the government will give it to an investor	7	3.6%
Because agriculturalists or investors come and take over my water	16	8.2%
Because I have no certificate of ownership for my water point	144	74.2%
Total	194	100.0%

Table 43. Did you undertake any investment to improve drinking water?

	N	Per cent
Yes	95	31.7
No	204	68.0
Total	299	99.7
Missing system	1	.3
Total	300	100.0

Table 44. Have you done any type of improvements for livestock water source?

	N	Per cent
Yes	80	26.7
No	219	73.0
Total	299	99.7
Missing system	1	.3
Total	300	100.0

7.0 SOCIAL AND LAND USE CHANGES

As described in this report, there are many social and land use changes taking place in Gujarat. Land is increasingly being privatized and/or individualized, migration is becoming more difficult and people more settled, and it is getting harder for pastoralists to access common areas. This means that some households have opted-out of pastoralism altogether and taken up alternative livelihoods that have led to significant changes in social relations and socio-economic status of families – including a loss of the economic power and status that women used to enjoy in the past when livelihoods depended on livestock:

> 'Pehla karta aadmi nu jyada chaltu thayu' (In comparison with the past men control in the family has increased). FGD, Rabari women, Ratadki village, Surendranagar District.

In addition, the group social dynamics that livestock-keeping encouraged are breaking down. This can have fundamentally negative impacts on the collective nature of pastoral societies and their ability to cope with drought which rely on mutual support. As one respondent said:

> 'Pehla bharat kaam, kilol, baatan, ghar ana jaaana' (Earlier we would spend more time together embroidering, gossiping, singing, moving from one place to another etc.). FGD, Rabari women, Sudamda village, Surendranagar District.

Women said that their responsibilities have increased, especially in domestic drudgery whereas previously they would make livestock products for sale. They felt they are minimally involved in other occupations such as crop farming, and digger/tractor or wage employment, and because of these changes their roles and responsibilities as providers in households have been lost. Previously they would have responsibilities to negotiate with farmers and traders in selling some livestock products.

> 'Maal ma haru, gaam ma hoye to kaam jyada. Poora din rasode ma nikli jaaye' (Migration with livestock is better, in the village there is more work and the whole day is spent in the kitchen making tea and food). FGD, Rabari women, Noli village, Surendranagar District.

> 'Vagda rahu jyada game.Maal charta hoye, maal dekhta hoye' (We used to like to stay in open fields and watch livestock). FGD, Rabari women, Noli village, Surendranagar District.

Some women also commented that now men spend more time at home and 'they meddle in every small matter.' These expressions are a reflection of changing spaces within and outside the home for women. Though there were some women who prefer the settled life in villages (mainly because of the increasing challenges and dangers while on migration), in general, if given a choice and the availability and access to grazing land is improved, both men and women would like to continue livestock keeping and the migration that goes with it. A general sentiment was that 'livestock keeps the entire household together.'

As shown in Box 2, today there is a trend towards keeping cows and buffalo instead of sheep and goats. It is getting difficult to migrate continuously to find grazing for sheep and goats and secondly, with the lucrative milk economy it makes more sense to keep cows and buffaloes. These trends are in consonance with the state-wide livestock population trends which showed an increase in exotic cows (69%), indigenous cows (18%) and buffalo (18%) between 2007 and 2012. In comparison, the total sheep population declined by 15% and the goat population increased by 7%. There were 1.7 million sheep in Gujarat in 2012, out of which 98% were indigenous sheep. Between 2007 and 2012, the indigenous sheep recorded a decline of 15% whereas exotic sheep recorded an increase of 85% (Directorate of Animal Husbandry 2012).

Box 2. Changing trends in herd compositions

Out of 100 families of Motabhai Bharwads in Jasper village, 80 families migrate. Together they own 1,500 cows and 1,000 goats and sheep. The herd composition has changed in the last two decades: earlier all households kept sheep and all migrated.

A similar trend from small to large ruminants can be found in Ratadki village, where out of 250 Rabari households, only 25 families own sheep and goats, and migrate. The families who do not migrate keep cows and buffaloes for milk, which is sold to dairy cooperatives.

There is also an aspirational shift when it comes to children's education. There is an impetus towards sending children to school, which is alienating children from their traditional pastoralist societies and occupations. This also affects household level decision-making processes related to herd size and herd composition as reflected in trends towards keeping more cows and buffaloes (instead of sheep and goats), which do not demand a continuous migratory cycle.

The biggest challenge remains the increasing lack of availability of, and access to, the commons. The most common complaint from respondents in the FGDs was that the common land, which includes wastelands, fallow lands and ponds, has been encroached on by agriculture. In addition, traditional access to forests is declining and it is even more difficult to access agricultural land because canal irrigation has enabled more land to be farmed, in some cases for multiple crops in a year. The change in cropping patterns also affects the availability of cropping by-products for grazing.

Unfortunately, the solution to these challenges is not as easy as selling off livestock to invest in alternative livelihoods. There might be an inclination towards selling livestock to buy diggers and tractors, but this change is not working well for all. One family said that they had sold livestock and taken out a loan to buy a digger 10 years ago but were not able to repay the instalments in time resulting in greater debts. The family recently sold the digger and is buying livestock again. They commented 'Maal ma devu na thaye' (Livestock does not bring indebtedness).

8.0 CONCLUSIONS AND OPPORTUNITIES

Pastoralists in India have customary rights over the commons. In times past, the Raj of the area gave pastoral communities the rights to access and use the commons in their vicinity. A few of these allocations were properly documented, but the demarcation of most has relied on word-of-mouth. Because of this failure to document the rights of pastoralists, many of their lands have been left vulnerable to encroachment and excisement by other land users.

Competition between land uses has also created conflict between the pastoralists and other communities dependent on the land. According to the policies of the state government of Gujarat, at least 40 acres need to be demarcated for every 100 animals that pastoralists own but this rule has not been followed. Further, the 'Gaucharni zameen na vyavasthapan karwa angeni niti' (Grazing Land Policy) (Government of Gujarat 2015) does not support pastoralism, and rather promotes the privatization of land by fencing as exclosures for cultivation and the growing and sale of grasses. It also promotes stall feeding. Further, it sanctions land acquisition for public development and infrastructure projects, with little room for public consultation. These and other pressures on land reduce the amount of land available for pastoralists to use and increases pressure on that which remains.

Pastoralist women are able to access and use the commons in the same way as men: in fact, for pastoralism to work effectively women and men need to work together, with complimentary roles and responsibilities. However, increasingly, this access and use is being challenged due to the rapid encroachment and loss of the commons together with its conversion to other uses. Commons and particularly grasslands do not receive the same legal protection as forests, and even where a degree of protection may exist on paper, this is rarely effected.

One of the most important findings of the survey is the high dependence on the use of cropping lands post-harvest for grazing in winter and summer with more than 80% of pastoralists grazing their livestock on the remains of crops (stubble). In the monsoon, the dependence on cropping land is less but still substantial for 43% of families. Clearly respondent families depend more on private, individual cropping land of farmers than on common lands.

The access to cropping or grazing land is governed by informal agreements between farmers and pastoralists, which are built on relations that the two actors have maintained over generations. However, the nature of the relationship is changing from social or in-kind, to monetary transactions. The dimensions of tenure security as it applies to customary or common land property does not apply to private cropping land. The common land such as forest, wasteland, gauchar, grass islands and vidi is accessed for livestock grazing mainly during the monsoon season. The increasing dependence on private versus common lands and its impact on tenure security for pastoralist women is an issue that needs more research.

Previously, where pastoralism was practised actively and the required migrations took place, women had a central role in livestock production and even more so in money management. However, as pastoralism has declined so too has women's role in managing money. With more reliance on cash transactions and shifts in income sources, men are taking more control of the finances. Increasingly, men now undertake market-related transactions and hold on to the money received. Further, pastoralists are finding themselves in debt which puts additional pressure on social relations.

As a result of these socio-economic changes, women's status is reducing, and it is now more difficult for them to access money required to purchase livestock or household items. Whereas women have a wealth of knowledge and skills about livestock, it clearly emerged that women do not have the same knowledge and skills about crop farming as men, and as a result management and decision-making about farming activities is now being done by men. These changing roles and responsibilities may have greater and far-reaching impacts on the personalities of women as well as their position in the household. It was observed that women who used to migrate were not afraid of people or situations, unlike the women who never migrated. Not only do women who no longer migrate feel that their control in household decision-making has reduced, but they also feel that they have lost their distinct relationship with the animals, with milk, with wool, with farmers and with other communities. These relationships are changing and so are women's roles; many of them no longer process raw milk into other products and some have lost the skill to make ghee or mawa.

In 2010, pastoral women from 31 countries who met in Gujarat articulated their needs including the recognition of their profession and contribution to pastoralism, the protection of grazing lands, the protection of mobility, the provision of security in nomadic areas including the enforcement of laws that guarantee the safety of women and ensuring proportionate representation of pastoralist women in all levels of governance (The Mera Declaration 2010 in IFAD 2012). However, despite this statement little has changed and pastoral women (and men) are rapidly losing their access to the commons, as well as their social status and other benefits associated with these lands.

In this context, because women do not feel tenure secure to common lands, they are not investing in in land improvement or resource management. Women feel greater security to individual cropping lands that are becoming increasingly important in the more integrated crop-livestock systems that are developing. However, as more land is turned to crop land, more grasslands are being lost. If the rangelands of Gujarat are to be protected and reach their full potential, then pastoralists should be given assistance in expanding these practices and investing more in rangeland management and restoration activities. A process such as participatory rangeland management (PRM) (see for example Flintan and Cullis 2010), would be a strong framework for developing and implementing such restorative practices.

Despite the challenges that pastoralists are facing in terms of accessing land and resources, lack of government support and investments (e.g. in accessing veterinary services or developing markets for products such as wool), lack of opportunities and insecurity during migrations etc., the majority of pastoralists, both men and women, want to continue the pastoralist way of life. For women in particular, pastoralism provides them with clear roles and responsibilities and status, as well as control over some finances and household decision-making. This highlights the need for greater investment in pastoralism which makes use of land and resources, suitable for little else. Pastoral women need to be supported as part of this: a good understanding of the local context and the changes taking place as described here for Gujarat, should be the starting point for this.

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