# **Is Community Governance Working?**

Local Governance of Common Property Resources in Three Agro-climatic Regions in Rajasthan, India

A case study of community management in the Arid, Semi-Arid and dry Semi-arid regions of Rajasthan.

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# Synopsis

This thesis investigates community management of Common Property Resources in three Agro-climatic regions in Rajasthan. The focus of the thesis is to investigate the local management practises in relation to Garrett Hardin’s *Tragedy of the Commons* and Elinor Ostrom’s *Governing the Commons*. The data has been collected through five months of field work in Rajasthan and in cooperation with an Indian, Rajasthan based NGO.

The data and the following analysis are based on a questionnaire conducted in seven different villages as well as walks in the land areas to estimate the status of encroachment and vegetation. This has been done within three different agro-climatic regions in order to obtain information on management practises under different conditions such as cultural, climatic, social-economic and environmental issues.

“What are the roots that clutch, what branches grow

Out of this stony rubbish? Son of man,

You cannot say, or guess, for you know only

A heap of broken images, where the sun beats,

And the dead tree gives no shelter, the cricket no relief,

And the dry stone no sound of water. Only

There is shadow under the red rock,

(Come in under the shadow of this red rock),

And I will show you something different from either

Your shadow at morning striding behind you

Or your shadow at evening rising to meet you;

I will show you fear in a handful of dust”.

“The Waste Land”

T.S. Eliot

# Introduction:

The Indian economy has since the mid 90´s been through a rapid growth. In 1994-1995 the GDP was 7.5%, and since early 2000 the economy has been growing with around 9% annually[[1]](#footnote-1). The Indian economy is therefore one of the leading economies of the BRICS[[2]](#footnote-2) countries, being the fastest growing and the largest emerging market economy.

It is ,however, not everyone in India who has benefited from the economic boom. Overall, the economic growth has been localized to the major cities[[3]](#footnote-3). This uneven development is further enhanced by the fact that there is a rural population of 742.490.639 and an urban population of 286.119.689 in India[[4]](#footnote-4). Arid regions, tribal areas and the inaccessible hill/mountain regions have largely remained outside the growth paradigm[[5]](#footnote-5). The crisis in these regions has been apparent in terms of reduced land and livestock holdings, a breakdown in agro-pastoral production systems, changes in cropping patterns and depleting groundwater tables[[6]](#footnote-6).

The agrarian development, based on resource intensification and capital investment for increased production, also known as the green revolution, has spiked and levelled in many parts of rural India[[7]](#footnote-7). The passing of the Mahatma Gandhi National Rural Employment Guarantee Act, The Forest Right Act and the National Food Security Act are some indicators of this crisis in rural employment and sustainability[[8]](#footnote-8). India has the largest number of poor in the world; many of them depend directly or indirectly on natural resources for their livelihoods. Poverty, as well as large and expanding human and livestock populations, puts unrelenting pressure on these resources[[9]](#footnote-9).

The close connection of the rural poor to the natural resources and the traditional user rights, of community forest, -Pasture lands and Revenue Wasteland, the resources are viewed as Common Property Resources or Common Pool Resources[[10]](#footnote-10) (CPR). In Rajasthan there is a significant issue with encroachments on the communities CPRs, this is partly due to the population pressure and the increased resource demand but also the Government policy of regularization of the encroached lands. There is, so to speak, an integrated benefit on trespassing on community lands. The irony is that while trespassers are rewarded through regularization; law-abiding people are deprived through loss of access to the commons[[11]](#footnote-11).

Today, approximately 22% of India´s land area is under forest, with around 275 million rural poor depending on it for their livelihood[[12]](#footnote-12). Half of India´s 89 million tribal people, one of the most disadvantage social groups in India, live in the periphery of the forest areas and have a close cultural and economic link to the forest[[13]](#footnote-13). However, the quality of these forests has been significantly reduced since Independence in 1947. Although, there has been a large increase in the forest land under control by the Forest Department (a 50% increase from 1960 to 1980), there has been a steady degeneration of these government managed forests[[14]](#footnote-14). An estimate by the World Bank states that 41% of the forest lands have been degraded over the last several decades[[15]](#footnote-15).

India´s forest are ecological unstable and unhealthy. The process of conversion largely through clear cutting has destroyed the primary structure of most of the forests. Repeated fires and overgrazing have altered the ground and soil structure substantially. *Status of Indian Forestry*,S.A. Shah, 1995.

One of the reasons for this decay of Natural Resources in India after 1947 is that large parts of the Jungle were turned into state forest or revenue forest, mainly for commercial timber production, with little regard for the development of the forest communities[[16]](#footnote-16). In this process, rural people and tribes, who had lived and used the forest as a significant part of their livelihood, were denied user rights to the land through changing laws and Acts[[17]](#footnote-17),[[18]](#footnote-18). In the early 1980´s there was a shift towards forest conservation, with the passing of the Forest Conservation Act[[19]](#footnote-19). During the late 80´s West Bengal and other progressive states, experimented with allocating a specific area of forest along with limited management responsibilities to communities in return for a share of forest revenues from timber and better access to non-timber forest products[[20]](#footnote-20). In 1990 a policy circular formally adopted this model as Joint Forest Management (JFM).

After independence, on one hand, access of communities to common lands was legally denied by the state, on the other hand the derelict state functionaries continued illegally to provide access to its individuals. This has led to widespread, illegal privatization of most of the common land in the villages[[21]](#footnote-21). The people have been compelled to opt for vertical ties with their patrons at the cost of community solidarity and social cohesion. It became nearly impossible to put in place the institutional mechanisms for sustainable land use leading to large-scale deprivation and land degradation leading to economic, social and political disempowerment of the rural poor dependent on the commons[[22]](#footnote-22),[[23]](#footnote-23),[[24]](#footnote-24).

Through my nine months with Seva Mandir, an Indian, Rajasthan based NGO, I have worked exclusively with JFM for four months (Sept.-Dec. 2010) and the general status of CPRs in Rajasthan for five months (Sept.-Feb 2011-12). During this time I have estimated the status of 28 JFM sites in Udaipur district alone and conducted field trips all over Rajasthan to evaluate the status of village CPRs. Through this work I have seen both success and failures in the management of the CPRs. I have seen completely ruined land areas without a single tree left due to overexploitation, I have spoken to villagers who are conducting minor wars with neighbouring villages over the access to the natural resources; often with lethal consequences on both sides, as well as villages who are in open conflict with the Forest Department, due to denied access to the local forest. But I have also seen successful management of the natural resources by the communities and well functioning local institutions that are able to resolve, often long-term and violent conflicts through community based organizations and conduct successful development work on their local CPRs, both in terms of restoring the vegetation and strengthening the local institutions. This has led me to the question of this thesis:

## Problem Formulation

*How is the local governance determining the success or failure of the CPRs in three agro-climatic regions in Rajasthan, India?*

### Description of Problem formulation

The hypothesis of this thesis is; a CPR, sustainably managed and used, can provide the community with a self-empowering tool for improving the natural resources, on which they are dependant. Furthermore, a sustainable managed CPR will provide direct and indirect benefits in terms of increased use values and more tangible ecological benefits. Additionally, this will positively affect the general development of the community in the form of spill-over effects such as; efforts to build a school or to resolve conflicts. It could also prove a powerful tool in mitigating the severe degradation of the natural resources in India and turn this progress with the sustainable community management of CPR.

Governance or management programs applied to the CPR, being it Community Pastures, Community Forests or Government Wastelands, are a result of human decision-making and actions and therefore the local population as well as external powers, such as government, NGO´s and/or international institutions, must be considered an integral part of the equation. Management implies control, whether being informed of economic and/or ecological processes or not. Decisions are made on the basis of goals or objectives in relation to a hierarchy of wants, either for the individual household or for the community, and based on the perception of external and internal processes[[25]](#footnote-25).

Therefore in answering the problem formulation, it is important to capture the views, interests and social norms from the community using the CPR. Furthermore the research must also reflect the changes in livelihood due to external factors, such as policy- and law changes, changes in climate and rainfall and other social factors.

The collected data from the three districts in Rajasthan (Udaipur, Jaisalmer and Alwar), each representing an agro-climatic region, will be viewed with the advantage provided by the theoretical lenses of a conceptual framework made out of the two theories by Hardin and Ostrom. The purpose is here to discuss the findings in the cases and hereby conclude whether the overall hypothesis is correct or not, and in either case to what degree.

# Operationalization

## Design

The design of this thesis is a case design based on three agro-climatic regions of Rajasthan; this allows for an indebt analysis of the aspect within the regions, the consistencies or differences in local governance between the regions and in the end the State as a whole as examples of successes or failures. It cannot be ruled out, for example, that certain variables such as local institutional problems, climate differences, interconnection with wildlife sanctuaries or the dynamics of the different regional communities will have an impact on the management of the CPRs. These different matters must be investigated, to get a clear understanding of why the communities and intuitions act as they do. It may not be possible to incorporate all variables in all regions or villages, but I can strive to incorporate as many as possible to provide a broad and holistic picture as possible[[26]](#footnote-26).

The case design is of both descriptive and explorative character. Descriptive because, the background must be investigated such as traditional methods for management, internal and external conflicts in the villages, the community- and institutional history. Explorative because it must be investigated what is happening in the communities right now and how are they dealing with the current status of the Commons. David de Vaus (2001) is using two terms when it comes to theory. He distinguishes between a theory testing and a theory-building case study. The intentions is not to build a new theory, so the logic option would be to make a theory-testing project, though our main purpose is not to test how well, for example, a Liberal theory or a collective action theory will hold water on the conditions in Rajasthan, but to use it to understand the matters going on in the communities in rural Rajasthan, which is why the theory-using approach is preferred. One may call the case study a “clinical case study” because the ambition is not to verify or falsify a theory, but to use different theories to diagnose the communities’ ability to manage the local commons[[27]](#footnote-27).

## Use of theory

Hardin´s Tragedy of the Commons is one of the most widely accepted explanations for the overexploitation of resources, as well as being one of the most influential articles for ecologists and environmental policy researchers. It relies on classical liberalism in explaining human behaviour and economics, and states that Commons are doomed to overexploitation due to human nature. Hardin´s conclusion has become an integral part of conventional wisdom in environmental studies, resource policy, economics and political science[[28]](#footnote-28). It has been used for formulating resource management policies around the world, where Atlantic Canada Fisheries were one of the first and major national policies[[29]](#footnote-29). Due to the overall degradation of the community commons in Rajasthan, this theory can give insight to why this is happening and why the actors behave as they do.

Elinor Ostrom´s *Governing the Commons* is a fairly resent theory. She was awarded the 2009 Nobel Memorial Prize in Economic Sciences, for her analysis of economic governance, specifically concerning the commons. To a CPR with certain characteristics she argues that local organization can and have been successful in maintaining the resource and avoiding overexploitation. This theory will be helpful in order to understand when and where community organization of the Commons is effective, if at all, and the difference between Indian national policy and the situation in the field.

However, in realisation that the chosen theories and concepts might not be able to explain what I initially expected them to; new concepts may be introduced in the analysis. This due to the character of the project process, as new empirical findings might reveal unexpected issues that the chosen theories are not able to explain[[30]](#footnote-30).

## Method

This study represent social, agro-ecological, climatically and agrarian systems in the arid and semi-arid Rajasthan. Both Qualitative and quantitative data was collected through research instrument developed for this purpose during field work. The research relies on the active participation of the communities and local NGOs. In selection of the villages care have been taken to uses villages that represent the larger situation within the Districts such as socio-economic aspects, a high percentage of the population is Tribal or from Scheduled castes/tribes, past history of encroachment and to capture different types of common land.

The status of degradation of the natural resources within the regions cannot directly be compared due to the difference in climate but the management systems of the CPRs are comparable across the state and experiences from the local governance in one region can be learned from and used as an example in other regions, even though the environmental conditions are different.

**Case Studies:** Data collection and case studies have been conducted in seven villages in Rajasthan, in three different districts: Udaipur, Jaisalmer and Alwar; two villages in Udaipur, two in Jaisalmer and three in Alwar district. These three districts each represent a different agro-climatic and socio-political area within Rajasthan and will provide a state-wide insight to the CPRs and give a basis to generalize. The selection of villages was guided by the presence of local co-operators to help in the field work, in terms of local understanding, translation of the local dialect to Hindi and English as well as the logistic requirements have been a force to be reckoned with.

Udaipur district has a long history of local NGO work in the villages, in the case of Seva Mandir over 40 years, as well as the Joint Forest Management (JFM) project are found in many villages in Udaipur district. Jaisalmer has little to no NGO activity and the typography is completely dominated by the desert. The area size of the CPRs in Jaisalmer and the distance from village to village is another feature that brings a new aspect to the study. The study villages in Alwar were selected in relation to the Sariska Tiger Reserve to bring the conflict between traditional rights and modern wildlife and forest management to light. Alwar has a fairly long history of NGO work as well, but the main feature is the open conflict between villages and the government Forest Department and the cases of relocation of villagers out of the reserve forest.

Each village has been surveyed through walks of the CPR to give a visual estimate of the situation, land records and maps from each village have been compared to the field findings, and an interview based on Elinor Ostrom’s management principals was conducted in order to understand the local management systems and traditions, the importance of the local CPRs and the user- and access rights of the village commons.

**NGO:** The field work was done in cooperation with Seva Mandir, a non-profit organization located in Udaipur City. Seva Mandir has been working in the Adivasi[[31]](#footnote-31) belt in Udaipur District since the 1970s. The organization has been working with the marginalized tribal population through various natural resource management efforts such as, Agriculture, watershed development, afforestation on private and common lands, and through Joint Forest Management on forest lands[[32]](#footnote-32). Seva Mandir´s work in the field of natural resources is based on the premise that, improvement in the natural resource base leads to improvement in the land-based livelihood of the tribal communities[[33]](#footnote-33).

Maps and land records

The land records (as of 1985) and land-use maps were obtained upon request from the Revenue Department of Rajasthan state. The villages were visited together with a village contact from local NGO’s to determine the status of all non-private lands compared to the land-use maps and records. The visited lands include pasturelands, revenue wastelands and barren and uncultivable lands.

Data compilation and representation

The recorded data fall into the following categories:

* Total area (ha) (from land record)
* State of grazing: open, closed (based on visual inspection for boundary walls)
* Total area unoccupied (ha) (based on visual estimate)
* Area of encroachment (ha) (based on visual estimate)
* Age of encroachment: an estimate obtained from local stakeholders when available
* Use of encroachment: (H) houses on encroached land, (A) agricultural field, (W) wasteland, (L) livestock enclosures, (U) unenclosed livestock areas (open for grazing)
* State of vegetation: well-vegetated (WV), sparse (S), scrub vegetation (SV) (based on visual estimate)

Village interview

The management practices for the project have been researched on the basis of a questionnaire developed in reference to the guidelines of Elinor Ostrom[[34]](#footnote-34). E. Ostrom identifies eight design principles of stable common resource management[[35]](#footnote-35). These eight principles are:

* Clearly defined boundaries (effective exclusion of external unentitled parties)
* Rules regarding the appropriation and provision of common resources are adapted to local conditions
* Collective-choice arrangements allow most resource appropriators to participate in the decision-making process
* Effective monitoring by monitors who are part of or accountable to the appropriators
* There is a scale of graduated sanctions for resource appropriators who violate community rules
* Mechanisms of conflict resolution are cheap and of easy access
* The self-determination of the community is recognized by higher-level authorities
* In the case of larger common-pool resources: Organization in the form of multiple layers of nested enterprises

The last point of these design principles will not be part of the analysis as it applies to much larger scenarios than the village commons in Rajasthan. This could apply to the governance of CPRs in India in relation to the federal state´s policy, state policy and local/district policy.

These principals have undergone slight modification by Ostrom and Janssen in *Working Together: Collective Action, the Commons, and Multiple Methods in Practice* (2010), to include a number of additional variables believed to affect the success of self-organized governance systems, including effective communication, internal trust and reciprocity[[36]](#footnote-36), and the nature of the resource system as a whole.

In order to get a more comprehensive understanding of the CPR’s in the villages, some sub-questions have been added. This is also done in order to turn the questionnaire closer to a real conversation, and thereby, simplifying and breaking up the questions into two or more sub-questions. Altering the way of asking, to the perspectives of the interview group(s), such as questions concerning dependency and leadership issues proved beneficial for the research. Both in order for the interview group(s) to fully understand the aim of the question and in order to bring the, sometimes technical questions, into the village sphere. The aim was to get more natural answers through, enhancing the villagers understanding of the project aims and increased their trust in the project and the researchers. Sometimes, to get a specific answer, a question focus point was approached from several different perspectives and asked in different ways, such as aspect of leadership, encroachment and dependency on the Commons.

The Questionnaire based on Ostrom’s principals

1. What are the common property resources in the village and how are they used?

* Is there a clear understanding of the boundaries around the CPR’s and boundaries in relation to who has access to the resources (user and/or owner right conflicts)
* Are there any conflicts over access to the CPR, both internal (village) and external (between villages)
* Overlap between village and resources location

1. Who defines the boundary, rules, sanctions and access right of the CPRs?

* Leadership, corruption, conflicts and familiarity with changing external environments
* The homogeneity of identities, social norms and interests within the village
* Social/economic independence between the different groups

1. What are the main purposes of the CPRs in the village? (Grazing, fuel wood, timber, etc.)

* What is the general level of dependence upon the CPR
* Fairness in allocation of resources

1. What is the role of administrative authorities in protecting the CPRs?

* In relation to locally constructed rules of access and management
* The ease of implementing and in enforcing sanctions.
* The process of implementation and institutional management

1. What are the methods applied by villagers for improvement of the CPRs?

* Level of sanctions
* Accountability in following the rules/norms
* Past successful management experience

1. Who play the pivotal role in the development of CPRs and what is the level of participation in decision making?

* Decision making is independent from external governance
* Accountability of officials towards the community

1. What is the source of water in the village and how it is maintained?
2. What are the institutions for development activities in the village and what is their role in the same?

* Levels of aid/compensation from external governance to the community for conservation activities.
* Local levels of assigning the process, provisions and general self-governance

1. What are the coping mechanisms used by the villagers in difficult situations?

* Change in conduct and management in times of drought and other hard situations.

1. What is the cropping season in the village?

* Relation between harvesting and the regeneration in the resources

**Limitations:** The case studies will only represent three different agro-climatic regions in Rajasthan, although these three represent different cases in regards to climatic, cultural, topography and law -related impacts on the CPR's, they do not represent the state as a whole, but will give a fairly good understanding of the state. Within the district 2-3 villages have been selected for the study, although they were selected due to certain parameters, such as tribal population, they are not representing the district as a whole and cases of success and failure could have been overlooked. But due to time limitation and the sheer expanse of the state of Rajasthan, the districts and the areas of CPRs themselves, districts and villages were selected.

Regarding the land records and maps there are some limitations both due to the fairly old records (1985), in some cases no representative from either the Forest Department or the Revenue Department had visited and adopted the land records in a village for over 50 years, and due to the use of on-site estimations. The use of GPS was not available, which in use with Google Earth could have provided specific and exact land records.

**Topography limitations:** Due to the steep mountains, forest and sheer size of the areas it was not always possible to walk or view the entire area to estimate the situation. The walks of the areas was in those cases planned to cover most of the area and to include specific sites, such as water conservation efforts, areas of conflict and sites with a good overview of the area in order to make a valid estimate of the status.

# Theory

In this section the two conceptual frameworks used in this thesis, by Garrett Hardin and Elinor Ostrom, will be described. Garrett Hardin´s “*Tragedy of the Commons”* is based upon classical liberal economic theory and its assumptions about human and market behaviour, concerning the rational individual and profit maximization, which will lead to overexploitation.Elinor Ostrom´s “*Governing the Commons”* focuses on community management and build upon the assumptions that CPRs are often not the *open-access* resources Hardin describe them as, and the actors’ behaviour is not associated with the term of a profit maximizing rational individual from the liberal economic theory. Both frameworks focus on usage, access and governance of Common Property Resources, but as stated, have different approaches and assumptions on this subject.

The reason for choosing these two theories are: The influence of Hardin´s *Tragedy* on development policy, his conclusion of either private property or Government control as the only way out of the dilemma and his refusal of the user’s ability to create sustainable local management. Ostrom´s more recent theory has been chosen due to her focus on the ability of the community to manage their commons, her refusal of the liberal rational behaviour as the sole motivator and the communities ability to remove themselves from the dilemma of overexploitation and destruction of their livelihood.

## Garrett Hardin - Tragedy of the Commons:

The *Tragedy of the Commons*, which have become an integral part of “conventional wisdom” regarding environmental studies, resource science and policy, economics and political science[[37]](#footnote-37),[[38]](#footnote-38), refers to the social dilemma put forth by the ecologist, Garrett Hardin, in 1968.

Hardin´s theory provides a concept of understanding on how we have come to the brink of numerous environmental disasters. His thesis is that people face dangerous situations, not because of a malicious outside force, but because of the behaviour of many individuals acting alone[[39]](#footnote-39).

Hardin´s article *The Tragedy of the Commons* both challenged and inspired its contemporary generation. The article is one of the most cited publications of recent times, as well as one of the most influential for ecologists and environmental policy researchers (E. Ostrom)[[40]](#footnote-40). Hardin´s Tragedy of the Commons has its roots in classical liberalism and many of the assumptions are based on classical liberal economic theory, such as Adam Smith´s *invisible hand* and the rational individual profit maximizer[[41]](#footnote-41).

It was published at a time when environmental concerns were emerging from local- to global issues and a period where other major works, such as *The Population Bomb* (Ehrlich, 1968) and *The Limit to Growth* (Meadows, 1972) had serious attention from policy-makers and academics[[42]](#footnote-42). These works had similar conclusions: The global environment was threatened by fundamental human characteristic[[43]](#footnote-43). For Ehrlich it was the desire to reproduce, for Meadows; the tendency to endlessly expand our production and consumption of goods and for Hardin; our short-sightedness and our tendency to look out for our-selves first[[44]](#footnote-44). In general, the conclusion was: Humanity was forced to change or find a way to restrain human nature[[45]](#footnote-45).

Hardin uses the word *Tragedy* as the philosopher Whitehead[[46]](#footnote-46) used it: *"The essence of dramatic tragedy is not unhappiness. It resides in the solemnity of the remorseless working of things”*[[47]](#footnote-47). Although Hardin is properly one of the most influential researchers on this subject, many were sceptical towards the commons long before him. *“What is common to the greatest number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the common interest”.* Aristotle, Politics, Book II[[48]](#footnote-48).

Since the early studies of Common Property Resources by Gordon (1954) and Scott (1955) economists have analyzed common property resource systems using relatively similar assumptions and Garrett Hardin is a clear example of this[[49]](#footnote-49). In these systems it is assumed that:

* The resource generates a predictable, finite supply of one type of resource unit in each relevant time period.
* Users are assumed to be homogenous in terms of their assets, skills, discount rates, and cultural views.
* The users are short-term, profit-maximizing actors who possess complete information.

In this perspective, anyone can enter the resource and utilize resource units. The user gain property rights only to what they extract, which they then sell in an open competitive market[[50]](#footnote-50). The open access condition is a given and the users do not make any effort to change it, in terms of restricting the access. The users act independently and do not communicate or coordinate their activities in any way[[51]](#footnote-51).

**The Tragedy.**

Hardin exemplifies the “tragedy of the commons” in a scenario of a pasture land, with open access to all. Furthermore, it is expected that each herder will try to keep the maximum number of livestock on the pasture[[52]](#footnote-52), as rational profit maximizers. Hardin´s herder asks himself: What is the utility *for me* of adding one more animal to my herd? According to theory, this has one positive component and one negative[[53]](#footnote-53).

* **The Positive:**

The positive component is a function of the addition of one animal. Since the herder receives all the benefits from the sale of the additional animal, the positive utility is close to +1.

* **The Negative:**

The negative component is a function of the additional overgrazing created by one more animal. Since the effects of overgrazing are shared by all the herdsmen, the negative utility for any particular herdsman, connected to the commons, is only a fraction of -1.

In adding the components partial utility together, the rational herdsman concludes that, the only sensible course for him is to add another animal to his herd and continue to do so[[54]](#footnote-54).

Therefore, in Hardin's example it is in each herder's interest to put the next (and succeeding) animal he acquires onto the land, even if the quality of the common is damaged for all as a result. This is caused by herder receiving all of the benefits from an additional cow, while the damage to the Commons is shared by the entire group. But it will be the rational conclusion of each and every herdsman sharing the Commons, to add more animals in order to reap the benefits and share the cost[[55]](#footnote-55). When all the herdsmen make this individually rational economic decision, the common will be depleted or even destroyed, to the detriment of all and therein the tragedy of the commons[[56]](#footnote-56).

*“The individual benefits as an individual from his ability to deny the truth even though society as a whole, of which he is a part, suffers”*[[57]](#footnote-57)*.*

Hardin produces examples of this by pointing to cattle rages in the US where the increase in livestock has come to a point where overgrazing leads to erosion and dominance of low nutrition vegetation and towards the more commonly known overexploitation of the whale population[[58]](#footnote-58).

According to Hardin an appeal to conscience to desist from overexploiting the commons, would be understood in two ways, an intended verbal communication and an unintended nonverbal[[59]](#footnote-59):

1. *If you don't do as we ask, we will openly condemn you for not acting like a responsible citizen.*
2. *If you do behave as we ask, we will secretly condemn you for a simpleton who can be shamed into standing aside while the rest of us exploit the commons*.

Hardin states that responsibility should only be used in specific social arrangements, that create coercion. In this sense Hardin argue that we should seek to create social arrangements that will prevent the pasture land in becoming Commons, and thereby prevent the freedom of overexploitation[[60]](#footnote-60), this would be either through private property arrangements or government control. In other words, coercion through an outside agent[[61]](#footnote-61).

*“Individuals locked into the logic of the commons are free only to bring on universal ruin; once they see the necessity of mutual coercion, they become free to pursue other goals”*[[62]](#footnote-62)*.*

Implicitly, the theory assumes that regulators will act in the interest of the public and understand how ecological systems work and how to change institutions so as to induce socially optimal behaviour[[63]](#footnote-63).

**Open Access:**

An open access resource is defined as a depletable, fugitive resource characterized by rivalry in exploitation; it is subject to use by any person who has the capability and will to enter into harvest or extraction of it; and its extraction results in negative externalities[[64]](#footnote-64).

The rivalry in production of an open access resource indicates that one agent’s extraction of the resource excludes another agent possession. If one fisherman catches a fish, another can’t possess the same fish. The rivalry in extraction indicates that the open access resource is not a pure public good[[65]](#footnote-65) in all potential uses. The depletability of an open access resource reflects not only the rivalry in extraction but also that a rate of use, that reduces the resource to zero, exists. The fugitive nature of an open access resource means that it is “reduced to ownership by capture”. There are no enforceable ownership rights over the resource in question[[66]](#footnote-66).

A maximum sustainable yield (MSY) should be reached, according to Stevenson, when the effort going into the extraction of the resource will decline the reproduction, and therefore efforts beyond the MSY will reduce the output and cause decline in revenue[[67]](#footnote-67). The yield-effort function is an equilibrium concept, where, in a fishery, as efforts increase catch and revenue increase up to a point where it meets the MSY. Further increase in effort would result in decline in catch levels, due to a lower fish population and a slower reproduction, as well as a decline in revenue[[68]](#footnote-68). At the point of MSY the actors will be making a profit and this will attract new inputs, either from the actors themselves or from new actors. But due to the open access of the resource, the existing actors cannot prevent new actors from entering and thereby increasing the effort beyond the MSY or into overexploitation[[69]](#footnote-69).

*“...no level of “optimal rate output” can be maintained indefinitely, because of the open access conditions: at such an effort level the fishermen would earn a profit, additional fishermen would be attracted, and efforts would increase”*[[70]](#footnote-70)*.*

**Population Growth:**

According to Hardin, a finite world can only support a finite population, and therefore growth must sooner or later equal zero[[71]](#footnote-71). Hardin argues, that the population growth, as well as his views on human nature, is one of the main reason for the *Tragedy* and both should be seen through Adam Smith’s optics of “the invisible hand”; *each individual acts in its own interest and through that is guided to promote the public interest*[[72]](#footnote-72). The unlimited access to the Commons is what, according to Hardin, causes the *Tragedy*[[73]](#footnote-73).

*“To couple the concept of freedom to breed with the belief that everyone born has an equal right to the commons is to lock the world into a tragic course of action.”*[[74]](#footnote-74)

Hardin criticises the UN declaration of human rights from 1967, stating that: *...the family is the fundamental unit of society and it therefore follows that any decision regarding the size of the family only rests with the family itself*. Hardin denies, categorically, as he writes it, the validity of this human right. Hardin states that, the most important necessity that should be recognized must be the necessity in removing reproduction from the Commons[[75]](#footnote-75). In other words, to govern the reproduction of mankind.

*“The only way we can preserve and nurture other and more precious freedoms is by relinquishing the freedom to breed, and that very soon. "Freedom is the recognition of necessity"-and it is the role of education to reveal to all the necessity of abandoning the freedom to breed. Only so, can we put an end to this aspect of the tragedy of the commons”*[[76]](#footnote-76)*.*

Hardin argues that, it would be a mistake to think that human reproduction could be controlled simply by an appeal to conscience, due to the Darwinian belief that procreation is heredity; therefore it should be done through law[[77]](#footnote-77). He does not mention how this should be done within the boundaries of democracy.

**Avoiding the Tragedy:**

By Hardin, the most straightforward way to achieve restraint towards resource extraction is through coercion, administered by outside agents[[78]](#footnote-78). Hardin sees two possible solutions to create coercion, either through centralized control or through private property. While privatization is the less severe, it involves external actors and the force of law to defend the private property and to manage as they see fit[[79]](#footnote-79). Creating property rights in the Commons would create a structure of rules that recognizes dissipation and would work towards reducing or avoiding it[[80]](#footnote-80).

The creation of private property rights in the Commons would secure an exclusive right to resource extraction that in turn would impart the incentive to the user to utilize the resource at an optimal rate[[81]](#footnote-81). The private rights holder would not only reap the benefits but also incur all the cost of additional resource extraction. A balancing of these benefits and costs would lead the user to an optimal extraction rate, according to theory of common property economics[[82]](#footnote-82).

According to Hardin, taxing would be an effective coercion tool and to avoid enforcement of a ban of the social behaviour, simply by making the norm increasingly expensive to do. Hardin also states that the only form of coercion he would recommend would be a mutual coercion, mutually agreed upon by the majority of the people affected[[83]](#footnote-83).

Hardin identifies two human factors that he believes, drive environmental change: Firstly; the increasing demands for natural resources and environmental services, due to the growth in population and per capita resources consumption. Secondly; the way humans organize themselves into institutional arrangements to extract resources from the environment and eject waste into it[[84]](#footnote-84). Hardin argues that, only two state-organized institutional arrangements could sustain commons in the long run, private property and State Government[[85]](#footnote-85).

Hardin´s view can be stated as follows: If a group of people are placed in a situation where they could mutually benefit if all adapted to a set rule of restrained use, they will not do so in the absence of an external enforcer of agreements, due to their self-interests.

Critique of Hardin´s Tragedy of the Commons

As stated, Hardin uses a form of game theory to analyse the commons and his example of the open pasture land. Although, he does not use the well known Prisoners' Dilemma, his argument shares the same assumptions and can be represented as a variant of this model[[86]](#footnote-86). Just as the Prisoners' Dilemma, Hardin's example assumes that the individual herder has no information about the aggregate state of the commons and its proximity to collapse, as well as there is no communication between the herders[[87]](#footnote-87). This assumption permits Hardin to have the herder make a decision just prior to collapse, that is against his own self-interest, to add another animal and thereby initiate the collapse, with the consequence that he, as well as the others, lose it all[[88]](#footnote-88).

The issue of critique is the amount of information people have about the larger situation in which they function. According to Wade, the informational assumption does not make sense in the usual village situation[[89]](#footnote-89). Here, monitoring the condition of the commons, and of cheating, is frequently and fairly easy.

Hardin does not make the distinction between situations of no property and situations of common property. He begins his argument by assuming 'a pasture open to all'. The case is quite different where a joint ownership unit exists, and access is open only within the bounds of this unit, such as the Joint Forest Management system. Here the chances of getting compliance with rules of restrained access are much better[[90]](#footnote-90). By ignoring the distinction, Hardin generalise the results for no property to cover common property as well. According to Wade, cases of successful common resource management have all involve common property rather than no property[[91]](#footnote-91).

## Elinor Ostrom - Governing the Commons:

The Nobel Prize award was bestowed upon Elinor Ostrom for her work on Common Properties. Her work contradicts Garret Hardin’s theory of the “Tragedy of Commons” and goes one step further to tell us that under certain conditions the commons have been effectively governed.

Elinor Ostrom, and others, argue that Hardin has an oversimplified approach in two ways; firstly, only private property or centralized government can save the environment in the long run and secondly, the resource users are locked in the tragedy dilemma, incapable of creating a solution[[92]](#footnote-92). *“…many social groups, including the herders on the commons that provided the metaphor for his* (Hardin) *analysis, have struggled successfully against threats of resource degradation by developing and maintaining self-governing institutions”[[93]](#footnote-93).*

Ostrom argues that the logic of the tragedy of the commons rests on a set of assumptions about human behaviour concerning governance and the use of commons and of the nature of the resource[[94]](#footnote-94). According to Ostrom, Hardin´s model is too simple to cover the reality of the commons and of human behaviour. “*Human motivation is complex, the rules of governing the real commons do not always permit free access to everyone, and the resource systems themselves have dynamics that influence their response to human use”[[95]](#footnote-95).*

Ostrom states that, the empirical data from the last 30 years tell a rich and complicated story of the commons. Sometimes it is the history of Hardin´s tragedy, but often the results are filled with ambiguity and fall outside Hardin´s story[[96]](#footnote-96). She opposes the view of the rational actor that dominates most economic theory, with a view that assumes that humans take account of the interests of the group. The tragedy of the commons presumes the only motivator to be self-interest and social mechanisms to control the self-interest, such as trust, communication and the ability to make binding agreements (formal or informal), is either lacking or unsuccessful[[97]](#footnote-97). Ostrom does not reject that such conditions apply to some interactions, but sometimes people do move beyond the individual interest. Trust, communication and the anticipation of future interactions can control the self-interest enough to prevent the tragedy[[98]](#footnote-98).

According to Ostrom and Runge, most users of common property resources, especially in the developing world, live in the same village where their families have lived for generations and plan to stay for generations to come. Given the general poverty facing most villagers and the unpredictability of the natural resources they all face, it is doubtful to suppose that the individuals have a “free-rider” strategy as a dominant motivation[[99]](#footnote-99). Runge, as well as Ostrom, argues that common resource users in developing countries face a repeated coordination game instead of the one-try Prisoner´s Dilemma game, Hardin rely upon[[100]](#footnote-100). In such situations all users would favour to limit their own use, as long as others committed themselves to the limitations as well. And the village institutions would provide a mechanism for the group as a whole to arrive at agreements that would ensure each user the others was committed to the agreed upon rules[[101]](#footnote-101). Therefore the issue of the commons would be a coordination problem and not a dilemma.

Ostrom agrees with Hardin, that without appropriate and effective governance institutions the environment and its natural resources will be in danger from increased population and consumption as well as overexploitation through modern technologies[[102]](#footnote-102). Each individual has an incentive to ignore the social costs of his resource use for fear that others will capture the benefits before he can. The lack of exclusion from the resource can thus create an incentive for aggregated use which exceeds the natural regeneration of the resource (Ostrom, 1985)[[103]](#footnote-103). Although, local institutions have not always succeeded in maintaining the resource in question, neither have Hardin’s alternatives of either state- or private-ownership.

Ostrom uses the global ocean as an example of a threat of immense ecosystem degradation, resulting from; interplay among ocean ecology, fishing technology and inadequate governance[[104]](#footnote-104). Ostrom criticizes the top-down national regimes and rule-systems and argues that it leaves the local users and -officials with insufficient autonomy and understanding to design effective institutions and management systems. Ostrom argue that; rules created on models that have no or little credibility among the users and as a result compliance to the rules have been relative low and strong resistance towards strengthening the existing restrictions[[105]](#footnote-105).

According to Ostrom, the creation of governance systems for an sustainable use of the earth’s resources, that include a reasonable quality of life, involve making decisions under conditions that are uncertain, complex, with significant biophysical constrains and conflicting human values and interests[[106]](#footnote-106). A set of laws or rules created under a certain socio-ecological environment, can change or erode as social, economical, environmental and/or technological development increase the potential for resource acquirement or change the environment from where the resource is collected[[107]](#footnote-107). Furthermore Ostrom states that, humans have a tendency to devise methods for evading governance and therefore the rule-set needs to be able to evolve with the environment as a whole.

According to Ostrom, effective governance of commons is best achieved when:

* The resources and use of the resources by humans can be monitored, and the information can be verified and understood at relatively low cost.
* Rates of change in resources, resource-user populations, technology, and economic and social conditions are moderate.
* Communities maintain frequent face-to-face communication and dense social networks.
* Outsiders can be excluded at relatively low cost from using the resource.
* The users support effective monitoring and rule enforcement.

Regarding dense social network and face-to-face communication, the argument is that it will increase trust among the members, allow people to express emotions and see reactions to distrust as well as lowering the cost of monitoring compliance to the rules. Exclusion of outsiders is important due to the increased harvesting pressure on the given resource and a typical lack of understanding of the rules by the newcomers.

Although, only very few situations in the world are characterized by all of these conditions, the challenge, according to Ostrom, is to create institutional arrangements that help facilitate such conditions, or as a main create governance in the absence ideal conditions[[108]](#footnote-108). Ostrom refers to Robert M. Netting´s research in the Swiss Alps[[109]](#footnote-109) and his five resource characteristics that would relate to forms of common property being created by the users[[110]](#footnote-110).

* The value per-unit production is low
* The frequency and dependability of yield is low
* The possibility of improvement is low
* The area required for effective use is large
* The size of the group needed to make capital investments is large

The opposite characteristics would, according to Netting, make the users create forms of private property. Common property regimes developed under these conditions have been sustained for centuries without overexploiting the resource[[111]](#footnote-111).

Under specific conditions common property regimes will be more beneficial than private property. These conditions would be when:

* The cost of creating and enforcing private property rights is high
* The economic value of the output is low
* The benefits created by the resource are distributed with high spatial uncertainty

Under such conditions, a common property system would provide a way of reducing the risk of having nothing at all, in a period of time, and therefore preferable to private property[[112]](#footnote-112).

According to Ostrom the research should be focused, not on a quest for the “correct” overall concept and the single right policy, but on an understanding of the conditions under which specific institutional models provide beneficial for the users in sustaining their resources over a long period of time, also known as design principles[[113]](#footnote-113).

In her book *Governing the Commons: The Evolution of Institutions for Collective Action*, from 1990, Ostrom formulated eight principles for where community based organization would function[[114]](#footnote-114), based on discussions on the National Research Council appointed panel on the Study of Common Property Resource Management, as well as a long series of field studies from all over the world.

* Clearly defined boundaries (effective exclusion of external parties)
* Rules regarding the appropriation and provision of common resources are adapted to local conditions
* Collective-choice arrangements allow most resource appropriators to participate in the decision-making process
* Effective monitoring by monitors who are part of or accountable to the appropriators
* There is a scale of graduated sanctions for resource appropriators who violate community rules
* Mechanisms of conflict resolution are cheap and of easy access
* The self-determination of the community is recognized by higher-level authorities
* In the case of larger common-pool resources: Organization in the form of multiple layers of nested enterprises

As mentioned in the method chapter, the last point will not be part of the analysis in this thesis, as the focus of the thesis is not on the large scale organisation of the Indian Commons.

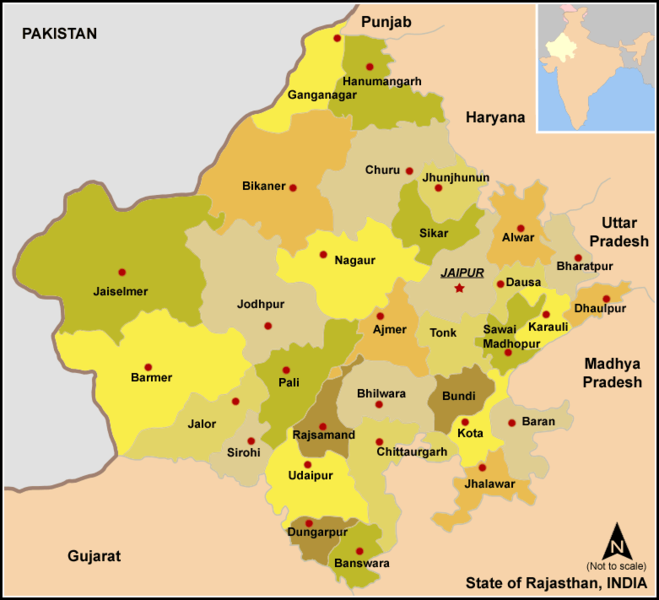
To summon up on the theory chapter, the key aspects from the two theories are; from Hardin´s: The individuals are solely motivated by personal gains, they are a homogeneous group with no difference in terms of culture, skills and assets, they have a fear of losing access if they don´t exploit before someone else does, the open access to the resource and that the users are trapped in the *Tragedy* and are unable to resolve the situation themselves, and thereby unable to create local institutions to manage the commons effectively. As the solution to the Tragedy Hardin has two options; private property or government control.

The key aspects from Ostrom, as stated in her design principles, are; cheap and easy exclusion of outsiders, a high cost of enforcing private property, an effective and local decision-making process, effective monitoring of both users and the resource, guaranties sanctions toward rule breakers as well as accountability towards the rules, easy and local conflict resolution and the recognition of the local authority by government officials.

With this, the focus of the analysis will be to investigate the field data through the lens of the two theories to understand the condition of the Commons and the motivations of the appropriators for their usage and management of the CPRs.

# Introduction of Cases

**Rajasthan/**Rajputanaliterally means "*the land of kings"* or *"the land of kingdoms"*, with the dominating cast being *Rajput*, and it is the largest state of the Republic of India by area[[115]](#footnote-115) and it covers much of the area of the *Thar* Desert. The state is bordered by Pakistan to the west, Gujarat to the southwest, Madhya Pradesh to the southeast, Uttar Pradesh and Haryana to the northeast and Punjab to the north. Rajasthan covers 10.4% of India´s land mass, an area of 342,269 km2.[[116]](#footnote-116) The present State of Rajasthan was formed after a long process of integration which began on March 17, 1948 and ended on November 1, 1956[[117]](#footnote-117).



One of the world's oldest mountain ranges, the Aravalli Range dominates the landscape from the south-west travelling north-east towards Delhi and Punjab, from the districts of Udaipur and Sirohi towards the district of Alwar, for more than 850 km[[118]](#footnote-118). The Aravalli hills create a natural barrier to the desert and divide the state into two ecological "zones"; the arid north-west and the semi-arid south-east[[119]](#footnote-119).

In Rajasthan, Hindus account for 88.8% of the population, Muslims make up 8.5%, Sikhs 1.4% and Jains 1.2% of the population[[120]](#footnote-120). The state of Rajasthan is also populated by *Sindhis*, who came to Rajasthan from the Sindh province (now in Pakistan) during the India-Pakistan separation in 1947[[121]](#footnote-121). The total population of Rajasthan is estimated to be more than 68 million according to the 2011 census[[122]](#footnote-122).

**Common Property Resources** (CPRs/Commons) are land resources owned and managed by a local community, rather than controlled by governments (public/government resources), or owned by individuals (private resources). *"Rural common property resources are broadly defined as, resources towards which all members of an identifiable community have inalienable user rights. In the Indian context CPRs include Community Pastures, Community Forests, Government Wastelands, Common Dumping and Threshing Grounds, Watershed Drainages, Village Ponds and Rivers etc. The first three resources are particularly important because of their large area and their contribution to people's sustenance."[[123]](#footnote-123)*

It is helpful to distinguish between the type of property right and the type of resource, to allow for the fact that the same type of resource may be exploited under a range of property rights. Common pool resources are to be understood as a sub-set of public goods (as that term is used in economics). All public goods have the property that many can use them at the same time, because exclusion is difficult. Some public goods yield infinite benefits, in the sense that if A uses more there is no reduction in the amount available for others (e.g. lighthouses and weather forecasts). Common-pool resources, by contrast, are public goods with limited or subtractive benefits; if A uses more, less remains for others. Common-pool resources are therefore potentially subject to congestion, depletion, or degradation, i.e. extraction which is pushed beyond the limits of sustainable yield.

Fresh water, for example, is a common property resource: it can be used jointly, because of the high cost of excluding a landowner with nearby land; and its consumption is subtractive in the sense that water applied to A's land is not simultaneously available for B's[[124]](#footnote-124).

The rural poor with limited alternative means of income, depends largely on the benefits from the CPRs. Whereas, the rural rich have a very low dependency on the CPRs[[125]](#footnote-125). This dependency is even more significant in India’s arid and semi-arid regions, such as Rajasthan, due to the harsh environment[[126]](#footnote-126). According to Jodha´s study, the poor households dependency on the CPRs for fodder and food items rages from 84% to 100%, the equivalent dependency for rich households in Rajasthan rages from 10% - 19%[[127]](#footnote-127). Despite the CPRs significant and valuable contribution to the livelihood of the rural population, they are among the most neglected areas within development planning in India[[128]](#footnote-128).

The previous Indian literature regarding the CPR (Jodha) consider the significant importance of the commons revolve around two major points; the importance for ecology and to the livelihood of the rural poor[[129]](#footnote-129). The CPRs contribution are abundant, and includes; local employment, income generation and asset accumulation. Nevertheless, due to the daily routines these are seldom recorded or recognized[[130]](#footnote-130). They range from the direct and more visible contributions in terms of physical supplies to the less visible gains implied by sustainability of agro-ecological systems. This sort of invisibility of CPR contributions, according to Jodha, is more prominent in the case of long-term social and ecological processes characterising dry areas[[131]](#footnote-131). According to Jodha´s field study, the CPRs in Rajasthan contributes to the poor households on an average with 71% of the fuel wood used for the year, 84% of the annual fodder, 165 days of employment and 23% of the annual income[[132]](#footnote-132) per household[[133]](#footnote-133). However, CPRs in India´s arid and semi-arid regions face a significant crisis and at the present status, the CPRs cannot meet the local needs. This is reflected through their general shrinkage in area, decline in productivity and general degradation and breakdown in local management systems[[134]](#footnote-134). According to Jodha, the decline in area has been fairly easy to observe through village interviews and records of land use. On the other hand, the decline in productivity, although clearly felt in the villages, is difficult to quantify due to the productivity have never been recorded in the past[[135]](#footnote-135).

The local ecology and community receive direct benefits from a well vegetated CPR, through the lessened soil erosion and the higher level of soil moisture, as well as effective water conservation efforts to keep the water supply up for the harsh summer period. The erosion and soil moisture are interconnected through vegetation[[136]](#footnote-136). A high level of vegetation, and thereby a large root network from the top soil to deeper levels, will prevent much the soil run off during the monsoon as well as, lessening the evaporation of water and in arid regions, such as western Rajasthan, this is of critical importance[[137]](#footnote-137).

**Farming** in rural Rajasthan is mainly rain fed, and therefore subsistence orientated in nature. The continued degradation of the forest has affected the soil and water system in the agricultural lands located in the plains and downstream. This leads to more frequent droughts, and food and income shortages as result of the top soil being washed away by the monsoon. Another trend towards overgrazing has been the change in the farming techniques; instead of letting livestock graze on the crop fields after harvest, farmers sow a second or third crop, without letting the land pause to regenerate[[138]](#footnote-138). In effect, this means that the fodder obtained from the post-harvest fields is not available and additional fodder must be obtained from the CPRs.

Due to the farming based livelihood of the rural population, the levels of soil moisture, silt run off and a stable and nutritious layer of top soil will have significant effects on the farming productivity, both in agricultural and livestock based farming. Although the livestock farming is not directly affected by e.g. erosion, they are affected indirectly through the availability of fodder for grazing and harvesting. As mentioned the landless households in Rajasthan are especially dependent on the CPR's to make ends meet.

The problems concerning common lands in the state are not merely physical in terms of degradation or sub-optimal productivity, which can be addressed with relative ease through technological options, but also socio-political in nature, often requiring long drawn attempts at reconciliation of stakes of various sections of the community and advocating for accommodation of these interests.

## Case Descriptions

In the following case studies the question of how the local management is influencing the condition and status of the CPRs will be investigated both through interviews conducted in all villages and through estimates of the land status. This is done in order to understand the background of the institutional organisations and to investigate the current situation of the Commons.

### Case I: Udaipur District

Udaipur district is located in the south of Rajasthan and dominated by the Aravali Hills, one of the oldest mountain ranges in the world. The area is characterized by semi-arid climatic conditions and undulating terrain. Many of the hills are barren and the area is marked by scarcity of rainfall, which usually takes place during monsoon months. On top of this, the low levels of vegetation increases water erosion by the monsoon, and wash-off of nutritious soil, leaving the land less fertile and barren. According to the Rajasthan Government Statistics from 2007, out of the total population of 2.63 million, 81.4% lives in the rural areas[[139]](#footnote-139).The total population of Udaipur District has increased by about 600.000[[140]](#footnote-140) since 1999 and according to the State Statistics 47.86% of the total population in the district belong to a Scheduled Tribe and 6% to Scheduled Caste groups[[141]](#footnote-141). The population in Udaipur is mainly rural and heavily depends on natural resources for their survival[[142]](#footnote-142). However, due to the increase in human and livestock population and the high level of dependency of the natural resource, the common lands have been severely degraded over the last 15 years through overexploitation, misuse and encroachments. This has resulted in a variety of negative environmental and social impacts, which may see the future subsistence of the land uncertain.

*“In the hills, not so arid areas of the south, land consolidation is an important policy option, as at present fragmented form of lands makes it very difficult to promote value addition in agriculture. Here, the general practice of the ST communities of claiming the land as new families are formed—a practice from the expansive agriculture era—brings marginal lands under the plough, leads to cutting of the woods and further fragmentation of the existing land. This must, now, give way to more sustainable styles of land use. For this, a new settlement process must be initiated.”*

Government of Rajasthan, Human Development Report, 2008.

Water scarcity, diminished land quality and small landholdings place severe constraints on agricultural productivity. Therefore, in addition to widespread involvement in agriculture and animal husbandry a large section of the rural population, including the youth, have become heavily involved and dependent on various forms of casual labour, migrating for work on a daily or seasonal basis[[143]](#footnote-143). While the local population is largely dependent on natural resources for their livelihood, most of the commons have fallen victim to overgrazing and encroachment[[144]](#footnote-144). Furthermore, these processes of degradation have been amplified by the fragile nature of the land, which makes the area vulnerable to droughts and limits the possibility of developing new alternative activities to increase the productivity of lands. The economic condition of these tribal communities can be gauged from the fact that roughly 44 % of all families live below the poverty line[[145]](#footnote-145).

As the immediate livelihood needs are increasingly being met through labour migration, the destruction of the local ecology for short-term private gain has increasingly become the norm[[146]](#footnote-146). At present, with continuously growing demand for resources and the growing value of lands, the commons are increasingly becoming subject of speculation. As the state seeks to encourage economic growth, it is increasingly unlikely that fragmented communities will be able to compete with powerful business interests who see large profits in utilizing the lands. This presents a serious threat to the local ecology and, therefore, the very foundation of sustainable local livelihoods[[147]](#footnote-147).

#### Ramaj

See appendix II for Ramaj village details

Village Statistics:

All parcels smaller than one hectare were omitted from the survey. Subsequently 70% by area of total common land was surveyed, yet only 15% by number of parcels, indicating that a small number of parcels represent the majority of common land in Ramaj.

Figure 1 – Level of Survey

The total *de facto* area (pastureland, revenue waste land and barren and uncultivable land) is of 318.64 ha compiling of 467 parcel units. The surveyed land area is 230.88 ha, 70 parcel units. In terms of percentage it is 72.46% of land in merely 14.99% of the parcel units.

Figure 2 - Level of Survey by land categories

The surveyed pasture land in area is 75.8 ha, which is 92.64% of the total pasture land in Ramaj. The surveyed revenue land area is 45.91 ha which amounts to 86.49% of the total revenue wasteland. The surveyed Barren and Uncultivable land area is 109.18 ha which cover 59.42% of the total Barren land category. Barren and Uncultivable land is the major land mass in Ramaj with a total area of 183.75 ha in 361 parcel unit. The surveyed parcels in the Barren and Uncultivable land covered merely 6.93% of the total parcel units, with an average parcel area of 4.3 ha, but covered nearly 60% of the total category.

Table - Level of Survey

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Pastureland | Revenue Wasteland | Barren and uncultivable | Total |
| Total area of land (ha) | 81.81 | 53.08 | 183.75 | 318.64 |
| Area of land (ha) surveyed | 75.79 | 45.91 | 109.18 | 230.88 |
| Level of surveying | 92.64% | 86.49% | 59.42% | 72,46% |
| Total number of parcels | 53 | 53 | 361 | 467 |
| Number of parcels surveyed | 22 | 23 | 25 | 70 |
| % of parcels surveyed | 41.51% | 43.40% | 6.93% | 14,99% |

Some caution is warranted regarding Ramaj village, as it is considered to be a typical representative of the common land scenarios. There is no forestland in Ramaj, which eliminates forest resource use, deforestation and additionally, the unique set of institutional and legal implications of Forest Department jurisdiction.

Level of encroachment

Table - Level of encroachment by land category

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Pastureland | Revenue Wasteland | Barren and Uncultivable | TOTAL |
| Area of land (ha) | 75.79 | 45.91 | 109.18 | 230.88 |
| Encroached Area (ha) | 23.56 | 35.495 | 101.51 | 160.565 |
| Level of encroachment | 31.09% | 77.31% | 92.97% | 69.54% |

Table 2 shows the level of encroachment in land categories, and according to the findings Ramaj has a high average level of encroachment on the commons.

Although, there is a difference between the categories ranging from 31% in pasture lands, 77% in revenue wasteland and to 93% in uncultivable land. The high level of encroachment found in Revenue Wasteland is closely connected with the policy of regularization, this could indicate Hardin´s model of behaviour. The individual farmer has knowledge of the regularization policy, although the process often takes 10-15 years, the bribes and fines that come with the encroachment are fairly low and the fines are often never given. While the individual farmer will gain all of the benefits from the additional land and in the end could get the land allotted through government policies. The degeneration to the rest of the Revenue Wasteland will only affect him mildly. The high amount of encroachments could also indicate the fear of losing access to the resources, due to others encroachment, as a high motivator for further encroachments. This would be in accordance to Hardin´s non-verbal understanding of the desistance to overexploit.

The relatively low level (31%) of encroachment on pastureland reflects the consistent effort over 25 years, undertaken by villagers to protect the pastures. The pasture land in Ramaj shows that community organization have functioned, although not perfect, it is still far from the encroachment levels of the other categories. The highest level of encroachment (93%) occurs on barren and uncultivable land, which cannot be allotted. This could point to a lack of knowledge of the current land laws in the village, and the rights of use and allotment following these laws. But it could also be a sign of a difference between, what the villagers determine as common land and what is stated in the revenue records, an example of De Facto village commons.

Status of Vegetation

In Ramaj there is no forest land and only sparse tree vegetation is present on the land categories that are recorded in revenue department documents. The villagers stated that most of the forest was sold off as timber shortly after independence. Although, there is currently no evidence to prove this statement, other than the statement from the villagers, it is not an uncommon scenario during the governance changes during the early days of independence. The fact is that there is no forest in Ramaj anymore.

The vegetation shows some notable differentiation across the land categories. Barren and uncultivable land has the lowest level of vegetated area. Pastureland shows the highest level of vegetation, this is mainly due to the long effort by the community and NGO to protect the pasture land in Ramaj. The Village Development initiatives largely account for the whole difference and have had a big and positive effect on the village plantation efforts and concerns towards the regeneration of the pasture land.

Figure 3 - Vegetation type by land classification

Village data Conclusion:

The level of encroachment (69.5%) across the land categories in Ramaj is high and it promotes honeycombing. Moreover, parcels with partial encroachment might be completely inaccessible to villagers because of the encroaching households’ staking claims to the lands.

The Pastureland Development initiative remains a notable exception in the village. In relation to this, the old encroaching households, that were removed prior to the demarcation, have begun to send their cattle for grazing on the land during the last couple of years, claiming rights to the land or wanting compensation in other areas. On the pasture land developed in 2005-06, there were extensive encroachments before the area was enclosed. These encroachments were removed and the land marked by a boundary of cactus plants[[148]](#footnote-148). But during the last two years the former encroachers have begun to send their cattle for grazing inside the boundary and stake a claim for their old land holdings. The claim is; the former encroachers had an agreement with the *Panchayat* of getting the land back after 5-6 years or get land allotted in another *Phalla[[149]](#footnote-149)*, being the revenue wasteland, ergo government land holdings that can be allotted. They feel they have been unfairly treated since many other encroachers are still present in other areas of the village.

The high rate (92.97%) of encroachment on Barren and Uncultivable land is unexpected, given that villagers cannot receive these lands through regularization. One possibility is that Revenue Department officials could change the category of a parcel to revenue wasteland, which can then be allotted as private agricultural land. Experience shows that bribery and other irregular activities, between villagers and government officials play an important role in allotment, making this a possibility. Encroachment on revenue wasteland, a category that can be allotted by the Revenue Department, is expected as villagers can stake a claim for future allotment while cultivating land, all at the cost of relatively small fines (100 rupee) or bribes over several years. As stated, fines are rarely given and bribes often keep the Panchayat ineffective. The accountability of the encroachers towards the community is very low and the sanction functions are ineffective and rarely enforced. This provides a serious stumbling block for the community governance of the commons, and it is highlighted by Ostrom´s principle that without accountability and effective sanctions, community organization will have a very hard time.

**Interview**

The interview in Ramaj was done during two different visits and with two different groups. The group referred to as Group A, consists of four elder members of the village who were or had been members of the Village Development Committee and had all been involved in the development of pastureland and five private *Chaks* (grazing lands) during the late 90’s.

The other interview group consisted of seven village members, five men and two women. They were mostly elder community members and all of them were farmers and livestock herders. The second group was not willing to speak much about the encroachment problems in the village, very likely because some of them were encroachers themselves. This gave the replies some aspect of being biased and lacking clear information. When the two interviews were combined it proved fruitful and gave insights from different village perspectives.

Interview findings:

The initial talk of the land categories, boundaries and water sources, with both groups, showed a good understanding for the different land categories and the location of the water resources and the moist conservation constructions, like anicuts and water treatment areas; although, there is an ongoing internal conflict over encroachment on the village commons. As the data findings indicate, there is a massive problem with encroachments on common land in Ramaj. Where one group acknowledge this problem and were willing to talk about it the other group denied the encroachments altogether.

One group of villagers (Group A) has tried to take action against the massive problems concerning encroachment, mainly focused on the pasture- and the revenue wasteland encroachments. This has been tried through the local political institutions. But they feel their efforts, overall, have been unsuccessful. Group A, indicated that some of the members of the local *Panchayat* are either encroachers themselves or that they are economically and/or politically connected to the encroachers, therefore it is against their personal interests to change the conduct of the Ramaj commons.

Group A stated that, more that 75% of the village pasture land is actually encroached upon, and not available for common grazing. The pasture lands have become divided into small areas by the encroachment boundaries, making access to the rest even more difficult. Some of the villagers stated, that around 50 households are encroaching on the pastures and this creates a fairly large and powerful group who does not want to talk about changing the conduct and norm, as the act of encroaching has become a norm over the last 20-25 years without much resistance.

One major hindrance Group A has met in their efforts, has been to prove the encroachers have no legal right to the land. This is coursed by the village having no records of land holdings and –categories (*Gambandi*[[150]](#footnote-150)). By this the encroachers uphold their claims on land titles.

Group A has tried to remove the encroachers through the legal process of both the village, the *Gram Panchayat* and through the Chief Block Adiministrator (*Tehsildar*). They claim the local *Panchayat* members are also encroachers and the *Panchayat*-leader (Kamlendra Singh) corrupted the election with bribes of money and liquor to the Scheduled Tribes in the area, and is supported by the Rajput in the region. Kamlendra Singh is of the Rajput caste and not from Ramaj, furthermore it was said that he is a “straw man” for his elder brother and father, and other powerful individuals in the region. He takes only very few and minor decisions without consulting with his farther and bother first. Additionally it was said that his elder brother is the *King Maker* and the real power behind the rural politics in the area.

Group A tried to go to the *Panchayat* to get the encroachers removed; the Panchayat leader went to his farther, who is an encroacher, and promised the villagers to make the Dept. *Sagh-Panch* take action. The villagers said that the Dept. S*agh-Panch* is related to some of the encroaching households and therefore did nothing. The villagers wrote a letter of complaint to the Chief Revenue Collector but with no effect, this complaint was registered and the *Patvari* made a report. During the next *Panchayat Gram Sabat* meting Group A raised the issue of encroachment, but with no real effect, even though the law states that, if a complaint is registered by the *Pamchad* and sent to the *Tehsildar*, they are bound by law to react on this and investigate the issue.

Within the village there is only one caste represented, it is the Ratwa-Meena. It is legally recognized as a Scheduled Tribe, but socially they are more empowered compared to other ST. in Udaipur District. As such the community could be seen as very homogeneous but within the community there are a lot of social and economic differences. This comes to light through the internal conflict of the village.

Related to the specific questions and principals, it shows that there are problems with the precise area of the different land categories in the village. In other words, the general area of a land category is known but the category of the specific parcels is a subject, and reason, to internal conflict, focused on the division between private land and common land on sight. In that regard there is a large overlap between the village and the CPRs.

The rules of access and the usage, and to some extent, the CPR-boundaries are set by the *Gram Panchayat* and otherwise by the Revenue Department, but all authorities show a high level of corruption and conflicts of interest.

The main usage of the CPR in Ramaj is grazing and fodder for the livestock; otherwise the area is dominated by farming. The village is very dependent on the remaining CPR for grazing, but as described the allocation of the resources available not nor equal due to the large amount of encroachment.

The local authority on the CPR is the *Panchayat* and the *Gram Panchayat*, and their role is to administer the local CPRs and solve any conflict regarded to this. In reality, as indicated by the internal conflicts, this is not the case. The implementation of rules and sanctions is very poor and close to non-existence, as well as the level of accountability towards the rules from the village in general. There is no real management system of the village CPRs and all areas are set for open grazing, all through the year.

In all of Ramaj there are 15 handpumps and around 90 tubewells and four anicuts, two government and two constructed by Seva Mandir, according to the villagers none of the important sources of water run dry during summer season. The water level will of course be low but not gone. The wells and anicuts are maintained by the village, cleaned of silt and repaired every five years and the community was very happy, and interested in showing the anicuts. A reason for the little concern with water scarcity, is partly due to the many tube wells in the area and of course as well to the maintenance of the water conservation efforts, but another reason could also be the plentiful monsoons seasons the last three years, the villagers said that the last drought was in 2006.

During droughts the villagers’ plant and harvest grass on their fields for fodder, other than that, they graze the livestock on the pasture lands and revenue lands, as normal. The villagers are provided with additional fodder and other essentials from the government store, at a low price, when required, during difficult times. The more wealthy households are able to cover their needs through buying goods at the market. When asked the villagers were interested in improving the vegetation on the common land, but indicated that they were not able to due to lack of funds. However, they indicated that they would like to obtain help from external agencies to do plantation efforts, and in doing so would provide labour as the community’s main contributing resource.

#### Ramaj Conclusion:

The internal and long term conflict goes against Ostrom´s principles where conflict resolution is easy and the high level of encroachment indicates that the community based governance is not functioning and the accountability to the rules is very low. It also indicates Hardin´s *Tragedy* where the actors are trapped in the second-level dilemma due to negative impacts of the first. The villagers are unable to solve their internal conflict due to the existing problems with the local governance institution and encroachments.

The local governance institution seems to be rife with corruption, both in terms of power distribution and towards the legal process of encroachments. Given the long term conflict, over 30 years, the villagers seem unable to solve the issue without external help. Although, they have tried to find a resolution through the legal process, this has come to little effect. Without the official land records and government officials to back them up the encroachers are too powerful.

The overall situation in Ramaj seems to fit with Hardin´s perception of the Commons e.g. the *Tragedy*, where the short-term gains are the motivator for the users. In effect the commons have massively decreased in size and availability, mainly due to the large scale encroachments, but the resources needed have remained high and this, more than anything, have led to the overall degradation of the CPR. But on the other hand, Ramaj also shows some ability for improving and protecting the pasture land, although with some difficulty and with help from an external actor. In regards to the pasture land, the monitoring has been done by the Village Development Committee in cooperation with the NGO and it has been fairly effective. This shows that Ramaj has been capable of forming local organization, but only in connection with the pasture land and only with outside help. In all other regards the monitoring is ineffective to non-existent from both the Panchayat and from the Revenue Department. There are some clear rules for usage of the CPRs, but the only one that are upheld, is to exclude people from other villages from the CPR. The encroachment has become a social norm in the village as well as bribery of officials. It would indicate that there is only minor forces working for community access and the majority, and the more empowered, are focusing on their private gains rather than the sustainability of the CPR and they have the money and political power to influence local officials and policy.

Ramaj has a fairly long history of community institutions, going back to the 1990’ies. Although many development projects, have met difficulties and failures, due to the ineffectiveness of the local institutions, conflicts and general mismanagement, the villagers have also managed to overcome some of these difficulties. An example of this would be the work on the pasture land, which initially failed due to poor management and improper protection. Although, these pasture lands have again become an issue of encroachment and illegal grazing and have resulted in conflict.

In regards to sanctions towards the rule violators, it is basically non-existent. There are only a few cases of fines and only in relation to the pasture land, in all other regards sanctions towards the encroachers are absent from both the Panchayat and the Revenue Department. The group that is working against the encroachers only seems interested in the pasture land and the water sources, little interest is shown towards the other land categories.

There are a few cases of conflict resolution in Ramaj, again mainly in regard to the pasture land, but the overall picture would be that resolutions are not easy, eventhough the political power to do so lies with the village Panchayat. But due to the corruption the institution is seriously hampered and ineffective. As stated in the analysis, it is mandatory by law that the *Gram Panchayat* and *Tehsildar* reacts on a recorded complaint of encroachment on village CPR. So the accusation on members of the *Panchayat* being encroachers themselves, or at least to be involved financially, seems to hold true.

The villagers in the interview indicated a high dependency on the commons for grazing their livestock, as they are the main source of income for most of the community. Especially, with the shrinkage of the commons available, due to the encroachments, the continued overgrazing and depletion of the CPR in Ramaj is likely to continue, without any restriction norms.

The water sources are in good condition and well maintained and it is the only area where the village has a continued effective management of a common resource. This indicates, according to Ostrom, that the vitality and scarcity of the resource makes the community form management organisation and uphold the rules of conduct. But it does not hold true towards any other CPR in the village and with the increasing lack of fodder available it is rather the funds and employment the village receive from for development work on the water facilities from Seva Mandir, which is the motivator.

Overall there are massive problems with encroachment on the common lands, corruption in the administrative levels and with very low accountability towards the rules of conduct on the CPRs. There are only a few members who are alarmed about the general status of the village CPRs. The majority of the community are not concerned with the encroachments and are unwilling to take any action against the encroachers. This has created a norm of, *Encroach or watch someone else do it*, which fits with Hardin´s analysis of behaviour towards commons. The few successes Ramaj has had in development of the commons have time and again been spoiled by further encroachments and the ineffectiveness of the Panchayat.

#### Dodawali

For Dodawali details see Appendix III

Village Statistic:

All parcels smaller than one hectare were omitted from the survey. 93% of the total area was surveyed equivalent to 42,85% of the total parcels.

Table – Level of survey

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Forest land | Revenue Wasteland | Barren and uncultivable | Total |
| Total area (ha) of land | 707.97 | 57.57 | 130.78 | 896.31 |
| Area (ha) surveyed | 707.97 | 31.95 | 94.00 | 833.91 |
| Level of surveying | 100% | 55.5% | 71.87% | 93.03% |
| Total number of parcels | 63 | 125 | 274 | 462 |
| Number of parcels surveyed | 63 | 52 | 83 | 198 |
| % parcels surveyed | 100% | 41.6% | 30% | 42.85% |

The table above depicts the level of surveying in terms of parcels and area of the common lands of Dodawali village.

The parcel distribution in terms of size is quite uneven and it ranges from less than a hectare to more than 6 hectares. This is why encroachments in terms of area are so high in terms of percentage but not parcel-wise. Even if only a few parcels are encroached upon, it covers a large part of the common lands due to the size of the parcels.

Figure : Number of parcels surveyed Figure : Area of land surveyed (ha)

The above graphs depict the total land surveyed in terms of parcels and area. The total number of parcels of common land in Dodawali village is 462 covering an area of 896.31 ha. The survey covers 198 parcels (42,8%) but it covers an area of 834 ha.

Figure : Classification of land Figure : Level of surveying

Dodawali village consists of three categories of land, Forest Land, Revenue Wasteland and Barren and Uncultivable land. There are two JFM sites being constructed in cooperation with Seva Mandir, of 50 ha each in the forest of Dodawali. As an attempt to rebuild the forest cover in the village.

Level of encroachment:

Figure - Level of encroachment

The above graph depicts the level of encroachment on surveyed land. There is only 3.77% encroachment in the forest land. This is mainly because of the distance and difficult terrain, the very same terrain somewhat, protects the forest from overuse and thereby contributes to the sustainability of the forest. The forest land is generally undulating and steep hills which make it difficult to encroachment upon and the productivity of the land, once cleared of forest, is not particularly high. The percentage of encroachment is very high in the other two land categories with 67.37% in the revenue wasteland category and 86.19% in the barren and uncultivable land category.

Table – Level of encroachment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Forrest land | Revenue Wasteland | Barren and Uncultivable | **TOTAL** |
| Total land encroached land (ha) | 26.72 | 24.54 | 68.86 | **120.12** |
| Total land surveyed (ha) | 707.97 | 36.43 | 79.90 | **824.29** |
| *Percentage of land (ha) encroached* | *3.77%* | *67.37%* | *86.19%* | ***52,44%*** |
| Total number of parcels encroached | 17 | 51 | 79 | **147** |
| Total number of parcels surveyed | 63 | 52 | 83 | **198** |
| *Percentage of parcels encroached* | *26.98%* | *98.08%* | *95.18%* | ***74.24%*** |

The above table gives data about the encroachment in the common lands of Dodawali village in terms of hectares as well as in number of parcels among the three land categories of the area.

The table shows that although only 3.77% of the total area of forest in terms of hectares is encroached, the encroachment is 26.98% in terms of parcels. This is an example of honeycombing where many parcels in the same area are being encroached by a number of villagers, this form a cluster of encroachments in the forest. The area in terms of hectares is small because of the uneven distribution of land parcels in terms of hectares. This is a cause of concern as the parcels in which encroachments are done are rendered useless for any forestation activities and have a high likelihood of further degradation over time.

A similar trend is seen in the other two land categories as well. The percentage of encroachment in terms of area (hectares) is 67.37% and in terms of parcels is 98.08% for the revenue wasteland category. However for the barren and uncultivable land category there is a slight shift in trend where we see the percentage of encroachment in terms of area (hectares) is 86.19% while the percentage of encroachment in terms of area is 95.18%. This is due to the reason that the land in the barren and uncultivable category is superficially divided into a huge number of parcels in terms of area where most of the land in terms of area is less than a hectare.

Status of Vegetation

Figure – Vegetation type by land classification in terms of area (ha)

The above graph depicts the vegetation status of the land in terms of area; in spite of only 3.77% of encroachment in the forest land, almost 261 hectares of the forest land has been degraded and 426 hectares are only sparsely vegetated while well vegetation is found on 20.9% of land.

This is due to the honeycombing of parcels in the forest land and the large single unit parcel sizes on those lands. On the other hand, we see that although the level of encroachment is very high on barren and uncultivable land the well vegetated land is almost at par with the forest land which proves the assumption of the superficial distribution of land parcels in terms of area in the barren and uncultivable land category. This also justifies the assumption of leaving out the parcels below 0.4 hectares in size from the purview of our survey.

Village Data Conclusion:

The amount of encroachments in Dodawali is covering a large part of the common lands, in total 74,24% of the land is encroached upon. This is evident, especially in the Revenue Wasteland and the Barren and Uncultivable category. The reason for this, as stated above, is that the forest lands are located on the upper slopes of the hills. Therefore, the effort that is needed to turn the forest land into agriculture land is high, and secondly the quality of the land, thereby the productivity of the land, is lower that the Revenue Wasteland and the Barren and Uncultivable lands. Out of the 63 parcels of forest land surveyed only 17 parcels were encroached upon (*26.98%*). In comparison, the Revenue Wasteland has, in terms of parcels, 51 out of 52 surveyed parcels were encroached and of the Barren and Uncultivable land 79 out of 83 parcels were encroached. This makes the percentage of encroachments in both categories close to 100% (*98% and 95%*). In effect, there is only a very limited amount of village common land left for grazing, fodder collection and for collection of fire wood, and has led to further degradation in all land categories. Thereby, continuously increasing the difficulty for the poorest households to make ends meet. One of the major reasons behind the problems with encroachment in the common land is tied to the government policies of regularization. The state policy permits the regularization of encroachment done before Oct. 1980, but more often than not, it supports the demand for the privatization of encroached land regardless of the period they were done.[[151]](#footnote-151)

In all of the categories, the land deemed to be degraded or sparsely vegetated amount to a large majority of the total amount of land. There are many reasons for this; (1) the increase in population and livestock, (2) change in rain falls, (3) open grazing and forestry on the common land, (4) loss of community norms towards the maintenance of the common lands. It is likely that all of the mentioned points are contributing to the further degradation of the common land. The forest land in Dodawali, *Mutta Gatta hills*, is under the *Ubeshvar* Forest Department and is not protected. Although, there are two plots set aside for JFM by Seva Mandir, the villagers are collecting both fodder and timber from the forest, throughout the year. In relation to the increase in population, more resources are needed to make ends meet and the result has been a sharp degradation of the forest land in Dodawali during the last 10-15 years.

Interview Findings:

The interview in Dodawali was conducted with a group of six villagers, all elder members of the community and all from an agricultural/livestock dependent household. During the interview a social map was drawn of the village to indicate land categories, water sources and development efforts.

There is a fairly good understanding of where and what are the areas of the common land, as the government has set the boundaries recently and marked it by a boundary wall. There is no regulation or the rules on the usage and there are no special rules of usage during droughts or summer seasons. The villagers practise open grazing on the pasture land all through the year and there is no organized grass harvesting or areas left for growing grass. In this sense the concept of *open-access* from Hardin applies well to the CPR in Dodawali, the only exception is the exclusion of non-village members.

Dodawali has a very old and still ongoing conflict with four nearby villages; *Surana, Karnali, Pipliya and Kundala*, the conflict is stretching back to the times of local kings and minor wars, before the British colonial period. Now the conflict is focused on the access and rights of the forest land. According to the villagers there are no internal conflicts in Dodawali over resources. Although, the conflict is partly historical by nature it is now bound to the lack of forest resources in the neighbouring villages. The conflict seems to have little prospect of resolution, both due to its embedded status in the local culture but mainly due to the general lack of natural resources in the area. The people from Dodawali seemed unwilling to seek resolution as they saw the conflict as their right being violated and the outsiders as trespassers on their land.

The local authority for rules and regulations for the CPR lies with the *Patwari*. The government does not interfere with the local rules and management of the land, but at the same time there is no efficient rules of conduct set out from the village institutions. The village does not hold any meetings concerning the maintenance of the CPRs, but in relation to the proposed JFM there is a FPC[[152]](#footnote-152) that meets every 2nd month and discusses the progress of the JFM. The CPRs in Dodawali is mainly used for grazing and collection of wood and within the JFM-site there is still ongoing tree felling and grazing. The initiative to form the FPC and create a JFM site mainly came from Seva Mandir and there was no meeting conducted by the village regarding the forming of a FPC or the JFM, all meetings concerning initiation of the JFM was set up by Seva Mandir. Now that the committee is formed and working and the site for JFM is set up, there is a generally good interest from the villagers towards the JFM.

The *Patwari*, as stated, has the responsibility of setting the fines and penalties for land grapping and to report encroachments, but according to some of the villagers there has not been paid a single fine for encroachment in over 10 years. Even though, the evidence of encroachment is significant in the data collected, there is no real effort to approach this problem by the community. Some stated during the interview that no one takes any action towards the encroachers and that there are many cases of corruption and bribery to the government officials from both Revenue- and Forest Department. The villager stated that, *nobody wants to be the one who disturbs the harmony of the community*. This indicates the villagers have not been able to form functioning local organisations in accordance with Ostrom´s theory, the main efforts have come from external actors (Seva Mandir) and the fact that no fines have been paid over the last decade, despite of the massive encroachments, as well as the statement that no one is willing to act on the encroachment problem out of fear of creating an internal conflict in the village, could indicate that the community is indeed trapped in Hardin´s dilemma.

The management of the village commons is mainly done on the JFM site, where plantation efforts have been carried out with Bamboo and Mango. Only the water sources are maintained, this is done by both the government and the community. The government set five tube wells and 13 hand pumps in the village. Additionally, there are 20 dug wells and a good number of check dams and anicuts in the village, and these are all maintained by the community, and cleaned of silt every two years in the autumn when the anicuts are dry.

During droughts the livestock will be roaming to nearby areas to find water and furthermore the government provides a water tank for household water usage. Other than that, the villagers will dig new and deeper wells in search for water in droughts. There are no access or usage restrictions on common water sources during drought. In droughts mainly fodder in the form of grass will be cultivated, or there will be no farming at all, due to the lack of water. Consummation needs are covered by purchasing the products from the market; the state government will provide some financial aid in this regard.

#### Dodawali conclusion:

The knowledge of the village commons is clear and the boundaries have changed little over time. This was indicated by the elder members of the community and their significant and detailed knowledge of the village. Although there is severe problems with encroachments on both the village common land and the government land the official boundaries are well known. There is open access to all the Commons, although only for village members. This access is being contested by the conflict with the neighbouring villages over the access to the natural resources. It is not the *open access* term of Hardin but there is little to no restrictions on extraction, even during droughts, on any of the CPRs. In other words, internally there is a clear understanding of the boundaries but externally there is uncertainty and conflict over the access and boundaries.

In addition, there is a set of management rules related to the JFM site, where grazing and timber collection is illegal. Although, there are problems with upholding these “new” social norms and open grazing is present on the site. During droughts the Rajasthan Government supplies the village with additional fodder products from a government store at low prices, and this does take some of the pressure off the village commons.

The local institution in Dodawali is relatively weak concerning the management of the CPRs, and has done only very little to prevent further encroachments on the land. In addition to the high level of encroachment, it must be concluded that the villagers’ participation in the local governance is only minor and without much effect so far. As seen in Ramaj, the local authorities could very likely be involved in the encroachments through power and influence or being encroachers themselves.

The villagers generally seem unwilling to resolve the encroachment issue, and prioritised community harmony over evicting the trespassers. This could indicate that a majority of the households, or at least the powerful ones, are encroaching on the commons and in effect they view the CPRs more as sections of private property. This is also due to the overall age of the encroachments, many being over 25 years old. Another issue is the traditional right to inherit the land owned by the farther and thereby enhances the view of private property. As stated, there are no internal conflicts and in accordance with Hardin this could be due to the perception of the Commons as mostly private lands.

As indicated by the high level of encroachments, there is very little effective monitoring of the lands and very little effort is made by the local governance to remove encroachers from the Common. In contract the villagers keep a very close eye on outsiders coming into their area. This is mainly due to the lack of resources available. From the government officials there is also only little effort to resolve the encroachment problem. The fact that no fine has been effectively collected for encroachment related to the very significant presence observed in the field indicate an extremely weak monitoring by the local governance institution as well as a very low accountability towards the rules towards the CPRs. As stated by Ostrom, with the lack of guarantied sanctions towards rule violators, it will be very hard to have an effective local institution. The norms regarding the JFM site is having a better foothold in the village, but is still broken on a regular basis. As stated, there is no real sanction system in Dodawali, and it is obviously having a negative effect on the behavioural norms regarding Commons.

This lack of sanctions towards rule/norm breaking in the CPRs brings about a feeling of apathy in the community. The villagers know that no or only very little action will be taken towards the encroachers, and they feel incapable of taking action against more powerful and influential members of the community themselves. In addition, this trend is breaking down the community solidarity, which in turn could make future development work more difficult.

The conflict resolution will take place within the Panchayat when they arise. In these situations the resolution is both cheap, in that it takes place locally and within the community, and easy to access and participate in for the community. Although, there is no inter-village conflict in Dodawali but when the conflict between Dodawali and the neighbouring villages is brought into account, there is very little effort for conflict resolution. In other words, the tools for cheap and easily accessible conflict resolution, in accordance with Ostrom, are there in Dodawali, but it is not utilized.

The only management that seemed to be working well was the efforts in maintaining the water sources and cleaning them of slit to keep them functioning. The JFM is fairly new and it is expected that it will take some time to adjust. Although, there seemed to be a general goodwill towards the JFM programme and plantation efforts is being done by the community. Although, there are a number of illegal activities within the JFM site, very little action is taken against any rule breaking.

### Udaipur District Conclusion

Overall there is very little restriction on the use of the CPRs in the District and very little effort in evicting the encroachers. The encroachment problem is very high and the local institutions as well as the relationship with the government officials are plagued by corruption. In general the villagers seem to be unable to resolve their conflicts without external help and in the majority of the cases no real effort is taken or it is simply ignored by the local institutions. There is a general norm of; *Encroach before someone else* and the economically powerful actors view their encroachments as private land which they have the right to, due to the long-term cultivation. This leads to a breakdown in the community cohesion and the further depletion of the local Commons. Some efforts are being taken towards this in terms of initiating JFM sites by the communities but overall it does not seem that the local organisations are able or willing to enforce management on the commons. Although, there have been cases where the communities have created successful development of their CPRs but only with outside help and little initiative has come from the villages.

In general the local institutions are hampered by a significant amount of corruption both within the local institution and with the Government Revenue Department, who should uphold the federal laws, especially concerning the encroachments. There is a status general apathy towards the CPRs from the Panchayats’ and this is reflected in the communities as a whole.

Overall it must be concluded that the predictions of Hardin to a large degree hold true towards the management and usage of the CPRs in Udaipur District, and the few efforts for improving the Commons are done mainly by outside actors. Even though the resources are scarce the general behaviour is to enhance personal profits and not towards the benefit of the community. In accordance with Hardin’s theory this is leading to overexploitation of the Commons, the destruction of community solidarity and alienation. The local knowledge of the scarcity does, in this case, not lead to people supporting local governance but instead to an increased level of encroachment and the resulting destruction of the resources.

### Case II - Jaisalmer District

Jaisalmer District: is located in the western part of Rajasthan and is dominated by the desert and arid climatic conditions. Jaisalmer is the largest district in Rajasthan in terms of area and second largest in India. The arid western Rajasthan, that forms the Indian part of the *Thar* Desert, accounts for 62% of the total hot-arid areas in India[[153]](#footnote-153). This area faces severe challenges of desertification, due to the frequent droughts, overgrazing and increase in both human and livestock population. Most of the traditional and centuries old methods of integrating agriculture with livestock farming, utilizing recurring trees and grasses to sustain the animal fodder and efficient systems of water harvesting and usage, are now either forgotten or threatened by modernization[[154]](#footnote-154).

Geomorphology[[155]](#footnote-155) plays a significant role in assessment of the physical potential of the arid regions and it can pinpoint environmental problems, related to context and the use of land. In the arid western parts of Rajasthan the desert is completely dominating the landscape. But within the desert area, many different landforms must be taken into account for vegetation programs to have success. Overall many different landforms can be identified; this ranges from hills, rocky/gravel pediments[[156]](#footnote-156), flat aggraded alluvial[[157]](#footnote-157), flat buried pediments, sandy undulating pediments, plains, saline plains, sand dunes, sandy undulating interdunal plains, saline depression and graded river beds (Singh & Ghose, 1980). The different land types indentified are affected by different types of geomorphical problems, like wind erosional, salinity hazards, sand dunes and the scarcity of water[[158]](#footnote-158).

The erosion and salinity hazards that are created by geomorphical progress and accelerated by human activities are some of the major factors that limit agricultural production in the arid areas of Rajasthan. The problems are by no means isolated to the *Thar* Desert, but are evident in all arid regions across the world[[159]](#footnote-159). These hazards have resulted, due to the interaction between humans and the fragile desert environment, in large areas being unfit for any form of agriculture and severe drop in productivity in many other areas[[160]](#footnote-160).

According to studies conducted by CAZRI[[161]](#footnote-161), the major reason behind the desertification is caused by wind erosion followed by water erosion and water logging and salinity. The desertification of the western part of Rajasthan is either severely or moderately affected by wind erosion. Close to 76% of the area in western Rajasthan is under the influence of wind erosion[[162]](#footnote-162). This includes all of the major land categories, but mainly farming land and dune/sandy areas. According to the same research, 18% of the area is severely degraded and 66% is suffering from moderate to slight degradation, whereas approximately 16% of the area is not affected by degradation[[163]](#footnote-163).

The degradation of the natural vegetation in the region is very severe and widespread, as most pasture land has been overexploited through grazing and collection of fuel wood. In resent time the effects of industry is also becoming an important factor towards the further overall depletion of the land. It is estimated by CAZRI, that more that 60% of the area in western Rajasthan requires intensive rehabilitation management[[164]](#footnote-164).

**Climatic condition:** The climate of the region being arid, the erratic behaviour of the meagre rainfall (100-450 mm/year, 90% falls during July-September), extreme temperatures (often >45°C in the peak of summer and sub-zero in winter) and high summer winds (>30 km h-1 during sandstorms) are continual climatic challenges to be reckoned with, especially for agriculture[[165]](#footnote-165). Drought is and will remain a major challenge for agriculture in the region.

#### Bhopa

***Bhopa*** village comes under the *Kita* Panchayat of Jaisalmer. Bhopa is located around 30km south of Jaisalmer City. The village of Bhopa is connected to the district office via road. There is electricity, irrigation department and a school till class 8th standardin the village. The population of the village consists of close to 100 households, with a population of around 812 (2011). Animal husbandry and agriculture is the most important livelihood of the region.

Agriculture is practiced mostly in the rainy season, due to the long dry period after the monsoon. However a couple of years back two tube wells dug in the village which now facilitates agricultural activities round the year for the villagers. Most of the people here are to some extent depended on livestock with cattle, camel, goat and sheep as the main animals for livestock rearing. The villagers in Bhopa are also generating an additional income from the windmill established by Enercon Energy, by leasing land east of Bhopa.

Village Statistic:

One of the particular aspects of Bhopa is the massive size of the land areas, with close to 8000 bigha of total CPR or around 1778 ha. The land category Gochar and Oran is also a new aspect compaired to Udaipur District; both of them represent a sacred area of land surrounding a temple or other sacred place. Orans can be found in all of Rajasthan, but the Gochar category is only found in Jaisalmer District. Although, the Oran has only minor importance in Udaipur District, due its fairly small size and the comparably more fertile topography, it plays a significant role in Jaisalmer.

Magra: (Hills) 2131.01

Banjad (Barren and Uncultivable/Wasteland) 3410.04

Barani Banjad (Barren and Uncultivable/Wasteland) 142.14

Gochar (Sacred land) 1757.13

Oran (Sacred land) 473.03

Total: 7915 bigha

**Magra:**

In Bhopa, Magra constitutes of 2131.01 bigha. The Magra can’t be used for agriculture, due to the severe degradation of the vegetation. But they are still encroached upon. On the encroached areas, a powerhouse has been constructed and others are used for fodder storage and livestock enclosements. Whereas, some parcels are used for tube-wells or windmills. It was observed that encroachments on the Magra are evident, but only minor in relation to the amount of land available.

The above graph depicts the level of encroachment and the vegetation status on the Magra in Bhopa. Most of the land is severely degrade although, about 25% of the total Magra area is sparsely vegetated, the rest was deemed to be degraded. The 72 bigha of encroachments in the Magra category are relatively new encroachments; most of them are no more than 6 years old. Only one encroachment of 25 bigha is around 25 years old, this might give the encroaching household a fairly good chance of getting the land regulated to them, according to government laws of pre-1980 encroachments, and thereby, turning an illegal privatization into a legal one.

**Banjad & Barani Banjad:**

The total land size of the Banjad lands amounts to 3552.18 bigha, and is the largest land category in Bhopa. Although, on this Banjad land people are encroaching and conducting agriculture, some people do agricultural encroachment by filing for cases of regularization, and could thereby obtain the land through allotment in the future. Apart from this, this land is also used for grazing of livestock throughout the year, some villagers also use this land for residence and have built small hamlets in this land and some of them have created fencing while some have dug tube-wells, to further improve the agricultural encroachments.

The total encroachment of this Banjad/Barani Banjad land amounts to 570.02 bigha which is used for agriculture and the remaining land is used for grazing livestock. Most of the illegal occupants of this Banjad land are *Khaatedars[[166]](#footnote-166)* who encroach on the nearby land and are now claiming proprietary rights for its ownership.

During the rainy season the encroachment is at its maximum, as the agriculture can be done during this season. Contrastingly during the hot season the encroachment decreases as the land becomes uncultivable and due to strong winds the sand cover is blown away, making the land unfavourable for agriculture. Some areas of the Banjar land are severely degraded and holds no- or very little vegetation. Such patches cannot be used for either agriculture or grazing livestock and are either used for digging wells or construction of sheds for fodder storage. The encroachment during the rainy season for agriculture is typically fenced and these fences are temporary in nature and are removed as soon as the rainy season ends. It came to light, during the interviews and through the walks of the area, that around 40-50% of the villagers are encroaching on the Banjar land during the rainy season.

The above graph depicts the situation of encroachment and the vegetation status in the Barani Banjad land in Bhopa. This land is relatively small in terms of area spanning only 142 hectares of which 35 bigha is encroached. The entire area has fairly poor vegetation, with minor scrubs and average to low grass cover.

The Banjad is the largest area of land in Bhopa village. It is spread over an area of 3410 bigha out of this 535 bigha are being encroached upon. Most of the land is either sparsely vegetated or degraded. The encroached land is being used for agriculture or irrigation construction, in the form of water tanks. Only one case of regularization has been filed with the *Kita* Panchayat.

**Gochar:**

Gochar land in Bhopa lays outside the village and in one of the parcels a cenotaph and a temple has been constructed, a tube-well has also been dug. Only 1.18 bigha of the Gochar land has been encroached out of the total 1757.13 bigha, which occupies mainly north and east parts of the village. The Gochar is viewed as village common and is used for grazing, there is no tree felling within the Gochar, as it is considered sacred land in the Jaisalmer District and is one of the few areas that holds and tree cover.

The above graph depicts the situation of encroachment and the vegetation status on the Gochar land in Bhopa. The Gochar category amounts to 1757 bigha and is the third largest category in Bhopa. The land is almost unencroached, only 1.18 Bigha. However, the status of vegetation is not good on this land. Only 167 hectares out of the total area of 1757 hectares are well vegetated which accounts to less than 10% of the total Gochar land. The rest of the land is either sparsely vegetated or degraded, although in most of the Gochar scrubs and bushes are found, making it sparsely vegetated.

**Oran:**

The Oran land is considered sacred land all over Rajasthan and is located around a temple or another local holy place. In Bhopa it is being used by all villagers as a common grazing ground for their cattle. The Oran land generally named after some god or goddess due to which the villagers take good care of this land. In Bhopa the Oran occupies 473.03 bigha of land and lies in the western and northern parts of the village. One of the parcels has been used for constructing a school and some government residential quarters. Almost 16 bigha of the Oran land have been encroached and it can be predicted that with the rising population of the village the Oran occupation will increase. The Oran lands have traditionally been exclusively reserved for cattle grazing but now encroachment and poaching on these lands are taking place. In general the Orans in the arid regions of Rajasthan are the only areas that hold a decent amount of vegetation in otherwise very degraded surroundings. Out of the few encroachments on the Oran lands, approximately 16 bigha out of 473.03 bigha, none are being used for agriculture. Although, the Oran is always open to grazing and no maintenance is being conducted by the village community, no one is cutting any trees due to the religious significance and the norms set forth by the village community.

The above graph depicts the level of encroachment and the vegetation status on the Oran land in the Bhopa village. As we see from the graph that only 16 bigha of land are encroached. The reason for this is because of the fact that the villagers of Oran consider this land to be sacred and hence prevent encroachments on this land. The vegetation status is however not very good on this land, but comparing to the other land categories in the desert region the vegetation is fairly good. 277 bigha or 58% of the total Oran land in Bhopa is well vegetated and the rest is sparsely vegetated.

On the encroached land a school has been constructed, this means that the school has been constructed illegally, but most likely it is, a mix-up between two different departments. (Forest department and Revenue department) One reason for this could be ambiguity in land categories/laws and the boundaries between categories and/or the lack of communication between departments. The fact is that a school and a few houses have been built on the encroached land within the Oran category.

Level of encroachment:

A few cases of encroachment are found on commons, especially on cultivable wastelands, but overall the level of encroachment is only minor and holds little significance to the usage of the commons in general. However, hardly any case has been filed against the encroachers, which reflects the very small impact they have on the commons and the rest of the community. The encroachments in the cultivable wastelands are seasonal and occur on the peripheries of the revenue wasteland. The *Patwari* made a point that due to the vastness of the land in Jaisalmer districts, it was impractical to keep a track of all the land. The settlement survey, by the Revenue Department, in Jaisalmer district has been done just once in the last 60 years. The only land category that holds a large amount of encroachments, according to the field data collected, are the Banjad lands with 535 bigha of encroached land out of a total of 3410 bigha.

Status of Vegetation:

The overall condition of the vegetation level in Bhopa is degraded; this must of course be seen in relation to the arid area and the lack of rain fall in the region. But, it must also be seen as a consequence of the lack of maintenance and plantation work on the common land in general and an increase in livestock population, which brings an increase in the resources. The vegetation coverage in Bhopa mainly falls into two categories; the barren/degraded and at best the sparsely vegetated. Although, there is a relatively good vegetation in the Oran and to some extent in the Gochar the rest of the CPRs hold very little vegetation. There are efforts conducted by the forest department to plant new trees both in order to stabilize the sand and avoid the dust storms and to hold on to the soil moist that does come with the monsoon season.

Interview Findings:

According to the villagers in Bhopa, Gochar, Oran and Nadi (river, water sources in general) are the only three common property resources located in the village, e.g. the Magra lands are not viewed as part of the De Jure common land by the village. Due to the severe degradation of the Magra, the land is of little use to the villagers and, this could be the reason for the villagers’ disregard of this land. During the interview it was stated that there are only very few encroached lands in the village there are only few regularization cases in the village. This fits well with the data collected on the encroachment in the village.

The elders from the village will meet once every two months and set the rules and sanctions towards encroachments and other rule violations; usually the penalty is 1000-2000 Rs and 100kg of fodder for the birds, as a token of repayment to the community. Only very few cases ever get filed against the encroachers. During the interviews it was stated that the majority of the encroachments was done by bribing the government officials, and mainly done by the more powerful and influential households in the village. Although if the village committee wants to take action, it is fairly free to move without “orders” from the government, in a case of encroachment the sanction will be eviction.

According to the village the Gochar and Oran are used only for livestock rearing and grazing purposes, and are never used for agricultural purposes. Furthermore, in the Oran trees are never cut although, this is not the case with the Gochar. According to the knowledge of the village elders, such an incident has never occurred in the village. If ever there is an offender, he will be arrested by the police and socially boycotted by the villagers. However, villagers are well aware of the significance of Oran and Gochar and are motivated to protect them.

The Oran holds fairly good vegetation, relative to the district, and provides fodder for the village livestock; this has especially been the case the last two years (2009-10) due to very good monsoon seasons. There are no plantation efforts ongoing within the village CPR.

The villagers practise open grazing all year around, and there are no rules or social norms concerning livestock grazing, this is mainly due to; tradition, the size of the land and the fairly good vegetation for fodder in the Oran. The only other rule for the Oran, as stated above, is that no trees are allowed to be cut.

According to the villagers, the Revenue Department determined the boundaries of the Oran and Gochar and now these boundaries are considered as the demarcations of Oran and Gochar land. These demarcations of boundaries were done by the revenue department around 60-70 years back according to the village elders. However, the villagers were unable to specify any specific rules or proceedings followed by the revenue department in the demarcation of the boundaries of Oran and Gochar.

It was stated by villagers that the Oran and Gochar were not encroached by any of the villagers for dwelling or agricultural purposes. The reason for this is that the people in the village are aware of the benefits of Oran and Gochar and the significance of these two lands for their livestock. This indicates that the villagers are socially motivated to protect the Oran and Gochar. This motivation for protection has a very strong link to the religious significance of the Oran as well as the importance the Oran holds towards grazing purposes.

According to the villagers the government is also very strict in protecting the Oran and Gochar. If there is encroachment in the Oran or Gochar, and a complaint to this effect is ledged with the Revenue Department. They immediately swing into action and come for inspection. If a villager is found to be guilty, the local police are notified and the offender is arrested within 90 days. Although other villagers stated that; the few encroachments that existed within the village CPR was mainly done by influential groups and facilitated by bribery of government officials.

In the interviews it was stated that there had been some developmental activities in the Oran in the form of plantations and the villagers are ready to plant grasses and trees if proper infrastructure and funding is provided. It was stated that the village does not have the means to do so without external help. There is some water conservation being conducted near the temples within the Oran, and the only maintenance work being done in the village is for the water sources, no other development work is currently being done on the CPRs.

The villagers said that Gram Panchayat plays the pivotal role in development activities of the village and every development activity in the village is undertaken by Gram Panchayat. Decisions regarding the development activities are taken after approval from all villagers. The Gram Panchayat meets once every two months to discuss current issues and management in the village, its members are, according to the interviews, from all castes represented in Bhopa.

The *Nadi* is the principle source of source of water for the village and the Gram Panchayat looks after cleaning of this water body. According to the villagers there are no other institutions other than Gram Panchayat for development activities in the village. In Bhopa the common water sources are; the river, which only has water during the monsoon season and is normally dry by Jannuary, three tube wells and the anicut. The tube wells hold water during most of the year but the anicut will also run dry during summer.

Villagers also mentioned the availability of fodder and its shortfall during drought season. During droughts the Government arranges for fodder and rations it through camps which are opened in the village. The State Government provides fodder only to the cattle, for other livestock the villagers have to arrange in their own way. This means that goats and camels are roaming for water and fodder during a drought. During droughts the only water source that still holds any water is the government tube wells, all other sources are dry, and this is the case even through a normal summer. A household that does not have access to water, will work for a household that does and get water in return. During a drought the livestock population will go down, due to the death of the old and weak and that many households sell some of their livestock. There is no crisis-management or rules of the CPR during a drought, and there are no limitations on grazing or on the water.

There is no outside organization in the village working on development of the common property resources; only the Government is involved in the constructions of tube wells in the area. A livestock rearing organisation has created a SHG[[167]](#footnote-167) although; they do not work on CPRs.

#### Bhopa Conclusion

Overall, the local institutions are well functioning and the populations accountability towards the norms on the Commons is very good. This is indicated by the very low level of encroachment in all land categories, the regularity of the Panchayat meetings and the inclusion of all member of the community in the institution and decision making. This is one of the major aspects of Ostrom´s theory in order for the local community to effectively manage the CPRs. The encroachment that is there is mainly being used for the construction of community facilities, such as schools, bus stops, water conservation and power houses. Given the amount of land under CPR, this has basically no impact on the overall status of the CPRs. The few private encroachments are being done by the more powerful people, who are able to influence and bribe officials. Especially towards the Oran and Gochar, the villagers strictly uphold the norm of conduct. This is both due to the religious significance but no less due to the vegetation and fertility on these areas, especially compared to the arid nature of Jaisalmer. According to Ostrom´s principles the accountability and the guarantied sanctions towards rule breakers, are some of the major aspects for a successful local organization. This indicates the overall situation in Bhopa well.

Another aspect of when local organizations are effective in managing the Common is, when the enforcement of private property rights is difficult or impractical, and this is definitely the case in Bhopa with the very large areas. The general scarcity and the irregularity of the resources as well as the conditions of the desert provide a strong incentive for the villagers to continuing the traditional management strategies and adhere to the social norms regarding the Commons.

During drought there are a few special management conditions, with livestock roaming and the work-for-water arrangements as well as the Government provided fodder, to take some of the pressure of the resources.

Overall it must be concluded that, given the difficult conditions of the area, the community have been fairly successful in managing their Commons. The few cases of private encroachments and bribery have only little impact on the Commons as a whole and the general accountability towards the social norms and official rules is good.

#### Rasla

***Rasla*** is located in the *Fatehgarh tehsil* of Jaisalmer District about 65km from Jaisalmer City. It is a Gram *Panchayat* in itself, with a population of 1070 divided into 226 households. It is well connected with three concrete roads which go to Jaisalmer, Devikot and Sacra. There are many different castes and social groups living in the village, the main groups are Rajput, Meghwal and Muslims. In addition to this there are a few sub-castes. The main livelihood is livestock rearing, farming and wage labour as a third and often additional source of income for most households.

The village has electricity, water and education facilities. There is a middle school, a Gram Panchayat and a Patwari house in the village. Agriculture here is largely rain-fed but now some tube-wells have been constructed by the State Government which provides irrigation to some of the fields. As of now there are 14 tube-wells in the village and the agriculture produce have improved due to the new sources of irrigation. In the rainy season *Bajra, Moong, Jowar, Til* and Sesame crops are produced. After the introduction of tube wells the farmers are now able to produce Wheat, Groundnut and Gram as well. The main species of livestock are cattle, sheep, goat and camel. In a situation of drought a fodder depot by the government provides for the food of the cattle, while other livestock, such as camel and goats will be roaming for fodder and water. This is a general policy in all of Jaisalmer District.

Village Statistic:

Like Bhopa, the special aspect of Rasla is the massive land size of close to 29000 bigha, approximately 5767 hectares. The representation and importance of the Oran and Gochar categories is equal to Bhopa village and is a general aspect for Jaisalmer District due to the harsh nature.

* Oran 5.789
* Gochar 678
* Banjad 20.003
* Barani Banjad 2.364

**Total: 28.834 bigha**

In hectare: 5.767

**Oran:** The village Oran is named *Ainath Devi* after the deity that *presides* there. It is the second largest Oran in Jaisalmer District. The livestock come here for grazing and water all though the year, and there is no restriction on the usage of the Oran. The area of the Oran is 5789.14 bigha. Out of the total area, 51 bigha have been encroached with homesteads. Two parcels have been encroached by the Muslim community, this amount to about 45 bigha of Oran land, and they have built homesteads here for the past 15 years. The temple trust is working on getting them evicted, and there is a current conflict concerning a proposed construction of a Mosque. In the rainy season, they come to graze their cattle and in the other seasons they go back to their fields.

There is also a group of gypsies that comes to the Oran, they frequently come to live in the village area and migrate in search for livelihood.

The above graph depicts the level of encroachment and vegetation in the Oran.

As we see from the graph only 51 bigha of land is encroached upon, less that 1% of the area. The reason for this is the fact that the villagers of Oran consider this land to be sacred and hence prevent encroachments on this land as well as no trees are allowed to be cut. The vegetation status, however, is not good, but given the conditions in Jaisalmer District, as one of the driest parts of the country where vegetation in any case is scarce; the relative spatial vegetation is not too bad. 727 bigha of Oran land in Rasla is well vegetated (12,5%) and rest is mainly sparsely vegetated and around 19% is estimated to be degraded.

**Gochar:** (see graph on the next page)It is about 678 bigha and has not been encroached upon. Only the high-tension wire of the electricity department goes across the land. Earlier the Gochar was not a main source of fodder. However, this is not the case today and some people consider the Gochar to be of religious importance, in line with the Oran. The Gochar in Rasla is of fairly small size (678 bigha) compared to the other land categories, but it is providing a significant portion of the fodder needs in the village.

The above graph depicts the situation of encroachment and the vegetation status on the Gochar. The status of vegetation is not good on this land. The entire Gochar land in the village is sparsely vegetated and mildly degraded due to overgrazing, desertification and wind erosion. Still vegetation is present due to the good past monsoon seasons.

The above graph depicts the situation of encroachment and the vegetation status in the Barani Banjad land.

This land is relatively large in terms of area spanning at 2.364 bigha of which 516 bigha is encroached upon, around 22%. The land is to a large extent dominated by sparse vegetation but a fairly small percentage is deemed as degraded, thereby in fairly good condition in relation to the area in general.

About 22.367 bigha of land are under the Barren and Uncultivable category. People have encroached on this land for agriculture and farming. Anicuts have been constructed in the same area making water accessible for farming, households and the livestock alike. The Barren lands around the privately owned land are being encroached upon by villagers; in this way they are increasing the immediate land holdings without having to walk long distances, but putting additional pressure on the size of the CPR and on the availability of fodder. In some parcels villagers have built a bus stand and in another a school has been constructed.

The Banjad (a sub-category of the Barren & Uncultivable land) is the largest area of land in Rasla. The Banjad lands spread over an area of 19973 bigha and only 535 bigha out of it is encroached, less than 0,2%. Most of the land is sparsely vegetated (72%) and the rest is degraded (16%), bearing some truth to its characteristics as barren land.

Level of encroachment:

The amount of encroachment found in Rasla village is not overwhelming or as widespread as in many other places in Rajasthan. The highest percentage of encroachment (22%) is found in the Barani Banjad category, which is part of the more general category of Barren land. But if the combined encroachment (1051,11 bigha) is seen against the combined land in the Barren land category (22367,20 bigha) then the percentage of the total encroachment comes to only 4,7%.

Status of Vegetation:

In general the condition of the vegetation in Rasla is dominantly sparse to degrade, and thereby vegetation-wise it is deemed as of fairly critical situation. The only area that holds some amount of good vegetation is the Oran with around 12% of well vegetated area.

There is an ongoing conflict between the Hindu- and the Muslim population, the conflict is mainly over access to the vegetated land for fodder purposes but it has escalated into a more religious nature. The conflict over the construction of a Mosque near the main temple has aggravated the people in the temple trust further.

Interview Findings:

According to villager’s Gochar, Oran and Nadi are the only CPRs in the village. All other lands have been, either allotted by the government or is set aside as private land by the Panchayat, some villagers are practicing agriculture on them and others have built households there. The villagers say there are only very few encroachments in the village common properties and these statements are corresponding with the field data findings, percentage-wise.

There are 5789.14 bigha of Oran in the village and the massive size of it, which is special for the Jaisalmer district, is obvious of benefit in relation to the amount of fodder available and its ability to recover. It was stated that, the size of the Oran in each village provides enough land for fodder for all the village members, which is a significant aspect for the very few inter-village conflicts in the area. The entire Oran land is registered in the name of temple trust (*Shri Degray Mandir* and *Oran Vikas Sansthan*) and is managed by the trust chairman Mr. Ram Singh.

According to the village the Gochar and Oran are used only for livestock rearing and grazing purposes, in the Gochar the villagers are allowed to collect dry fallen wood for fuel and funeral fires. The Oran or Gochar are never used for agricultural purposes and no trees are allowed to be cut. The Oran and Gochar hold fairly good vegetation and provide fodder for the village livestock. There is no plantation of grasses or any other plantation efforts in the Oran or Gochar of the village. Although the temple trust is doing some plantation work near the main temple, this is mainly to enhance the religious tourism they get in the area and to beautify their newly constructed accommodations for the pilgrims. It was stated by some of the villagers that their primary objective was not to enhance the general vegetation.

The boundaries of Oran and Gochar are fixed by the temple trust after consultation with all the villagers. According to the villagers the Oran and Gochar were not at all encroached by any of the villagers for dwelling or agricultural purposes. The reason for this is that the people in the village are aware of the benefits of Oran and Gochar and the significance of these two areas for their livestock and livelihood. The villagers are socially motivated to protect the Oran and Gochar by all means. Moreover there are religious sentiments attached with Oran and Gochar due to which people are afraid to encroach on them lest some disaster might happen to the village or to their families.

According to the villagers the government is also very strict in protecting the Oran and Gochar. If there is encroachment in these areas, and a complaint to this effect is ledged with the revenue department the department immediately swings into action and comes for inspection. If a villager is found to be guilty, the local police are noticed and the offender is arrested within 90 days. The same conditions were stated in the Bhopa interview.

There has been plantation of seven grasses in the Oran and Gochar in recent years and there are efforts by temple trust to increase the Oran land. In this village 2700 bigha of Oran land has been noted in the government records as Barren and Uncultivable land which can be easily diverted for industrial purpose.

According to the villagers the temple trust and village Panchayat plays an essential role in development activities of the village. Decisions regarding development activities are taken after approval from all villagers. The temple trust is around 10 years old and before the trust was formed there was no real institution concerned with the CPR’s in Rasla. However, the main reason for the temple trust committee is to collect money for the temple. This money is spent for constructing houses and gardens to attract religious “tourists”; the focus is not on improving the wellbeing of the common land or for lessening the stress of the degradation on the land.

The *Nadi* is the principle source of water in the village and the *Gram Panchayat* and the temple trust undertake cleaning of Nadi from silt every two years during winter. The villagers also do some plantation activities around the Nadi.

Villagers also mentioned about availability of fodder and its shortfall during drought season. During drought season the state government arranges for fodder and rations it through camps which are opened in the village. The state government provides fodder only to the cow and for other livestock villagers has to arrange in their own way. This is also a general state policy of Jaisalmer District. The state government has constructed three new wells in the village, which has been a great stress relive during drought. Before the construction there were only a few wells and ponds available to the village, and villagers could only use specific sources of water, now after the government initiative there are more water sources and the wells are open to all.

#### Rasla Conclusion

The villagers understanding of what consists as CPRs in the village does not include the category of Barren lands, the reason could be that more than 1000 bigha of encroached land within this category and with the construction of anicuts, irrigation for agriculture have become available. They view this land as private- or allotted land. Only the Oran, Gochar and the water sources are thought of as Commons. These three categories are also by far the most important for the village, it is where the majority of the fodder is obtained and water is of course of extreme importance in the arid region. According to Ostrom, when the resource is in short supply accountability towards the rules of usage the facilitation of local management is enhanced. This seems to be the case in Rasla, where local efforts have protected and in some sense enhanced the vegetation of the Oran and Gochar as well as the sources of water. Restriction on the use of water has been in use until the Government constructed new wells and thereby increased the availability. After that the restricted use of water is not in effect any more.

The gypsy community, which could be seen as outsiders, with their nomadic traditions has been part of the regions culture for millennial and are viewed as an integrated and normal part of the region and culture, much more than the permanent Muslim community. The community of Rasla seemed much more open towards “outsiders” than any village in Udaipur District would ever be. It could be due to the large areas of land and the next to impossible task of “patrolling” the area. Upholding a form of property is impractical in cases with large areas of land and this goes against the theory of Ostrom in facilitating local management organizations, where easy monitoring and exclusion is one of the main points. But it does not seem to be the case in Rasla where there is a fairly well functioning local institution. But equally, the cost of upholding private property rights is also impractical in the case of such large areas of land.

The fact is that the local institution is functioning, with only minor cases of irregularities, the accountability towards the social norms is very good in all of the community and there are no external conflicts. The conflict with the Muslim community is more of religious nature and derives from the more general conflict between Muslins and Hindus, especially in the north-west of India near the border to Pakistan. The temple trust is one of the main catalyst for development work on the Commons and with their interest in religious Tourism they have a “natural” conflict with the Muslim community.

The decision making process in the village Panchayat is very closely related to Ostrom´s principle of collective-choice arrangement, as decisions regarding development project are approved by the community as a whole before it is initiated, as well as the frequent face-to-face communication and the dense social network will enhance the ability to form and maintain local governance of the Commons.

### Jaisalmer District Conclusion

Overall the Jaisalmer District, with its very harsh nature and scarcity of resources, are maintaining well functioning local governance of the CPRs. There are no examples of inter-village conflicts, such as the case of Udaipur and only minor conflict within the villages. The size of the Orans and Gochars as well as their necessity for the communities’ survival is definitely contributing to the community solidarity and accountability towards the norms and thereby towards supporting the local management. This is partly out of necessity as well as due to no outside actors are doing development work on the Commons other that the water conservation efforts by the Government. The encroachment levels in both villages are low and there is basically no one who breaks the rules towards the sacred areas. In both villages the elders could not remember anyone felling a tree within the Oran. Although fines are rarely given, the strongest sanction is the exclusion from the community and the fear of the gods’ anger for “trespassing” on their land.

Although many of the encroachments in the Barren land and in the Revenue wasteland are seen as private property, due to the size and the poor status of the areas this is currently of no real concern to the villagers. This indicates that some of the villages are prioritising their individual gains over the good of the community, the majority is well aware of the sensitive situation of the environment and show consideration and restriction towards private usage in the Orans and Gochars.

In accordance with Ostrom´s principles of community management, the communities in Jaisalmer have well functioning and participatory community institutions and decision making processes. The size of the land makes it impractical to uphold a strict form of property as well as the area needed to meet the resource needs, which fits well with Ostrom’s principles. The scarcity of the resources is well known and intensively felt during droughts and this leads to a good community management with very little help from external players. An overall monitoring of the CPRs, however, is difficult to make effective due to the size, which does not fit with Ostrom’s theory but because the main resources are located within the Orans and Gochars the monitoring of these areas is fairly efficient. The most efficient governing tool in Jaisalmer is the “fear of the gods”, trespassing into the Orans is unthinkable to all members of the community and this have led to a good local management of the sacred areas.

### Case III - Alwar District

Alwar District; is located in the north-east corner of Rajasthan. It is bound on the north by Bharatpur district and the Gurgaon and Mahendragarh districts of Punjab, and on the south by Jaipur and Sawai Madhopur districts. According to the Census of 2011, Alwar had a population of 3.671.999 of which male and female were 1.938.929 and 1.733.070 respectively. There was increase of 22.70 percent in the population compared to population as per 2001. In the previous census of India 2001, Alwar District recorded increase of 27.22 percent to its population compared to 1991. The initial provisional data suggests a density of 438 in 2011 compared to 357 of 2001. Topographically, Alwar district is characterised by ridges of rocky and precipitous paralleled hills. The Aravalli range runs southwards from the north-east, surfacing again towards the south-west at the Jaipur district boundary. These chains of hills intersect the district: to the west is a level plain, mostly sandy and dotted with small hills; on the eastern side is a succession of hill ranges.

Like all districts in Rajasthan, Alwar experiences erratic seasonal rainfall. The annual average is 61.16cm, but this is generally scattered and uneven, meaning the occurrence of both drought and flooding in the region is frequent but highly unpredictable. In response to this underlying uncertainty the region’s rural inhabitants employ a variety of subsistence strategies, including agro-pastoralism, rain-fed and irrigated agriculture and more specialised forms of crop rotation, mixed cropping and agro-forestry.

Three villages in Alwar was selected for the study, namely Bakhtpura, Kalikhol and Kairwari. The villages are an integral part of a macro watershed ‘Umren Development Block located along the east - north periphery of the well-known Sariska Tiger Reserve, in Alwar district of Rajasthan State.

After Independence, a series of land reforms were implemented in Alwar. These were characterised by the discontinuity of the *zamindar* system (intended to enhance tenurial security for the rural poor) and the conservation of state lands through the process of nationalisation. Both the Forest Department and the *Panchayat* system that replaced intermediaries under the 1955 Rajasthan Land Tenancy Act were ill-equipped to control village commons. Prior to this, forests had generally been well maintained through coercive local governance, but now such areas fell victim to bureaucratic incompetence, corruption and widespread unchecked resource extraction for industrial concerns[[168]](#footnote-168).

Villagers commented that their fathers’ generation was greatly concerned by this trend, but that they lived in constant fear of the Forest Department guards, who would demand bribes of ghee or threaten villagers with firearms. As such, they could do little to prevent the depletion of their traditional resource base. There followed a period of some three decades, in the region, during which forests became increasingly degraded. Finally, the pressure from illegal timber contractors began to let off, and the attention of Forest Department turned elsewhere. After years of widespread neglect, the people were left with a simple choice: protect the remaining forest or give up their traditional livelihoods. They chose the former, bringing together age-old systems of ‘ecological prudence’ and new, formalised management institutions.

With the legislative emphasis now firmly on wildlife conservation and the Reserve increasingly touted as a *natural* place (Shahabuddin *et al*. 2005) or *wilderness* (Sehgal 2001), the region’s human populations were again placed in the spotlight. Sariska’s management plans declared human habitation to be a major threat to the preservation of the Reserve’s flora and fauna, in particular the tiger (Government of Rajasthan, 2002). According to a comprehensive report on ‘human-nature interactions’ in Sariska, done by the Indian Institute of Public Administration (IIPA), *“agriculture introduces “exotics”, changes animals’ feeding habits, depletes water resources, and induces soil erosion; grazing spreads disease and weeds, and creates fodder scarcity; and fuelwood collection decreases forest density and cover, and leads to irregular and stunted tree growth”* (cited in Johari 2003:106). From 1982 and onwards, this logic was used to legitimate sustained attempts to relocate settlements situated in Sariska. Already at this time, a number of villages had been forcibly evicted following a ban on agriculture in the valley introduced during the 1960s. Now, efforts were formalised and intensified. Despite this increased pressure, village relocation from Sariska have been far from a smooth process.

Sariska Tiger Reserve has experienced serious problems with illegal timber production and poaching since its creation. There are no original tigers left in the forest and five tigers from Ranthambore tiger reserve have been moved into the area, four are now left. Some possible reasons for this decay are stated in the village interviews further on.

The most immediate threats to the existence of traditional resource management systems are increasing human and livestock population, which may render institutions such as *Khadu, Kankad,* *Dhara,* *Dharadi, Johad* entirely ineffectual. These systems evolved several generations ago, when total demands for natural resources were considerably less. These systems are based on inherited land tenure – *de facto rights* to a pond or patch of pasture – and as such can persist only so long as there is space enough for new *Johads and Dharas*. Moreover, by the community’s own admission the shift from cows to small ruminants has resulted in poor floral regeneration, as goats are prone to graze on new seeds and shoots, as soon as they appears.



For Alwar village details see Appendix III

Village Statistic:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Village | Total area  Ha | Irrigated  area (Ha) | Un- irrigated  Area (Ha) | Cultivable Waste (Ha) | Area not available  for cultivation (Ha) | Forest  Ha |
| Bakhtpura | 346 | 119 | 35 | 14 | 30 | 148 |
| Kalikhol | 265 | 27 | 123 | 24 | 25 | 66 |
| Kairwari | 306 | 66 | 211 | 9 | 20 | 0 |

The land areas of the CPRs in the three survey villages in Alwar is fairly small, with the forest in Bakhtpura being the only large area of CPR, although this area is part of the tiger reserve and many of the traditional rights no longer apply to this forest.

Land holding varies from Buffer area to outside the reserve, in Kalikhol village located in the buffer zone, the average land holding is 0.8 hectares per house hold where as it is on an average 2 ha per household outside the reserve.

Status of encroachment:

All of the Revenue Wasteland areas in all three villages are highly encroached upon, ranging from 83-99%, and it is partly due to the availability of regularization. As stated earlier, the high level of encroachment in this category is a general trend in all of Rajasthan, as the government policy naturally applies to this category in all of the state. The Barren category on the other hand holds only a fairly low level of encroachment (3-10%) as this land is not available for regularization and therefore little effort is put into the land.

The Oran/Devbani category in Alwar is generally well vegetated in all three villages. There is only little encroachments within the Orans and only significant in Kairwari village. The encroachment here is due to the expanding village and population as well as a growing neglect for the old traditions by the new generations.

Status of vegetation:

The landscape appears for half a year barren and brushy, its plains and ridges dominated by thorny shrubs, sinewy grasses and the occasional stunted acacia. The Orans in all the villages look well vegetated, where as wastelands and forest lands are Scrub types. Barren uncultivable lands are scrub sparsely vegetated. The main niches of vegetation are:

* Hill top plateaus called *Maalas*, where pasture of quality is to be found, and on the other hand the foot of the hills are dominated by scrubs and below average vegetation cover.
* Community protected scrub forests along foothills are in contrast to the rest of the foothills, with a good vegetation cover within the community protected areas.
* River beds and streams which are also used to collect sand and *Sarkanda* (Reed) production for marketing. A large part of the general income in Kairwari stems from the sale of thatching materials grown on the river beds.

#### Bakhtpura (periphery of Sariska Tiger Reserve):

Bakhtpura lies within the borders of the Sariska Tiger reserve and during the creation of the reserve forest, in 1982, the villagers lost many of their traditional land rights and have been subject to relocation by the government. The village has been in conflict with the Forest Department ever since the creation of the tiger reserve, as well as nearby villages, mainly over rights to access and use of the forest. The typography is generally dominated by steep hills with flat plateaus and the forest is naturally dominating much of the landscape, although it is degraded to a large extent. The Devbani/Oran in Bakhtpura is held in high regard by the villagers and is protected and managed by the community itself.

**Revenue/Culturable Wasteland:** Out of the total 14 hectares, field data was collected on 9.73 hectares, and most of it (i.e. 8.24 hectares), is reported encroached by the villagers for cultivation, by expanding their cultivated lands into the nearby revenue wastelands. According to a revenue department letter, 9.22 hectares were offered for regularization/allotment. This means that a very high percentage of the revenue wasteland is encroached upon and all of it is being processed for allotment. Within a short time the Culturable Wasteland in Bakhtpura will be completely privatized.

**Barren/Uncultivable:** The total area of this category is 30 ha and during the collection of field data it was estimated that only around 0,9 ha was encroached upon, about 3% of the area. This encroachment was used for livestock enclosure. The Barren/Uncultivable land cannot be allotted as the Revenue Wasteland and therefore the amount of encroachments is naturally low.

**Forest Land:** A large part of the total area for research in Bakhtpura is forest land, 148 ha. This has been enclosed as a forest reserve (a part of Sariska) but lying stripped bare – presumably by the local community. Encroachment is a recurrent problem. As much as 11 hectares area was reported encroached.

Cultivators living on the margins of the forest land stealthily expand their cultivated lands into the forest area. *Guwada* (cattle camps/livestock enclosures) is also a common practice for encroachment. Thus most of the forest land in the villages is over-grazed and depleted as livestock graze freely on the land.

**Oran Land:** The Oran in Bakhtpura is known as ‘*Bharu Nathji ki Devbani’*. The area of the Oran is 6.56 ha. Legal status of this land is *Area not available for cultivation* but for the study the Oran is viewed as a separate category. Encroachment in the area is very low, only around 0.5 ha, and they are all temporary, mainly for storing fuel wood and dung cakes. The village Bakhtpura illustrates the difference a community’s involvement in an Oran can make.

The Oran of this village has been cut into two parts, one that is community controlled and another, which has been enclosed as a forest reserve. The result of this has been that the Reserved forest has been stripped bare, presumably by the local community, whereas the community controlled forests retains fairly thick stands of trees. In the Oran, a very good *Johad* water harvesting structure (water tank) also exists. With the coming of the rains in late July, the *Johad* swells to its maximum.

Interview Findings:

BAKHTPURA:

When the interview group was asked about the boundaries of the village commons, there was a very good and precise understanding of the areas of land. The main area of CPR in the villages in Alwar district is the *Devbani* (Oran) and it is very closely linked to the community, both in terms of livelihood and through the local culture. This should indicate, according to Ostrom’s theory; where the users support effective rule enforcement, a foundation for good local management. The *Devbani* is sacred forest and is characterized by temples and a good and diverse tree cover. Given its religious significance, like the Oran, the management of usage and access is very well respected in the community. The part that has come under the Forest Department have become increasingly degraded and holds a below average vegetation with only few trees.

It was stated by the villagers that, the CPR boundaries was set by the *Patwari* and are largely set on the same lines as they have been since the Mughal Empire. In this way the boundaries of the commons have had a very long and well known history in Bakhtpura village. Although the Forest Department has extended the area of the forest and what land comes under F.D. over the last 15 years, this has only affected the village commons to a very small degree, as the land simply have shifted category from Revenue Wasteland to Forest Land.

Bakhtpura village has an ongoing conflict with the nearby village of *Bruha* over the grazing and forest products on the Bakhtpura CPRs. A short time ago (Sept, 2011) one member of the Bakhtpura community was beaten by members of the other village, and this resulted in a major fight between members of the two communities, where both parties used weapons, such as axes, stones and clubs. The police came and arrested some members from both communities and held them for 3-4 days. A settlement was made to follow the traditional grazing rights and boundaries although minor fights have occurred since.

The group interviewed felt that they could control their own village in regards to taking wood and breaking the grazing rules. They stated that they had done so for over 25 years and protecting the *Devbani* and the village. But during this year (2011), a group of 20-25 women from a nearby village have come very often to cut the trees. They stated that, it is very difficult for them to control that, and especially to do it without creating a new fight, as well as the social norm of never touching another man’s wife, which could result in death in the tribal areas. They said that some damage was done to the forest because of this. The neighbouring villages have overexploited their own forest and are now coming to collect forest resources from the forest in Bakhtpura. The change in conduct from the neighbouring village was described as a process evolving over the last three years. The first two years they came and did some lumbering on the community forest, they took only little and there was no real reaction from Bakhtpura community, as only small amounts of resources was taken. The villagers stated that, this year they are taking in bulk and they thought that it could be due to they meet no consequences earlier from Bakhtpura’s community.

The CPR in Bakhtpura is being managed by two sets of institution systems; one is an old tax collecting system (*Patele*). This position is inherited and is not being used anymore, informally the family or household is still *Patele* but they hold no power. The other is the Thai-system where decision-making is now taking place and rules for the commons are created. The Thai is made up by a committee of 5-6 elder members of the village, and they set the fines for rule breaking and decide on the rules and penalties. If someone from the community breaks the rules, the villagers will sit together and identify the encroachers and evict them and sometimes give out a fine.

The villagers also stated that around 20 years ago, there was a pass-system in place, for entering in to the forest for grazing purposes and collection of fuel wood. The amount paid for passing into the area was determined by the number and species of livestock and/or by the number of axes carried into the forest[[169]](#footnote-169). Thereby, it was a taxing system where the amount paid, was determined by the amount of resource a household took from the CPR. This system is only enforced to a limited degree today. This indicates a decrease in the in the norms of conduct and enforcement and should lead to prioritising private property, according to Hardin. This has not been the case in Bakhtpura, where the focus on protecting and keeping the CPRs is still widely accepted.

In 1985 the area was turned into a Tiger Reserve and the village lost the majority of their grazing rights in the area. Although, they still have the right for grazing within a distance of 3-4 km from the village, in the periphery of the reserve. After ’85 a system of fines was set up by the Forest Department for breaking the rules in the reserve, but the amount of fines that are registered are very low. The villagers believe that, the Forest Officials are usually bribed by the trespassers and as a result a low amount of fines are given. This indicates that the guarantied sanctions are not in place or effective, but the source is derived from the Government Forest department and not the local institution. This goes against Hardin where strict government control would help alleviate pressure on the natural resources.

There are some specific social norms in regards to the CPRsin the community; no one is allowed to carry and axe into the *Devbani* and outside the *Devbani*, it is only allowed to do lobbing on the trees not to cut the whole tree. Although, the villager indicated that, the accountability in the community towards the norms is not very strong anymore, and said that some of the women are sometimes carrying axes into the forest.

It was stated that, there is no regular meetings regarding the CPRs and a meeting is basically only held when a prominent person is present. Earlier they had monthly meetings, but with the change in the social norms, this has decreased. This goes against Ostrom’s principle of face-to-face communication and participation and should lead to decreased interest in the Commons and more towards private property, but as stated the community’s acceptance of the current status of land is widely accepted. When they do have a meeting, fines and rules are agreed upon, and they usually invite a forest-guard to discuss management efforts on the CPRs. The members of this committee are not elected but shifts and membership are based on individual performance and relations.

Regarding the level of dependency on the village CPR, the villagers were asked; if you earn Rs. 100 how much of it is produced from the CPRs? The interview group agreed upon, that about 50% of their income was produced through the commons, when the monsoon rains was normal. Around three months of the year, during the summer, they migrate for grazing or for manual labour. Approximately three months during the winter they depend on their private and often irrigated lands for grazing and agriculture and for about six months during and after the monsoon their livelihood are dependent on the village commons.

In times of droughts the village CPR can sustain their livelihood through 2-3 months. Therefore the villagers will migrate with their Buffalos to the *Nogarwa* plains, around 90 km from the village, to graze the livestock. One member of the interview group said that, during the last drought, he lost 50-60% of his livestock as there was not enough fodder available. He gave up on trying to find fodder for his livestock and came back to the village with his remaining buffalos and started using mustard plants, Char berries and leaves from a specific tree that grow on the *Devbani* as fodder. Although, the fodder is not good he made it through the drought, with the rest of his livestock. He stated that the leaves from the tree are only used under severe famines. One plant, the *Keep* can grow without water for a very long time, and in rocky areas; this plant will also be harvested during a drought. Some special rules come into effect during a drought; some land is allotted to each household from the Barren category for grazing, and no grazing in the forest is allowed for the sake of letting the forest regenerate its vegetation. The villagers indicated that, some households do break the drought-rules, but not often.

#### Bakhtpura Conclusion

The knowledge of CPR boundaries in the village is very precise; this is partly due to the conflict with the Forest Department and partly to the relative new conflict with the neighbouring village over forest resources. This makes the villagers very aware of their local lands and what they feel they have lost to the reserve. The boundaries were set by the Panchayat and have changes little since the time of the Mughal. The only changes to the land have come with the creation of the Tiger Reserve and the division of the Devbani. This should, according to Ostrom, enhance the ability to exclude outsiders, but it does not seem to the current case of Bakhtpura.

The local institution is only functioning to a certain degree, there are no regular meetings and the main reason for the protection of the Devbani is due to their past history of depletion and the very significant religious importance. The Local Devbani is also the main source of fodder and firewood collected from the fallen branches, in an otherwise relatively depleted environment. The local institution has good control over the conduct of the community but has little control over the “outsider” that has been coming into their area, especially without creating new fights as have happened in the past and are still occurring with the recent beating and the resulting, very violent fight.

There is a significant problem with encroachments on the revenue waste land, around 90% encroachment, and it is now accepted within the village as private land. But the Devbani and the forest is still widely accepted as common property.

Overall the community’s accountability towards the social norms has been decreasing and people are sometimes carrying axes into the forest, although the norms towards the Devbani are still respected. The efficiency of the community institution has also been decreasing and the communication and regularity of meetings is low. The management and conduct seem to be done out of individual or group initiatives, such as the taxing system and the drought management and not from the institution itself. This goes against both theories, where Hardin states that the individual would seek to enhance personal profit without enforced control and Ostrom; where the community would have a good local governance of Commons where the users support effective monitoring and rule enforcement. Contrary to Ostrom’s theory where the exclusion of outsiders should be easy and cheap to create good local governance, it does not seem to be the case in Bakhtpura with the fairly recent conflict over forest products. Especially in periods of droughts there is an overall effective management of the Commons, with no grazing allowed in the forest and additional land from the barren category is brought into use.

As stated, there is an ongoing conflict with a neighbouring village that has escalated into violent fight. The local institution is trying to put a lid on the conflict but beatings and larger fights, which include the use of weapons, are not uncommon. This indicates that the conflict resolution is not easily achieved which is a major principle for effective local governance, according to Ostrom.

Bakhtpura seems to be a mix of fairly respected rules and norms, especially towards the Devbani; although decreasing, an effective crisis management, violent conflicts over resources and a general frustration and large amount of anger towards the Forest Department, that are viewed as utterly corrupt and the source behind of the illegal timer production and the poaching. As well as the serious level of encroachment in the Revenue Wasteland that is generally seen as private lands now, and meets little resistance from the community. This land can be allotted and is definitely a motivator for the encroachments as stated in the introduction.

#### Kalikhol (Buffer-zone of Sariska Tiger Reserve):

Kalikhol is in many ways similar to Bakhtpura village, it has lost many user rights during the creation of Sariska tiger reserve, the typography is similar, it has also be subject to relocation of the villagers by the government and it is in open conflict with the Forest Department. Although it is technically outside the borders of Sariska it faces many of the same problems of Bakhtpura, and equally the Devbani is well protected and holds a significant importance to the village both social and economically.

**Revenue Wasteland:** Out of the total 24 hectares under the Revenue Wasteland category, as much as 20 hectares (83%) land was reported encroached for cultivation. This land category is open for regularization and it is an overall trend in all the villages in Rajasthan that this category is highly encroached upon, mainly due to the prospect of getting the land allotted as legally private property.

**Barren/Uncultivable:** The total Barren Uncultivable land in Kalikhol is 25 hectares (including 3.86 hectares of *Abadi*). In our field survey, only 6.93 hectares was reported encroached for livestock enclosures and cultivation.

**Forest Land:** The village of Kalikhol covers an area of 66 hectares, which is officially categorised as Reserved Forest by virtue of its partial location within the Sariska. However, this forest land is largely used for grazing, fuel wood and collecting NTFPs etc. About 11.03 ha (i.e. 17%) area of this land is under encroachment by individuals, particular for cultivation and *Guwada* (livestock enclosures).

This forest area is located in the hills/ hillocks and the hill top plateaus, called *Maalas*, are used as pasture by the local communities. All other fodder (both grass and leaves) is obtained from the surrounding forest area in accordance with a system known as *dhāra.* This system indicates that, no one can cut trees but collecting fallen leaves and branches is allowed. As well as no livestock is allowed to graze in the given area of *dhāra*, harvesting of grass is also allowed*.* The foothills, where the forest is degraded are encroached for agriculture purposes, both due to its proximity to the village and to the fact that the area is already “cleared” of forest, making agriculture easy and fairly productive.

**Devbani/Oran Land:** The main Oran of the village is located a little way from the village (approximately 3 km), in a crease of the valley. The area of Oran is about 10 hectares and under the official ownership of forest department (Sariska reserve). There is no encroachment is reported within the Oran. At dawn and dusk in winter months, the village men pass through *en route* to or from the plateau above, where the animals are left to graze; and pray for the deity to protect their herds from poor health and predation. Should time allow it, they may also visit the *mahatma*, a resident *saddhu* (holy man) who watches over the Devbani in return for food from the villagers. The general status of the Oran is well vegetated and the social norms regarding conduct within the Oran is widely acknowledged and upheld in the village.

Interview Findings:

The villagers in the interview showed a good and clear understanding of where the precise areas of community CPR are located. All of the land categories have been encroached except the reserve forest and *Devbani*. All the encroaching households, according to the interview group, are paying the fines and penalties for their encroachments. Inside the reserve forest the villagers graze their livestock and collect fuel woods and other NTFP. During the monsoon season, the livestock will be grazed on the top of the hill, and during post-monsoon season the grazing will be on the lower parts and the slopes of the hill. In the post-monsoon season, the land slots available for grazing will be rotated to give the vegetation time to recover.

The community has approximately six months of benefit from the CPR during and after monsoon; where grazing is open to all. First they graze on the plateau of the hills and later they move down on the slopes and foot of the hills. After the monsoon grass is harvested and dried for fodder use during late winter and summer. The stored grass lasts for about three months. The villagers will migrate with their livestock for 3-4 months during the summer season to find fodder. The interview group agreed upon that about 70-80% of their yearly income was produced directly or indirectly by the village commons.

The community has a fairly strict set of norms towards their *Devbani* and the forest, it is not allowed to cut any tree and the penalty for doing so is Rs.500 and the money goes to the village committee. There are some management systems that apply for the forest area, but there is no management on any other land category, and all but the forest areas are highly encroached upon. In good monsoons seasons, like the last two years (2010-2011). During lesser monsoons there will be some regulation on the CPR, the slots of land available for grazing, in the latter part of the year, will rotate. This is done out of regenerating purposes and is controlled by a village committee that looks after the forest and *Devbani*. When asked, the interview group said that they created the forest committee due to the high dependency they have on the forest. “…*we are utterly dependent on the local natural resources* (the forest)*…*”

The village committee has a fairly good authority and accountability in the community, but they are facing problems from outside sources, such as people from the nearby villagers and corrupt forest officials. The committee has, over time, been dissolving and has steadily been losing influence. The interview group said that the village forest committee had no “legal tooth” and was not respected by the F.D, due to this the villagers have stopped meeting, as they saw little point.

The villagers stated that, they feel the Forest Department is encouraging the illegal timber production, because they are earning bribes on all the illegal activities in the forest. They said that until about 1975 there was a very dense forest on the hill range, but after the Forest Department has been alienating the communities from the forest, the depletion of the forest has increased in speed. In this regard the villagers said that the F.D. had applied a divide and conquer system on the local communities, in the circumstances of removing the villagers from the forest, both in physical and mental terms in introducing a bribe system for forest resources and not respecting the local committees. *“..(The) Forest Department says, they are the owner (of the forest); but if the King is weak, what can you expect of the people..?”*

The villagers also stated that the Forest Department tells them that the Forest Right Act does not apply to the reserve forest and therefore they have no access or user rights to the forest resources. *“…If you want something from the Jungle, you have to pay (bribes)…”*

There have been incidents, were fighting has broken out between Kalikholi villagers and people from other villages and the interview group admitted that, they had almost no control on the outside people who came. They stated that, the problems started around 6-7 years ago, when people came to know that there were no more tigers in the area. This resulted in outside people lost their fear of the forest, and started to come and cut the trees down. The interview group said that, there was no forest left in the nearby town so the people come from there to take forest resources form Kalikholi village. This happened in increasing groups, now that they don’t fear the tigers anymore.

The villagers stated that, they have no *Gram Panchad* or –*Sabat*, additionally they stated about the local management and institutions that, the local *Panch* needed to be pushed into action every time and he was only meeting with the same few elder members of the village, rarely including a broad social group of the village.

In regard to development work the villagers stated that, the Forest Department do work on the forest areas, one patch of land has been enclosed for JFM. The villager complained that they were not included in the decision making and for the manual work on the JFM, they were never asked. Workers were hired by the Forest Department from outside the village. The NGO “Krapavis” have done work on the forest by doing plantation and water conservation facilities.

#### Kalikhol conclusion

There is a massive problem with encroachment on the village commons, except the reserve forest and the Devbani. Fines are stated to be paid to the community but have apparently little effect on the amount of encroachments. This can be seen in relation to Hardin’s theory where the positive benefits from encroaching outweighs the cost of the fines and therefore the encroachments will, by all likelihood, continue. The villagers showed little interest towards the encroached Revenue Wasteland but show a high concern towards the forest and the Devbani. This is mainly due to the importance of these categories to their livelihood. As stated “…*we are utterly dependent on the local natural resources* (the forest)*…*” This has also led to the creation of the local committee that manages the fines and conduct within the forest. Although this committee is losing influence in the village and is facing problems with “outsiders” that come to extract forest resources. Given that it is a completely local institution it is facing problems with recognition from the Forest Department and has little legal weight. The breakdown in this institution is partly due to the lack of acknowledgement from the government and the villagers therefore saw little point in regular meetings. The acknowledgement of the institution from authorities is one of Ostrom’s main points for successful local management and it has clearly led to a breakdown of institution control and efficiency in the community. The community has fairly efficient management systems for their CPRs with rotation of grazing areas, an acknowledge sanction system and harvesting of grass in the winter.

The community has severe problems with the Forest Department, the local officials are known for accepting bribes and thereby encouraging the illegal activities in the forest to gain an income. It has been very difficult for the community to enforce sustainable management of the forest, according to the traditional norms, due to the forest official is not protecting the area but is expecting an income from the bribes. This was clearly stated by the villagers; *“…If you want something from the Jungle, you have to pay (bribes)…”.*

The local leader of the Panchayat is inactive in the management and protection process and the participation and inclusion of the community is next to non-existent and the more informal protection committee showed much more efforts towards the protection, this could indicate that the Panchayat is evolved, in some form, in the corruption and not only the Forest Department officials.

Kalikholi is having conflicts with neighbouring villages, which has turned into violent fights. Part of the reason is that the tigers have disappeared from the region and outside villagers therefore have no fear of the forest anymore. This was stated by the Kalikholi villagers as: “*No Tiger, no fear”.*

Overall it can be stated that the Government has taken control over a large part of the traditional community CPRs, which stated by Hardin should solve the problems of overexploitation and maintain the ecology. The contrary seems to have happened in Kalikholi after the creation of the tiger reserve and the Forest Department has taken control. The lack of recognition from the government towards the local institutions is a serious stumbling block for effective local management as well, and likewise is the inactiveness of the local Panchayat leader. Like Bakhtpura the local institution is ineffective but the community’s focus on protecting the local forest and Devbani is high. The finding in Kalikholi does not fit well to any of the theories, and only partly to some of the aspects

#### Kairwari (outside Sariska Tiger Reserve):

The typography and situation of Kairwari is very different from the two other villages in Alwar District. The land is generally flat and fertile and the production of the fields is high. Most of the households have irrigated fields that support them throughout the year. Therefore the dependency on the village Commons is low and it is mainly used for grazing and the river bed is used for growing thatching materials, mainly for sale. The village, being outside the Sariska Reserve has no conflict with the Forest Department and has not lost any land rights to the wildlife reserve. Partly due to the low dependency on the village CPR, the traditional social norms regarding conduct on the CPRs does not hold much power over the people, especially the young generation. This is indicated by the encroachments onto the Devbani/Oran with no real conflict arising out of it.

**Revenue/Cultivable Wasteland:** During the field survey, all of the revenue wastelands (which is 9 hectares) were reported encroached upon by the villagers for cultivation. This is mainly done by expanding their private cultivated lands into the nearby wastelands. This is in the hope of getting the encroached land allotted to the household and rightly so, as it is usually the end result of the encroachments in the Revenue Wasteland category.

**Barren/Uncultivable:** The total Barren Uncultivable land in Kairwari is 20 hectares. Out of which 2.24 hectares were reported encroached upon, mainly for livestock enclosures and house constructions. This category cannot be allotted but is widely used for grazing.

**Oran Land:** *Bhrathari ki* Devbani, a low lying hillock adjacent to a village Kairwari. The Oran has administratively been cut into two equal parts, one that is under the jurisdiction of Kerwawal village (a neighbouring village) and another part fall under Kairwari jurisdiction. The area that belongs to the survey community is 3.20 ha, out of which 0.25 have been encroached upon for livestock enclosures. It is a source of fuel wood and grazing for the village. The Oran also serves as catchment area to the adjacent *Johad* (water tank), where drainage has been blocked by extension of settlements and fields into the Oran.

Interview Findings:

There are three categories of CPR in the village; the hills, the pastureland and the local *Devbani*. Although, the river is legally government land, it is used and viewed as village CPR, a case of *De Facto* commons.

The hills are only used for grazing other than that the village stated that they got no other resources from the hills. The pasture land has been heavily encroached upon and much of the land category has been allotted to private land. Additional, the river is used for water for the livestock. The river bed, adjoining to the private fields, is used for both grazing and for harvesting thatching materials. In the winter season they are harvesting thatching materials, which are dried and thereafter either sold or used in constructions.

In the community there are plenty of tube wells and even if there is very little monsoon rains, the villagers feel that there is no real water scarcity. The village has a number of open wells but they have all dried up, most people have shifted to tube wells on their private land.

The livelihood of Kairwari is mainly based on agriculture, due to the flat plain lands dominating the area, the production is high. The villagers stated that about 75% of their income was generated through the farming on private land. They have about three months of grazing on the hill in the monsoon and then either on their private land or on the river bed. Overall the village has a low dependency on the CPRs, compared with the other survey villages in Alwar district, and it is mainly due to the difference in terrain and the productivity of the land.

The village Oran is located on a hill a little off the village and is small in size (around 8ha, but shared with another village) and is fairly degraded. The lover part of the Oran still holds good vegetation but the mid- and upper part are highly degraded. Additionally, the Oran has been encroached upon over the last four years. The villagers have not done any effort to remove the encroachers. As they stated; *“they did not want to make them homeless and be remembered as the ones who disturbed the harmony of the community”.* All of the encroachers are from the village, and the process of encroachment has mainly happened through family expansion and inheritance.

There is no grazing system of the CPR and it is open to all. Livestock from other villages are not permitted, but the situation has never arisen. Some of the villagers have tried, at *Panchad* level to change the rules of conduct on grazing and usage of the river bed. They wanted to create a tax on the multipurpose grasses, to raise money for the *Gram Panchad* and thereby be able to afford new development work in the village. They did not succeed, as the leader of the *Panchad* was against the idea. The villagers were not willing to discuss why this was not accepted.

The villager stated that the *Gram Sabat[[170]](#footnote-170)* meets every third month and the *Ward Sabat* meets on a monthly basis, although the villagers stated that the leader of the *Ward Sabat* was cheating and just collecting signatures and recording that there was a meeting. The villager stated that earlier they had monthly meetings, but not anymore, now they only meet “when required”. When the villagers were asked about the reason for the change in the social norms, they stated that; the younger people have stopped listening to their elders and there is increasing problems with alcohol in the community. With gradual steps towards more and more modern views the old system of meeting has broken down, and the elders in the village have given up trying to enforce the old system.

#### Kairwari Conclusion

Overall there is very limited dependency on the local CPRs; only around 25% of their annual income is from the CPRs and mainly through the thatching material they sell on the market. All household have private irrigated land and the pasture land and the Revenue Wasteland is completely encroached upon and widely accepted as private land as well. This seems to match the theory; when productivity is high and only “small” areas of land is needed to meet the production needs, private property is more likely to endure and succeed. The local institution is not functioning at all and the meeting is mainly for show and to little effect. The leader was accused of cheating with the meeting records and few people had any confidence in the local governance institution. This indicates that the local management is failing, which could be due to the focus on private property and the people have little need for it. A few villagers have tried to create a taxing system to produce money for more development work, but were turned down and gave up. Even the Devbani is encroached upon, with no reaction from the village; this has not been observed anywhere else in the study villages in Rajasthan. It indicates a near complete breakdown of the traditional social norms and with the low dependency on the Commons, people do not really care.

There is no conflict in the village, internal or external, as all nearby villages have equally productive private lands and abundance in water sources; therefore there is no real need for forest products and other products of the CPRs. The encroachment on the Oran was accepted by most of the community as nobody wanted to disturb the harmony. This seems to fit fairly well with Hardin’s assumption that the users are concerned with their private property and care little for community lands. The feeling of harmony and no conflicts are stronger than the “old” fear of the gods. The major difference from Kairwari to any other village in this thesis are that the resources needed is obtained to a very large degree through their private lands and with the encroachments being viewed as private as well all households have access to irrigation and fodder.

The village being outside Sariska and with no forest in the area they have never been very dependent on the forest products. Therefore it must be concluded that due to high productivity, the availability of water and the flat fertile lands the system of private property is serving the community better and the breakdown in the traditional systems is caused by modernity with no real pains felt by the community, other than nostalgia by the elder members. The individuals are mainly focused on their own profits and care little for the community management, as indicated by Hardin.

### Alwar District Conclusion

The part conclusions from Alwar District are diverse and very complex. To a very large degree the situation of local governance is determined by the typography and relation to Sariska. Near the forest reserve (Bakhtpura & Kalikhol); the communities are highly dependent on the CPRs, especially the forest and Devbani, and this leads to the community vividly protecting and defending them. It creates strong community cohesion and a fairly good accountability towards the social norms on the use of the forest resources as well as crisis management. Although, there is in general a negative process of the traditional rules, this is closely related to the loss of right to the forest and the alienation of the communities towards the forest. The general depletion of the forest creates severe additional pressure on the resources and has resulted in violent conflicts between communities. According to Ostrom this should lead to an effective local governing institution, but it does not seem to be the case. The local Panchayat is ineffective and to some extent, could be involved in the illegal activities within the reserve. But the major corruption problem seems to lie with the Government forest Department. This contradicts Hardin’s theory where a strong government control would be effective towards decreasing the depletion and successfully managing the natural resources and this is definitely not the case of Sariska Forest department, no matter if you accept the accusations of corruption or not.

In Kairwari (outside the tiger reserve), the typography, the fairly high productivity of the agriculture as well as the high amount of private and irrigated fields, render the dependency on the CPRs to a minimum. This is especially indicated by the encroachment within the Oran with little to no protest from the community as a whole, which would be unthinkable in any other survey village in Rajasthan. This has led to a near complete breakdown of the traditional management systems and the local governing institution and all encroachments are accepted as private lands even if they have not officially been allotted. Due to most of the resource needs are being met by the private fields, this seems to have little consequence in relation to the overall livelihood of the community, which indicates than when the resource yield is relatively high private property right will be prioritised over common property and local governance.

Overall it must be concluded that none of the theories alone are sufficient to describe the processes within Alwar. In all three villages the local institutions are not very efficient, but in the cases of Bakhtpura and Kalikhol the community itself is upholding the traditional right and methods of management, to some degree, due to their dependency and the scarcity of the resource. They are very focused on monitoring the area and excluding outsiders, which according to Ostrom is a major principle in successful community management.

# Conclusion

In the Agro-climatic region of Udaipur, the local governing institution’s inability to effectively manage plays a significant and additional pressure on the local CPRs. The institution as a whole can be said to demonstrate a large degree of apathy towards the Commons in general and towards the massive amount of encroachments on the Commons and this attitude is reflected in the community. The local governing institution has even blocked and ignored community initiatives towards evicting the encroachments, thereby breaking the law concerning how they should react on filed complains. Therefore it must be concluded that the actions of the local governance, to a large degree, are enhancing and determining the continued failure of the CPRs. Ostrom’s principles of guarantied sanctions, regular face-to-face communication and community participation in the decision process, that is necessary for efficient local governance, are non-existent in the Udaipur survey villages and as a result the area available as Commons for the poor and landless in the community has been severely limited in size. The complete lack of governance as well as the indifference from the revenue Department has led to an encroaching norm with the population and the vegetation suffering as a result. In general the situation reflects Hardin’s assumption of the rational individual that seeks to enhance personnel gains with no concern for the community and the future of all of their livelihoods. In short; the lack of governance and monitoring from both the local Panchayat and from the Revenue Department leads to the further encroachment of the lands and the growing disregard of the Commons as CPR.

In the agro-climatic region of Jaisalmer, the severe restraints on vegetation and agriculture from the environment have on the other hand, enhanced the local governance and given the social and economical significance of the Orans and Gochars, the communities are showing fairly effective local management efforts. The degradation of the lands is much more a result of the desertification than a result of improper local governance. It reflects Ostrom’s principles of maintaining frequent face-to-face communication and dense social networks, the users support effective monitoring and rule enforcement and the knowledge that sanctions will be enforced. In this case the sanctions that are effective are not the monetary fines but rather the social exclusion and a “fear of the gods” in relation to the very religious communities. This has maintained the vegetation level on the Orans and Gochars at an acceptable level and has prevented large scale encroachment as it is seen in the other regions. It is not possible to enclose large additional lands as Oran or Devbani, because the fuel wood needs will still have to be met, and this out of necessity would overshadow the religious respect. The basic needs will always come before anything else. If people are starving or not allowed to extract the resources they need, this will easily outweigh the social norms of conduct, as it is beginning to in the agro-climatic region of Alwar that holds much more vegetation and much higher productivity than Jaisalmer. One of the crisis managements systems in Jaisalmer is to sell a fairly large percentage of the livestock both in order to relive pressure on the vegetation and water sources and to avoid the economic loss from the death of the livestock.

In the region of Alwar, the situation of both local management and the relationship to the Central Government, in the form of the Forest Department, is very different from the two other regions. The communities have a close and traditional relationship to the forest and the Devbani and this enhances the local management and protection of the areas and they are well aware of the general and continued process of the depletion of the forest. This has resulted in fairly good local governance with a very effective crisis management and initiatives by utilizing local plants that, although not the best for fodder for the livestock, it can sustain them during droughts. As stated in the analysis Alwar does not seem to fit completely to any of the theories. The official local governing institutions are slow to act and as in Udaipur, they have a tendency for apathy towards the situation of the Commons as a whole. In contrast to Udaipur, the community has not accepted this and has formed informal organisations to manage and protect the CPRs, especially the Devabani and the forest in general. In Alwar many of the communities have lost their traditional user rights of the forest and this has resulted in an increase in illegal activities to make ends meet for the households, this has also resulted in violent fights with neighbouring communities over access. The result is a slow but steady negative process of accountability towards the traditional norms, but the main reason for the continued degradation is from the significant and well known corruption of the Forest officials grading the Sariska Tiger reserve. The community that lies outside the Tiger Reserve, where the typography allows for intensive and high productive farming the dependency on the CPRs is very low and as a result the social norms and institutions upholding them have come to a complete breakdown.

In answering the problem formulation: *How is the local governance determining the success or failure of the CPRs in three agro-climatic regions in Rajasthan, India?* It must be concluded that strict government control does not lead to a more sustainable management of the CPRs but rather to the contrary. The main reason for the continued encroachment problems in all the regions of the research is the acceptance of bribes and the overall corruption with the Government departments. But only in the case of Udaipur has this manifested into a near complete apathy in the communities towards the encroachments and the general status of the Commons. In the other two regions the communities are showing fairly efficient efforts to maintain their CPRs and to monitor the usage and enforce exclusion of outsiders, in accordance with Ostrom’s principles. It must be stated that, in Udaipur Hardin’s assumption of the focus on private gains will overshadow the good of the community and could very well in the long run lead to the complete destruction of the local environment. In general is must also be concluded that there is a lack of long-term perspectives towards the local Commons, even though the knowledge of their degradation is there and more importantly felt in the communities. But more often than not this leads to private gains outweighing the community needs and the needs of the CPRs to maintain its vegetation cover and in turn sustain the community.

Some of the most important aspects of successful local management is to have an efficient monitoring system, regularity and participation by the communities in the local management as well as legal rights to exclude outsider and evict encroachers, but all of this matters little if the community does not accept and support the rules and norms towards the Common Property Resources.

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# Appendix

## Appendix I: Description of Terms

This section will describe some general terms and categories concerning Common Property Resources, governing institutions and Rajasthan in general.

***De Jure/De Facto:*** The NSSO[[171]](#footnote-171) uses two categories, 1) *de jure* and 2) *de facto* CPRs, to recognize the use of the commons across different land management regimes in India.

*De Jure* common lands is defined by the NSSO to be; “a resource becomes common property only when the group of people who have the right to its collective use is well defined, and the rules that govern their use of it are set out clearly and followed universally”. This method has been used for the collection of data on the size of CPRs.

*De Facto* CPRs includes resources such as revenue land not assigned to *Panchayat*[[172]](#footnote-172) or a community of the village, forest land, or even private land in use of the community by convention. All such land in practice used as common resources (including common use of private property confined to particular seasons) is treated as CPRs for data collection on benefits accruing to villagers even if they are located outside the boundary of the village[[173]](#footnote-173). This approach was adopted for collecting information on use of CPRs and was extended to include resources such as revenue land not assign to Panchayator a community of the village.

The varying jurisdictions of government agencies and the categories of land-use that they designate largely determines which CPRs are *de facto* or *de jure*. The laws carry provisions for custodianship of these lands. The three categories of land-use relevant for this study are 1) pasturelands, 2) forestlands, 3) other government-owned lands, and Oran/Gochar/Devbani lands.[[174]](#footnote-174)

**Pasturelands:** The Rajasthan Land Revenue Act allocates pastures and grazing lands to local Panchayat bodies based on livestock population. Encroachment on pastures is prohibited under section 4291. Even though this is the case on the legal side, in reality most encroachment has been conducted on pasture lands. These pasture lands are in now in the possession of the panchayats, but most of them only exist on paper and have been massively encroached upon[[175]](#footnote-175). This is due to both the easier access, the general quality of the land and the chance of getting the land allotted or regularized through government policies.

**Forestlands:** The Forest Conservation Act (FCA) of 1980 restricts conversion of forestlands for non-forestry purposes, prohibiting the conversion of land to agriculture through encroachments, allotments, and diversion. The Forest Rights Act (FRA) of 2005 recognizes the livelihood usage of forestlands, even for individual uses. Many also feared that it would turn into a land distribution scheme. To date, implementation has been slow and complicated, with numerous filings for individual property rights and very few for community forest rights, while verification of livelihood use of the forests has been delegated to the village level Forest Rights Committee (FRC).

**Other government-owned lands:** The Rajasthan Revenue Department is the responsible local authority. These lands are called *Revenue Wastelands*, which can be allotted to private citizens for cultivation or set aside as commons for Gram Panchayat[[176]](#footnote-176) management for a renewable 25-year term.[[177]](#footnote-177) A sub-category of Revenue Wasteland is *Barren* and *Uncultivable* *Land*, which cannot be allotted. Finally, Gram Panchayats control *Pasture Land*, placed under their control by the Rajasthan Land Settlement Act of 1955. Government surveys change the designation of particular lands over a time through conversion[[178]](#footnote-178), although most land designation remains unchanged from the surveys and settlements completed in the 1950s and 1960s. In the wasteland category, there are many cases of encroachments which have shrunk the area of what is regarded by the community as common land, thereby putting additional pressure for sustaining livelihood in the poorest households. The chance of getting the land allotted is one of the major reasons so many continue to encroach, and it could be said that it acts as an incentive for the illegal privatizations.

**Oran/Devbani & Gochar:** The Oran/Devbani and Gochar have traditionally been an extremely important source of fodder for the livestock in addition to it significant religious importance, which is why Oran and Gochar have been protected since times immemorial. Naturally, this is why the Gods are associated with the Oran and Gochar. For example Devi Bhadariya Rai Oran, Baba Ramdev Oran etc. It is commonly held in, that to cut one bush of Oran equals the sin incurring in killing one cow. Thus, the Orans are protected with religious connotation. It was mandated since ancient times that each village ought to be supplemented with one Oran. Without an Oran there could be no village and there would be a public feasts when the Oran were established. Legally the Oran is part of the *Area not available for cultivation* but due to its importance both socially and for fodder needs, the area is viewed as a separate and independent category.

The *Mukhiya* of the village used to mark the Oran by pouring a white cow’s milk or *Kesar* around the circumference of Oran. From morning to evening the extent up to which the area was marked was considered Oran. The Oran was named after the God of the dominant caste of the region. Then nobody dared to cut any tree or bush in fear of angering the god. Any person who disobeyed the rules would be ousted from the village and the village land was considered included in the Oran area.

Each village used to have its own Gochar and Oran which were protected by the whole village, due to the religious significance. Each village would have four or five *Mukhiyas* that would be “wardens” of the Oran. The Mukhiyas would select one person as responsible for the protection of Oran who in turn used to get an animal or some money as pay. If that person would find anyone cutting any tree from the Oran he would prevent that person from doing so or would penalize the offender in the presence of the other Mukhiyas. The offender would be considered an outcast from the village. However no such incidents used to occur because people were religiously respectful towards Oran.

The people in Jaisalmer are majorly livestock holders, and are dependent on the Oran and Gochar for fodder needs, due to the harsh environment in the region. There used to be no governmental support, like it is today, in wake of a drought. therefore, all animals were dependant on Oran and Gochar to provide enough fodder. It is said that even if it was a drought for two years at a stretch, the Orans and Gochars could provide enough fodder. Even if one accepts this likely overstatement, most grasses with a very high nutrition level have become nearly extinct now in Jaisalmer District. Not only the animals but also the people of the village used to depend upon Oran and Gochar for vegetables and other food sources, and this in relation to the general degradation of the surrounding lands.

***Panchayat:*** Local governing institution. The term is also used for the leader of the institution.

***Gram Panchayat:*** A larger governing institution, usually a grouping of villages form a Gram Panchayat for governance on a larger scale, but still fairly local. It can also concern only one village if the population is over a minimum of 300 and it has significant importance in the region, such as market access and infrastructure to the larger cities.

**Bigha:** Is a unit of measurement of area of land used in [Nepal](http://en.wikipedia.org/wiki/Nepal), [Bangladesh](http://en.wikipedia.org/wiki/Bangladesh) and in a few states of India, like [Rajasthan](http://en.wikipedia.org/wiki/Rajasthan). The precise size of one bigha varies considerably; in Udaipur: 1 hectare = 4.5 bigha; in Jaisalmer 1 hectare = 5.5 bigha

**Anicuts:** Small dams to hold back the run of water during the monsoon and to increase the deep percolation.

## Appendix II: Ramaj Details

***Ramaj*** Village is a revenue village[[179]](#footnote-179) in Udaipur District located 48 km South-East of Udaipur city. It lies in *Suron Ka Guda* zone of the *Girwa* Block. Ramaj comprises of 197 households divided among nine hamlets, belonging to the Rawat caste. The village is divided into nine hamlets. These are Ringna fala (14)[[180]](#footnote-180), Upla fala (26), Kanjda fala (36), Kheda fala(50), Lali Talai(10), Mataji Fala (16), Rupa Talai (12), Kala Khet (15) and Mahudi Rel (16).

The terrain of the village is dominated by undulating lands with little vegetation. Agriculture represented the primary source of livelihood for the villagers until recently. Land fragmentation (with the average landholding standing at two hectares and 91% of farmers considered “small and marginal”) and long spells of drought has increased the reliance of people on wage labour migration to make up for the deficit in food security. The low economic security of many households in the village and has increased the dependency on seasonal migration and wage labour. Around 150 men migrate out of the village for wage labour for eight months a year on an average.

The inhabitants typically cultivate maize, wheat, pulses, and small patches of vegetables around houses, the majority of which serves the household’s consumption, selling only a small amount of the crops.

Seva Mandir has been involved in conduction and development interventions in Ramaj in the areas of Watershed Development and Village Institutions for over 20 years[[181]](#footnote-181). In 1990 Seva Mandir undertook development of a *Khatedari Chak* (private land development) but the community were unable to manage and protect it properly and it turned out to be a failure[[182]](#footnote-182). This brought about a halt in development interventions in the village. Subsequently a new Village Development Committee was formed and the committee along with the villagers was re-oriented and challenged to excel. In next few years, they developed one pastureland and six private chakscovering an area of 64 hectares[[183]](#footnote-183)*.* Direct seed sowing of *Ratanjot* (Jatropha)have been done on trenches and 11650 plants have been planted in the pastureland and privatechaks. This resulted in significant increase in fodder productivity of these lands that helped these families overcome the fodder crisis that was prevalent all over the region during recent droughts.

## Appendix III: Dodawali Details

***Dodawali*** village is located 28 km away from the city of Udaipur in Girwa tehsil[[184]](#footnote-184) and falls under the Udaipur district of Rajasthan. The village is located in the Aravali hills and creates a unique topography and physical features. The land is undulating in nature; rocky, mostly barren marked by scarcity of rainfall, forest cover and presence of sedimentary rock. The houses are in close proximity with each other and the village is divided into 12 hamlets. Dodawali is a middle-size tribal village in terms of population and there are nearly 500 households and about 3500 people residing in the 12 hamlets of the village.

Revenue records show that the village of Dodawali has about 1222 ha out of which forest covers 285 ha, revenue land 460 ha, pasture land 101 ha and private land 585 ha[[185]](#footnote-185). The forest area in Dodawali it is located on the Mutta Gatta hills and is being managed by the *Ubeshvar* Forest Department. The forest area is not being protected and is laid open to grazing and collection of timber, this has resulted in a serious decline in the overall vegetation of the forest. In addition to the continuous over-exploitation of the forest land, there have been serious drought problems over the last 10 years, due to the lack of rain fall. Large parts of the forest have thereby turned into barren lands, with only very little vegetation[[186]](#footnote-186). Three plots of land, 50ha each, has been turned into JFM sites, under the guidance of Seva Mandir, as an attempt to improve the vegetation and to prevent further degradation and soil erosion.

In Dodawali some hamlets like *Nichli Gowadi, Talai Ghati, Lamba Davda* have private fodder land. The villagers from poor households generally work on these fields as labour for Rs 100 per day in cutting the fodder. Generally poor households are belonging to low caste and thus are subordinated from use of basic resource like fodder. The village *panchayat* has very little pasture land and that is also encroached upon.

## Appendix IV: Alwar Village Details

Village Details for Bakhtpura, Kalikhol & Kairwari:

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No.** | **Village** | **Location** | **No. of household** |
| 1. | Bakhtpura | On the periphery of  Sariska Tiger Reserve | 142 |
| 2. | Kalikhol | In the Buffer zone of Sariska | 208 |
| 3. | Kairwari | Outside the Sariska | 137 |

The periphery of Sariska is inside the actual reserve forest, although on the outskirts of the core areas. The buffer zone functions as a natural border, surrounding Sariska on all sides, for humans, animals and flora alike.

The total area of the district is approximately 7,665.37 km² (roughly 2.5% of the total area of the state), of which the ‘net area sown’ constitutes 64.9% and ‘uncultivable land’ 21.3%. The remainder consists of ‘forest’ (3.2%), ‘fallow land’ (5.8%), ‘permanent pastures’ (3.2%) and ‘culturable waste’ (1.7%). As per the Census of India 1991, the Land use pattern in Alwar district is as follows:

|  |  |  |
| --- | --- | --- |
| **Land Use** | **Area (km2)** | **Area (% of total)** |
| Net Area Sown | 4972.54 | 64.9 |
| Uncultivable Land | 1630.39 | 21.3 |
| Fallow Land | 442.32 | 5.8 |
| Permanent Pastures | 244.69 | 3.2 |
| Forest | 242.18 | 3.1 |
| Culturable Waste | 126.12 | 1.6 |
| Trees and Orchards | 7.13 | 0.1 |
| **Total** | 7665.37 | 100.0 |

**Water sources:**

* Open well: Generally located in the downstream of Johads, most open wells have now run dry

|  |  |  |  |
| --- | --- | --- | --- |
| **Village** | **Total wells** | **Dry wells** | **Still in function** |
| **Bakhtpura** | **26** | **12** | **14** |
| **Kairwari** | **47** | **17** | **30** |
| **Kalikhol** | **28** | **15** | **13** |

* Tube well: Less than ten years old, largely confined to the low lying parts. They were initially dug because open wells had dried up, subsequently they have led to further falling ground of water levels
* Johad: There are several Johads (rain water harvesting structure) in the villages
* River / stream: Seasonal, flows for two to three months in a year, important source of ground water recharge, and construction sand.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Village | Total population | Male | % Male literacy | Female | % Female literacy |
| Bakhtpura | 686 | 359 | 49.00 | 327 | 12.50 |
| Kalikhol | 1156 | 648 | 37.3 | 508 | 17.1 |
| Kairwari | 921 | 482 | 51.87 | 439 | 19.13 |

The female illiteracy in all the three villages is very high, ranging from 80-87% while the male illiteracy is usually around 40-50%. This reflects the lack of social status the women carry outside the household as well as the general lack of education facilities in the area. But it also reflects the general poverty in the villages, where only a few can afford to send their children to school instead of having them work in the fields or herding the livestock. Although, education have become much more available in the rural areas over the last 10-15 years and much of the school education is paid by the central government, as well as the understanding of the importance of education, many cannot afford to lose the workforce of their children.

Village Livelihood:

Production of a household consists mostly of milk and milk products (ghee, yogurt, buttermilk and *mava* (milk-cake). Most of these products are used for own consumption, and for consumption of the lambs and kids, but surplus is sold in the market. The main source of income however is the sale of male lambs. Household expenditure is on wheat, tea, sugar, and other food commodities, alongside other essential items such as supplementary livestock feed, medicines for humans and animals and clothing. Main income is the sale of the male lambs, whereas they aim at maintaining the females for future reproduction. All species of livestock are kept on a system of open range grazing along with stall feeding.

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140. From 2066580 in 1999 to 2633312 in 2007 [↑](#footnote-ref-140)
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142. 6th Comprehensive plan, Seva Mandir, 2009 [↑](#footnote-ref-142)
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144. 6th Comprehensive plan; Seva Mandir; 2009 [↑](#footnote-ref-144)
145. 6th Comprehensive plan, Seva Mandir, 2009 [↑](#footnote-ref-145)
146. 6th Comprehensive plan, Seva Mandir, 2009 [↑](#footnote-ref-146)
147. 6th Comprehensive plan, Seva Mandir, 2009 [↑](#footnote-ref-147)
148. This cactus is commonly use for demarcation of land in the region, due to its hostile and resilient nature, its slightly poisonous juice and its quick growth. [↑](#footnote-ref-148)
149. Section within the village. Each village/Township is divided into a few Phallas, some up to 15. [↑](#footnote-ref-149)
150. Records of pasture- and wasteland [↑](#footnote-ref-150)
151. *Decolonizing the Commons*; S.N. Bhise; 2004. [↑](#footnote-ref-151)
152. Forest Protection Committee [↑](#footnote-ref-152)
153. *Trends In Arid Zone Research In India*, Kar, Garg, Singh & Kadhja, 2009 [↑](#footnote-ref-153)
154. *Trends In Arid Zone Research In India*, Kar, Garg, Singh & Kadhja, 2009 [↑](#footnote-ref-154)
155. **Geomorphology** is the scientific study of landforms and the processes that shape them. [↑](#footnote-ref-155)
156. A **pediment** is a gently inclined erosional surface carved into bedrock. It is thinly covered with fluvial gravel that has developed at the foot of mountains. [↑](#footnote-ref-156)
157. An **alluvial plain** is a relatively flat landform created by the deposition of sediment over a long period of time by one or more rivers coming from highland regions, from which alluvial soil forms. [↑](#footnote-ref-157)
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162. *Trends In Arid Zone Research In India*, Kar, Garg, Singh & Kadhja, 2009 [↑](#footnote-ref-162)
163. *Trends In Arid Zone Research In India*, Kar, Garg, Singh & Kadhja, 2009 [↑](#footnote-ref-163)
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165. *Trends In Arid Zone Research In India*, Kar, Garg, Singh & Kadhja, 2009 [↑](#footnote-ref-165)
166. A sub-cast from the Indian-Pakistan region [↑](#footnote-ref-166)
167. Self Help Group [↑](#footnote-ref-167)
168. KRAPAVIS – This information have been gathered through the semi-structured interviews and conversations with farmers, elderly villagers and local NGO officials. [↑](#footnote-ref-168)
169. It informally agreed upon that, one person with one axe could take a certain amount of wood in one day. The tax for wood was set on this calculation. [↑](#footnote-ref-169)
170. The Sabat is another word for the Panchayat, found in other areas of Rajasthan. In the Alwar region the institution is called *Gram Sabat* and *Ward Sabat.* [↑](#footnote-ref-170)
171. National Sample Survey Organisation [↑](#footnote-ref-171)
172. [↑](#footnote-ref-172)
173. National Sample Survey Organisation. 1999. “Common Property Resources in India.” NSS 54th Round January 1998-June 1998. [↑](#footnote-ref-173)
174. Seva Mandir and the Indian Department of Land Reforms. 2008. “Report of the Committee on State Agrarian Relations and the unfinished task of land reforms, sub-group VI.” [↑](#footnote-ref-174)
175. *Decolonizing the Commons,* S.N. Bhise; 2004 [↑](#footnote-ref-175)
176. Gram panchayats are local self-governments at village or small town level in India with minimum population of 300. [↑](#footnote-ref-176)
177. Land, Community and Governance, Ballabh; Pankaj, Seva Mandir, 2004 [↑](#footnote-ref-177)
178. This involves transfer of ownership from the revenue department records to the forest department records. [↑](#footnote-ref-178)
179. Revenue village is a small administrative division in India, which may consist of several hamlets. [↑](#footnote-ref-179)
180. Number in the parenthesis indicates the total number of households in the concerned hamlet. [↑](#footnote-ref-180)
181. Ramaj Village Notes, Seva Mandir, 2006, Udaipur. [↑](#footnote-ref-181)
182. Ramaj Village Notes, Seva Mandir, 2006, Udaipur [↑](#footnote-ref-182)
183. Ramaj Village Notes, Seva Mandir, 2006, Udaipur [↑](#footnote-ref-183)
184. A tehsil is a unit of government in Pakistan and India, similar to a county. It usually consists of one, or more towns, and the villages around the towns. [↑](#footnote-ref-184)
185. Dodawali Village Microplan; Seva Mandir - 2009-2011 [↑](#footnote-ref-185)
186. Dodawali Village Microplan; Seva Mandir - 2009-2011 [↑](#footnote-ref-186)