Regeneration of Common Property Resources as a basis for revival of the rural economy in the time of COVID

Editors
Vijay Mahajan
Jeet Singh

RAJIV GANDHI
INSTITUTE FOR CONTEMPORARY STUDIES

Concept and Review

Mr Vijay Mahajan, Director
Rajiv Gandhi Institute for Contemporary Studies, New Delhi

Edited By

Jeet Singh, Fellow-Environment,
Rajiv Gandhi Institute for Contemporary Studies, New Delhi

Mr Vijay Mahajan, Director
Rajiv Gandhi Institute for Contemporary Studies, New Delhi

Published by:
Rajiv Gandhi Institute for Contemporary Studies, New Delhi

May 2021

Regeneration of Common Property Resources as a basis for revival of the rural economy in the time of COVID

Editors
Vijay Mahajan
Jeet Singh

Table of Contents

Foreword

The Rajiv Gandhi Institute for Contemporary Studies (RGICS) works on five themes:

- Constitutional Values and Democratic Institutions,
- Governance and Development,
- Growth with Employment,
- Environment, Natural Resources and Sustainability and
- India's Place in the World.

This report is one of the outcomes of research work undertaken, cross cutting two of the above themes namely Environment, Natural Resources & Sustainability and Growth with Employment. The painful exodus of migrant workers from cities in May-June 2020 during nationwide lockdown to contain the spread of COVID-19 prompted us to commission this study with the help of our field partners and associates. Relying on vast academic literature on distress migration from rural areas due to degradation of Common Property Resources (CPR), this study attempted to find out causes of CPR degradation. Moreover, it explores ecological and employment potential in the process of regenerating CPRs.

This study includes four detailed case studies from four different states to understand current importance of CPRs in sustaining rural lives and livelihood. All of these case studies go into historical, social, cultural, economic and governance details to understand causes of CPR degradation. The case study from the Bodoland Territorial Region of Assam describes traditional system of CPR governance especially irrigation canal and fish ponds. Case study from Uttarakhand analyzes history of social, economic and ecological changes due to institutionalization of forest CPRs in the time of British rule and shrinking of CPR institutions after the independence.

The case study from Rajasthan carefully documents traditional practices of communities in the Dang region of the state to keep land and forest CPR economically and ecologically viable. The case study from Tamil Nadu explores social, economic and governance issues responsible for degradation of the

tank system in the Madurai district of the state. The final chapter of this report synthesises findings of all these four case studies and suggests a strategy to meet dual goals of generating livelihoods in rural areas and meeting SDG and Climate goals. To attain these goals we recommend change in approach from protection to regeneration of natural resources. The suggested approach has potential to generate jobs in the short time but sustain rural livelihood in the long run. Doing this will automatically enhance our capacity as a nation to attain SDG and climate related goals on time.

We acknowledge support of our field partners Gram Gaurav Sansthan, Rajasthan and SANJOG, Assam in collecting data in the difficult time of the pandemic. We also extend our gratitude to our field associates Dr. S. Nirmala, Mr. Gautam Bandhopadhyaya, Mr. Manoj Mishra and Mr. Deenabandhu Karmakar. We hope this study will add value to the policy discourse on green recovery after COVID-19 pandemic.

Vijay Mahajan
Director, RGICS

1 Status and Significance of Common Property Resources in India

Jeet Singh, Fellow, RGICS

The degradation of natural resources is strongly interconnected with the human migration. In fact, the over exploitation of natural resources especially in the rural areas leads to the distress migration in search of livelihood opportunities. This interconnectedness is not a new revelation, it has been well studied both from economic and ecological perspectives. The UNCCD in one of its working papers published in 2017 asserts that the degradation of natural resources especially land is a major push factor in the rural-urban migration. The study also notes that this linkage is further mediated by social, economic, demographic, political and environmental factors .The Berlin Institute in one of its recent paper validate this linkage. It found that the degradation of the nature and environmental hazards are root causes of the migration everywhere. Degradation of natural resources due to poor planning, mismanagement and increasing pollution all across the globe have compromised ecosystem services leading to distress migration.

In India, a large population has migrated in last 3-4 decades. As per the Census 2011, the total number of migrant population increased from 31.5 crore in 2001 to 45.6 crore in 2011. A substantial number in this population moved from distress rural areas to cities in the search of jobs. Various studies in India in the past attributed the continuous migration to the degradation of natural resources especially land, water and forest. A relatively new study of CPRs in Assam published in 2012 (Mahanta and Das, 2012) examined demographic, social, economic and environmental data of the state for the year 1991 and 2001 and found that the “decreasing common property resources distress out rural people to urban areas in search of livelihood.” Many of these natural resources were initially in the control of village communities governed through traditional systems. These are called the ‘Common Property Resources’ (CPR).

A series of studies conducted in different agro-climatic zones of India by N.S. Jodha in 1980s found that CPR plays significant role in the lives and livelihood of rural people. A study of few district in the dry region of the country including Gujarat, Karnataka, Rajasthan and Tamil Nadu revealed that poor people were more dependent on CPR as compared to the relatively rich villagers . He also pointed continuous decline of the CPRs both in terms of their size and productivity directly affecting rural economy.

CPRs play a vital role in the lives and livelihoods of the rural poor. There were few efforts in the past to regenerate these resources which includes waste land development, development of rain fed area, watershed development programs, grazing land development, joint forest management etc. However, various data suggests that despite all these programmes, natural resources have degraded both in quality and quantity. Various studies have been carried out since 1980s on CPRs, most of these studies have found that they play vital role in the rural economy. More recent studies and assessment of secondary data have found that the degradation of CPRs is directly correlated with the distress migration from villages.

The existing literature on the CPRs answers lot of questions related to extent of CPR, its social, economic and ecological significance and interconnection of CPR degradation and the distress migration. The distress reverse migration of workers due to COVID-19 pandemic in India has shaken the consciousness of common people. Millions of people struggled to travel back to their origin in the month of April, May and June 2020. This hardship once again made policy stakeholders to re-think and re-discuss main causes of distress migration.

Decline in and degradation of CPRs is one of the main root causes of the distress migration, which has gained a lot of focus in last few months. The government of India has announced more funding for schemes like MGNREGA, under which efforts will be made to regenerate natural resources while providing unskilled jobs to rural labourers. However, just increasing funding of MGNREGA would not yield any result. There is need to systematically understand the degradation of CPRs and influence policies/programs/schemes in the context of new normal due to the current pandemic.

Common Property Resources:

The CPR in India includes resources like "pastures and grazing grounds, village forests and woodlots, protected and un-classed government forests, waste lands, common threshing grounds, watershed drainage, ponds and tanks, rivers, rivulets, water reservoirs, canals and irrigation channels (NSS, 1999). The idea of common property resources is not a new in India. It has been there for generation, and therefore, we had rich traditions around management, planning, governance and distribution of benefits of CPR. Nature of these traditions vary from region to region. However, over the time, the erosion in these traditions due to several factors led to degradation of village natural resources.

The NSSO survey in 1998 classified CPRs in following two categories based on their ownership:

1- **De Jure:** the *de jure* CPRs are those resources which are within the boundary of the village and are formally (i.e. by legal sanction or official assignment) held by the village panchayat or a community of the village.

2- **De facto:** the *de facto* CPRs are those resources within the reach of villagers for which the local community do not entertain any formal right but they are in the use of the community by convention. These resources includes revenue land not assigned to panchayat or a community of the village, forest land, or even private land in use of the community by convention.

Despite a rich traditional base, we don't have any updated record on the status of CPR in India. The National Sample Survey Organization conducted one household survey in 1998 to estimate number of CPRs and people's dependence on them in India. The survey estimated that in 1998, around 15% of the country's landmass was common property formally held by the village panchayats or communities. The estimate and distribution of de jure CPR in 1998 is given in the following table.

Availability of Common Property Land Resources in Rural India

Percentage of common property and resources in total geographical area	15%
Common property land resources per household (ha)	0.31
Average household size	5.04
Common property land resources per capita (ha)	0.06
Components of common property land resources: (Percentage)	
(i) Community pastures and grazing grounds	23
.....(ii) Village forests and woodlots	16
.....(iii) Other	61

Source: NSSO, 1999

The NSSO survey further showed that despite not having formal entitlements, villagers do have traditions of managing and planning of large number of natural resources. This is called de facto ownership of CPRs. Combining these two ownership patterns, the total geographical area of the CPR is much more than 15% of the total geographical area of India. A study of few villages in the dry regions of the country, N.S. Jodha found that the spread of the CPR to the total geographical area was as high as 41% in Madhya Pradesh and 36% in Rajasthan . A latest study by the Foundation for Ecological Security (FES) in 2010 also used de facto approach and found that the average area of CPR to the total geographical area is 57% in Odisha, 43.6% in Madhya Pradesh, 32-43% in Gujarat, 42% in Andhra Pradesh, 34% in Karnataka and 24% in Maharashtra (FES, 2010).

The story of commons (CPRs) is more of less same all across the globe. All traditional communities are facing challenges related to the degradation of their CPRs. The Nobel Laureate Elinor Ostrom studied CPRs in different parts of the world to understand issues related to the sustainability of these resources. She developed an eight point framework for the sustainable and equitable governance of the CPRs. Eight principles of managing commons drafted by Elinor Ostrom are as follows :

1. Define clear group boundaries.
2. Match rules governing use of common goods to local needs and conditions.
3. Ensure that those affected by the rules can participate in modifying the rules.
4. Make sure the rule-making rights of community members are respected by outside authorities.
5. Develop a system, carried out by community members, for monitoring members' behavior.
6. Use graduated sanctions for rule violators.
7. Provide accessible, low-cost means for dispute resolution.
8. Build responsibility for governing the common resource in nested tiers from the lowest level up to the entire interconnected system.

Common Property Resources and Livelihood:

People in rural area are highly dependent on common property resources for their life and livelihoods. The health of CPR is directly correlated with the local economic, social and cultural gains. It is this interconnectedness, which has probably developed traditional institutions of governance and customary laws to regulate these resources in various parts of the country. N.S. Jodha, in 1980s argued that the decline in the productivity of CPRs directly influence the economy of the rural poor . The study categorized dependence of people on CPRs in three broad categories as follows:

Category of Benefits from CPRs	CPR benefits
Physical Products	• Food, fibres • Fodder, fuel, timber, etc. • Water • Manure, silt, space
Income and Employment Benefits	• Off-season activities • Drought period sustenance • Additional crop activities • Additional animals • Petty trading and handicrafts
Social and Ecological Benefits	• Resource conservation • Drainage and recharge of groundwater • Sustainability of farming systems • Renewable resource supply • Better microclimate and environment

http://www.fao.org/3/v3960e/v3960e05.htm#TopOfPage

The studies by N.S. Jodha in 1980s reveal that while rural poor were more dependent on CPRs for access of physical products and direct employment; the rural elites were benefited hugely by social and ecological benefits of CPRs. The study further concluded that in the arid and sub-arid regions of the country 70 to 80% villagers were heavily dependent on CPRs. The estimate by NSSO in 1998 revealed that as many as 48% rural households were dependent on CPRs for their livelihoods.

Use of Common Property Resources

Households reporting collection of any material from CPRs	48%
Average value of annual collection per households	Rs. 693
Ratio of average value of collection to average value of consumption expenditure	3.02%
Households reporting grazing of livestock on CPRs	20%
Households reporting use of common water resources for	
(i) Irrigation	23%
(ii) Livestock rearing	30%
(iii) Households enterprise	2.8%

Source: NSSO, 1999

The NSSO survey further found that 45% of rural households were dependent on CPRs for their fuel wood, 13% household for fodder collection and 20% household for grazing. There is no other estimation of CPRs after the NSSO survey in 1998. However, various studies and related data show that the productivity of CPRs has gone down drastically in last two decades. Nearly 10 years after NSSO survey the Foundation for Ecological Security (FES) conducted a small scale sample survey in few central and southern states to understand the updated status of CPRs and people's dependence. This survey also found heavy dependence on CPRs despite their degradation. The dependence is higher in sub-humid and arid agro-climatic zones (FES, 2010).

Decline and Degradation of CPRs:

Almost all major studies found that the CPRs are declining both in terms of quantity and quality. N.S. Jodha found that the percentage of common land

to the total geographical area decreased from 41% in early 1950s to 24% in 1980s. Similar trend were observed in states like Rajasthan, Tamil Nadu, Gujarat and Andhra Pradesh. It also observed drastic decline in number of tree species and quantity of forest produces in these states. The declining trend was also observed in the NSSO survey conducted in 1998. According to this survey, the size of de jure CPR decreased at the quinquennial rate of 1.9%. This decline was observed faster in Middle-Gangetic Plains (7.2%), Trans-Gangetic Plains (7.1%) and Easter Plateau and Hills (5.0%).

The qualitative and quantitative degradation of CPRs can also be inferred from other studies related to land use change and land degradation in India. According to the State of the Forest Report, the forest cover of country remain stabilized at around 67 million hectare for last few decades. However, most of it is in the form of open forest and scrub. It means most of the forest that we have is degraded. Likewise the pastures land has also declined from 14 million hectare (Mha) in 1960-71 to 10 Mha in 2012-13. Reports also suggest that there is continues increase in the fallow lands. It has increased from 19Mha in 1970-71 to 26Mha in 2012-13. The reason for this rapid increase in the fallow land includes water logging, soil salinity and desertification etc.

The Study:

The Environment, Natural Resources and Sustainability theme of the Rajiv Gandhi Institute for Contemporary Studies (RGICS) conducted a qualitative study of Common Property Resources to linkages between resource regeneration and sustainable economic growth. The project was proposed for seven states namely Tamil Nadu, Odisha, Uttarakhand, Assam, Rajasthan, Madhya Pradesh and Chhattisgarh. However due to various reasons especially due to COVID-19 pandamic, we could not complete the study in Madhya Pradesh, Odisha and Chhattisgarh. This report carries good case studies from other four states based on extensive field work by our associates and partners.

The study is limited in few selected villages of the chosen district from four different states. The purpose of the study is to identify local issues of CPR degradation and ways to regenerate them using schemes, program and policies of the national and state governments. For the purpose of uniformity of analysis across the selected states, we propose to categorize CPRs as follows:

Land	1- Under tree cover	Community Forest, forest under forest department etc.
	2- Without significant tree cover	Waste land, grazing and pasture land
Water	1- Bounded water bodies	Well, Pond, lakes etc.
	2- Un bounded water bodies	Water stream, River/rivulets etc.

Objectives and Research Questions of the study:

Objectives	Research Questions
1- To develop inventory of de facto and de jure common property resources (CPR) in selected villages in the study area along with villagers' dependence on them.	1- Which CPRs are there in the selected villages? 2- How villagers are dependent on CPRs? 3- What are legal or traditional entitlements of villagers pertaining to the access of each of these CPRs? 4- How, changes have been made in the entitlements over the time? 5- Which are different laws/rules/regulation to govern CPR?
2- To identify factors behind degradation of CPRs in the selected villages (Institutional, governance, global climatic shift etc.)	6- What are the patterns observed by villagers in the productivity of CPRs? 7- How the changes have been observed in the traditional governance system pertaining to the degradation of CPRs? 8- How changes in the state and national laws affected access of CPRs? 9- What are major conflicts and resemblance in the traditional and formal system of CPR governance? 10- How the local elites influenced control and productivity of CPRs (both negative and positive)? 11- How villagers interprets changes in climate in relation to the degradation of CPRs?
3- To suggest micro and macro policy solutions for regeneration of CPR to minimize distress migration from these selected villages.	12- What is needed on the ground to revive the productivity of CPRs? 13- What changes are required in the governance/ management of CPRs for better results (both in the traditional system and in formal system of the governance) 14- How various schemes of the central and state government can be utilized for the revival of CPRs? 15- How to address issue of increasing pressure on CPRs due to increasing human population?

Sample selection and Area of the Study:

The unit sample for the proposed study is a village recorded in revenue records of the state governments. A purposive sample selection method has been adopted for this study. The selection of unit villages is guided by the field level availability of our associates or partner organizations for the primary and secondary data collection.

1. Chamoli district of Uttarakhand
2. Kokrajhar district of Assam
3. Karauli district of Rajasthan
4. Madurai district of Tamil Nadu

Project Team:

State	Team
Uttarakhand	Mr. Jeet Singh and Mr. Pramod Panwar
Assam	Mr. Piyush Saurabh Sharma and Mr. Deenabandhu
Rajasthan	Mr. Jagdish Gurjar, Mr. Samay Singh and Mr. Uzair Khan
Tamil Nadu	Dr. S. Nirmala

Methodology:

The research aims to collect both qualitative and quantitative data for final analysis. For the quantitative data, we were dependent on secondary sources such as the District Census Handbook, the Village Census Abstract, the relevant sections of the Forest Survey of India and state and national policy documents. For the qualitative information, our field associates and partners gathered first-hand information from villagers using a semi-structured questionnaire, focus group discussions, case studies etc. All research associates/partners conducted their field work in accordance with the regulations on movement and gathering imposed by the respective state governments for the containment of the Corona virus.

2 Traditional Institutions for Commons in the Bodoland

Piyush Saurabh Sharma

Background:

The Bodoland Territorial Region consists of four districts of Assam namely Kokrajhar, Chirang, Baksa and Udalguri is known for its unique social, economic, ethnic, linguistic and cultural identity. To protect the interest of local residents and fulfil their aspirations the Bodoland Territorial Council was constituted under the sixth schedule of the constitution in 2003. The Bodoland Territorial Council (BTC) functions as an autonomous system of governance on subjects transferred to the council by the state government. The region comprises more than three million people and is highly dependent on agriculture. The main crop being cultivated in the region is paddy. Being agriculture as the main occupation, the community is heavily dependent on natural resources such as river, streams, ponds, hills, forest and highly diverse flora and fauna. The one third area of the region is covered with forest that supports subsistence economy.

Other than the Bodo tribe the region also inhabits people from Assamese, Bengalis, Koch-Rajbongshis, Rabhas, Garos , Adivasis, Muslims and Nepali communities. Out of 2890 revenue villages, 2272 villages are predominantly inhabited by people from Bodo tribe. These tribal villages have a rich tradition of managing their common property resources (commons) such as forest, land and water. Tribal communities in the entire Baksa district have formed Village Committees (VC) consisting of entire households in the village/hamlets for regulating and up-keeping of village common properties. These village committees are responsible for the management, regeneration, and exploitation and sharing of benefits from common property resources. The VCs play a vital role in resolving internal village conflicts and also keeping robust relations with nearby villages at the same time deal with local administration for bringing resources within the village. Village councils are not formal institutions but they play an important role at the local level.

Villages in the Bodoland Territorial Region also have a tradition of digging canals for the purpose of irrigation. These canals are locally called 'Dong' and most of these dongs originate from a river or water stream. These dongs in many places are used effectively for Kharif crops, especially paddy, as the water flow is high at that time. In the winter season selected people use dongs for cultivation of vegetables and mustard crops. Considering the usefulness of these dongs, villagers have formed Dong Committees for effective management of the Dongs e.g. cleaning, constructing canals, repairing and sharing / distribution of water in each village, enforcing discipline and conflict resolutions within the village as well as inter village. Some of these dong committees are more than 100 years old. Unlike the village committees (VC), Dong Committees are formally registered as society under the Society Registration Act, 1860.

Like in many other parts of the country, the people of Bodoland Territorial Region are highly dependent on common property resources such as forest, water, hills and land for their livelihood. These resources contribute significantly in the subsistence economy of the region. One of the common resources that have been used extensively by villages in this region is water. The river systems and streams were used for drawing water to agricultural fields by the local populations across the villages, thus Dong (Canal) based systems came into existence in district of Baksa and its adjoining districts of Chirang (towards

west of Baksa) and Udalguri (towards east of Baksa). The Dongs are the lifeline for agriculture in villages of Baksa district. For the management and upkeep of these crucial resources, these villages have Village Committees and Dong Committees in place. These two community based institutions are part of their tradition and lifestyle. While it is common to have these two committees in tribal villages in this area, their work and priorities may differ from village to village. Since there is no common rule for the functioning of these committees, the function of these two institutions depends on the requirements of villagers and understanding/leadership of members of their management committees.

This paper attempts to describe functions and priorities of Dong Committee in the Ambrabati village and Village Committee in the Pub Hazira village in the Baksa district of the Bodoland Territorial Region. Both of these are typical tribal villages of the region with populations of more than one thousand each. The village committee of Pub Hazira manages three ponds and about 2 hectare agricultural land. Every year the committee leases them out to individuals and earns cash, which is then used for several purposes. On the other hand Dong Committee of the Ambrabati village is a complex set-up formed by seven different sub-committees. The role of committee is to manage the water of the canal originating from Gurakhowa spring in village Manikpur. It charges a certain amount from the water users, which is then used for the upkeep of the canal. While the Village committee of Pub Hazira has focused on earning hard cash for common use, the dong committee of Ambrabati attempts to ensure better agricultural production of each household by managing dong water.

This paper is part of a study on ‘Regeneration of common property resources as a basis for revival of the rural economy in the time of COVID’, commissioned by the Rajiv Gandhi Institute for Contemporary Studies. The study adopted qualitative research methods such as focus group discussions, interviews and case studies to collect first hand information. The field work was carried out by the Kabil Foundation and SANJOG in Assam. In this paper we will discuss these two models of CPR management and challenges faced by them.

The Hazira Village:

Hazira is inhabited by Bodo populations situated 13 Km from the district head quarter Baksa in Assam. It is a typical Bodo village of 228 families comprising a population of 1067. Almost the entire village is dependent on agriculture and

livestock for their livelihood. However the average land holding is as low as 0.35 hectare. Overwhelmingly 195 families are either marginal or small farmers. Moreover, 30 families in the village are farm labourers. The livestock is another means for livelihood for almost all villagers. They have a tradition of rearing cows, goats and pigs. In our field observation and focus group discussion, we observed that on an average each family has 4-5 livestock. The cows and piggery can be found in every house however, only around half of the families in the village have goats. A brief overview of the demographic and livelihood profile of the village is given in the following matrix.

Demographic and Livelihood Profile of Hazira

Total Population of the village	1076
Total Number of Households	228
Households dependent on combination of agriculture and livestock	225
Number of small and marginal farming households	195
Number of Farm Labourer Households	30
Number of households dependent on occupation other than farming and livestock but draws benefit from CPR	3
Number of households whose member (s) seasonally migrates for livelihood in the cities	70
Number of households whose member (s) migrated permanently for earning livelihood in the cities	0
Number of worker migrated back to the village after lockdown to contain COVID-19	18

The combination of agriculture and livestock is the main source of livelihood for the villagers in Hazira. However, the subsistence economy based on these two occupations is not enough to meet requirements of local villagers. To meet their additional requirements, many villagers migrate to nearby cities or cities outside Assam as seasonal labourers. In the Hazira village members of 70 out of 228 households migrate seasonally in search of the job. In March 2020, after the announcement of the nationwide lockdown to contain the spread of

COVID-19, 18 workers went back to their village. Compared to the size of the village, the outmigration for livelihood is very high. The data above shows that both the average land holding and possession of livestock is very low in the village, therefore it creates situations for distress migration from the village.

Commons and Village Committee of Hazira

The common property resources (commons) are crucial for the sustenance of rural occupations namely agriculture and livestock. There are examples where villagers invented new occupations using their common property resources. Like in other parts of the country, the Hazira village also has access to common property resources in and around the village. Some of these resources are owned by the village committee however, in some cases, villagers are de-facto users of resources owned by the government.

The village has two main common resources- three community ponds and common paddy fields. Both of these resources are directly linked to the livelihood. While the area where three ponds are located belongs to the state government, common paddy fields are owned by the village committee of Hazira. Brief detail of the three ponds is as follows:

Names of the community ponds	Area covered
Dolongbari	8 bigha (1.12 Ha) Average depth : 4.5-5 Feet (say 1.5 meter) Volume of water : 16,800 cubic meter
Singimari	3 bigha (0.4 Ha) Average depth : 6-8 feet (say, 2 meter) Volume of water: 8000 cubic meter
Chetna	3 bigha (0.4 Ha) Average depth : 6-8 feet Volume of water : 8000 cubic meter

River Chetna emerging from Bhutan hill changed its course from Hazira to nearby village due to floods in the year 1998. Chetna flows towards west of the village to merge in river Tihu which eventually merges in mighty Brahmaputra towards South of the village. Change of course of Chetna left behind low lying areas transformed into patches of wetland. The Village committee decided to approach the government through the local Block Office to seek support for construction of embankments in the wetland areas to renovate it into community managed fishery ponds. The Block Office obliged with a grant of Rs.30,000/- as labour cost to the entire village for construction of embankments surrounding the ponds. Around 150 nos. of households from the village engaged by giving four days of labour for construction of embankments to transform the entire patch of wetland into a community pond. Since then community manages the ponds and income generated is utilised for reinvestments in the ponds like purchase of fish seeds & fingerlings, cleaning, donations for festivities like Puja and Bihu and also if left over loaning farmers during the Sali (June /July to Nov/ Dec) season paddy crops.

The ponds are contracted to the highest individual bidder within the village in annual meetings of the VC. The event occurs annually and the margin left from the bidding is taken as profit for the entire village. The bidding process is done as villagers are not able to look after the pond collectively. Perhaps greater engagement of some development agency in the village can increase margins of profit for the VC manifold.

The village committee also owns 2 hectare of paddy field in the villages. This area is given to interested households of the village for paddy cultivation. The leasing out of land is done on an annual basis using a lottery system. The contracted village households give 1500 Kgs of paddy per Ha to the Village Committee. That is 3000 Kgs for 2 Ha of land where average production stands at 7200 Kgs . The same is sold during the Bihu for arranging events in the village. If money is saved it is lent to households within the village with interest of @5% per annum.

The affairs of the village are managed by Mazusupa Mini Swarang Village Committee. The village has common properties which is looked after by the villagers and income generated is utilised to manage common resources within the village and also represent the village in different outside forums and meetings. The Village Committee comprises all Village households, led by the President/Secretary chosen by village households in Annual General Meeting every year. The President/Secretary is chosen during the AGM with consensus of all village households through a voice vote by saying Yes/No. But there are elaborate discussions by village households before coming down to names. Once names are finalised through the vote the, same is noted down in the minute's book. Before finalising the names attributes like writing abilities and common acceptance of the persons elected in the community is assessed. The village committee is not a legally registered body, but it has a system of keeping records and documenting proceedings and events. The committee's records are kept in the form of minutes book and cash book. Any conflict that arises is solved amicably by villagers through meetings.

Based on focus group discussions organized in the village, it was found that in the last financial year the village committee earned Rs. 70,000 from three fish ponds and 1,05,000 from paddy fields by contracting them. The committee further invested Rs. 40,000 in these three ponds by purchasing fish seeds and fingerlings. Apart from this, a hefty amount of Rs. 60,000 from the total earning of the committee was used for various festivals and rituals in the village. It was also observed that mostly poor families are interested in contracting paddy field. However, the relatively richer family gets the contract of a fish pond every year.

Observations and Suggestions:

Ponds are often infested by aquatic weeds e.g. water hyacinth etc. and need regular maintenance to keep the required hygiene condition of the water body for good growth of fishes. Feeding and protection from diseases and pests are also very important practices. As of now such practices are not being followed in these ponds.

The villagers do not follow improved fish rearing practices. Otherwise, these ponds with a total volume of water about 32,000 (thirty two thousand) cubic meters can produce a minimum 8,000 kilogram of fishes (assumption made is 0.25 kg of fish/ cubic meter of water per annum. (This could be as high as 1 kilogram / cubic meter of water with good scientific management practices). The market price of common carp is minimum Rs.100 / kilogram. Thus, the value of 8000 kilogram of fish would be Rs. 8, 00, 000. This is much higher than what they are getting now (Rs. 70,000). Integration of duck rearing along with fishery could generate much more income. The estimate made above is basically to indicate the potential of such resources.

The Ambrabati Village:

The Ambrabati village is just three kilometres from Baksa district headquarter in Assam. It is predominantly a Bodo village, comprising 1954 Bodo people and 743 people from other backward communities (OBCs). Ambrabati village is one amongst many villages settled about more than 100 years ago on the Indo-Bhutan border across Assam. Much of the settlements occurred during the British Raj who brought labourers from Aadivasi belts of Jharkhand, Madhya Pradesh, Chhattisgarh and other such areas to work in tea gardens. The local tribal populations (mostly Bodo and Rabha tribes) also settled in the area clearing forests and establishing new villages. A brief overview of the demographic and livelihood profile of the village is given in the following matrix.

Demographic and Livelihood Profile of Ambrabati

Total Population of the village	2697
Total Number of Households	830
Households dependent on combination of agriculture and livestock	830

Number of Large farming households	2
Number of small and marginal farming households	756
Number of Farm Labourer Households	72
Number of households dependent on occupation other than farming and livestock but draws benefit from CPR	0
Number of households whose member (s) seasonally migrates for livelihood in the cities	45
Number of households whose member (s) migrated permanently for earning livelihood in the cities	0
Number of worker migrated back to the village after lockdown to contain COVID-19	12

Villagers of Ambrabati are dependent on a number of occupations for their livelihood. Main occupations are agriculture, livestock and daily wage labourers. A large proportion of households in the village are small and marginal farmers with land holding less than 2 hectare. As many as 72 families are farm and other daily wage labourers. However, a daily wage labourer also comprises a household with some land holding. Other than the agriculture and wage labourers, livestock is another major source of income in the village. Rearing cows, pigs and goats is common in the village. The focus group discussions with villagers revealed that on average a household keeps one cow, four goats and two pigs.

Despite being very close to the district headquarters; the villagers of Ambrabati migrate to other cities and states for employment. Members of 45 households in the village migrate seasonally to earn livelihood. Many of these migrant workers find jobs in cities like Bangalore. Due to the nationwide lockdown in March 2020, only 12 workers could manage to come back home. All these workers are willing to stay back in the village, if employment is available.

Commons and the Dong Committee of Ambrabati:

The Ambrabati village has been managing three main common property resources for years. These include a community pond with an area of 1.1 hectare, an irrigation canal (6 km) and community paddy field (0.53 hectare). The community paddy field and community pond are managed by the village committee of Ambrabati. The constitution and function of the village committee

is similar to the village committee of Hazira, which is described in the above section in this document. The unique thing about this village is that the village committee purchased the land for the construction of a fish pond. The fish harvested from the pond is sold to traders on a yearly basis. The earned money is used for reinvesting for buying fish seeds and the rest of the money is kept for maintenance of village infrastructure like temples, meeting hall and others such as sometimes village roads. The income from this pond is not high but better management and systematic fishing can yield better return to the village. One part of the community land owned by the village committee is used as a playground for the school. Another part of the land (around 0.66 acre) is used for paddy cultivation by the village committee with an average production of 1000kgs of paddy in a year. The harvested paddy is sold and returns are utilised for investing in events like Puja and festivities like Bihu.

The management of irrigation canal by the dong committee of the Ambrabati village is distinct from the case of Hazira. Irrigation canals as mentioned in the beginning are very crucial for the subsistence economy of the area and there is a rich tradition of constructing and managing these canals. Locally canals

are called Dong. The Gaurkhowa Dong of about 6 km serves farmers of the Ambrabati village. Nearly 285 out of 672 hectare of agriculture land of the village gets water from this dong in the kharif season. In the rabi season only 4 hectare land gets water for cultivation of mustard seeds. In total 427 families benefit from this canal.

The Gurakhowa dong emerges from Gurakhowa spring (jhara) in village Manikpur under Baska Development Block of Baksa district. The Gurakhowa canal emerges from spring (a patch of 5 feet wide and 40 feet long wet land from where water oozes out) unlike other canals in Baksa district which originates from hills of Bhutan barring few other canals. Villagers of Ambrabati have diverted stream water through a canal from this source to agricultural land. There are six other villages which have diverted water from Gurakhowa canal. Based on field observation and focus group discussions in the villages, we attempted to map trends in water availability and velocity in different seasons. Estimated figures are as follows:

Current Status of the Gurakhowa Dong

Depth of the dong when cleaned:	2.5 - 4 feet (June -Jul)
Depth of the Dong when rain stops :	1 - 2.5 feet (Nov- Mar)
Flow in the month of June and July:	Highest flow (100%) (Reduced by 20% in past 10 years)
Flow in the month of Sep-October:	Medium flow (50%) (Reduced by 20% in past 10 years)
Flow in the month of Nov – January:	Starts declining (70%) (Reduced by 20% in past 10 years)
Flow in the month of February – March:	Lowest Flow (20%) (1 feet depth) (Reduced by 20% in past 10 years)

The Gurakhowa dong committee is more than hundred years old in age which comprises village wise seven sub dong committees including Ambrabati village. Each Sub-dong committee is headed by the President, Secretary and the general body is represented by the entire user household in a particular village. All the user households comprising seven villages form the main general body of the Gurakhowa Dong Committee. The General Body of Gurakhowa Dong committee has a Managing Body represented by the President and Secretary of all the sub-dong committees of different villages. From among the Managing Committee a President and Secretary is selected to lead the Dong Committee.

The main role of President and Secretary is convene Annual meetings, meetings of the Managing Committee, collect monetary contributions in the form of user fees, fines for not attending meetings, causing damage to dongs and not contributing labour (as and when required and decided by the committee). The user fee is ₹.10/- per bigha of land (0.33 Acre) and disciplinary action fees is ₹.250/- per household. The user fee is mostly collected once in a year for conducting annual meetings of dong Committee and operational expenses during cleaning of Dong once a year before the pre monsoon showers begin that is in the month of April. The Dong Committee does not have any bank account as money collected as annual fees and fines are spent instantly during the cleaning of Dong and no amount is left in hand. But there is a process of annual social audit done by the entire village of the amount generated in an annual general meeting. The books of account are presented by the President and secretary to the entire village during the annual meeting.

Observations and Suggestions:

In the past twenty years the discharge of water has gone down in rivers, canals and other sources of water. The reasons are unknown though common assumptions are deforestation, constructions of dams over rivers upstream inside Bhutan and some also think climate change. Low discharge during dry seasons has resulted in water thefts by villagers during the dry seasons. Over the years continuous reduction in flow and in some cases drying water sources has generated fear in the minds of a large number of villagers for their livelihoods. Dong water also meets demand for drinking water in many villages bordering Bhutan, hence fear is observed more intensely in those villages.

The dong is used only during the Kharif season crops like paddy and for winter season vegetable and mustard crops by the villagers. The use of Dong water for winter paddy cultivation has reduced due to reduced flow of water from dong. Over the years the canal has degraded owing to low discharge of water which is till now perennial. According to villagers threats of the source point getting dry looms large in coming six to seven years. Since the farming households have left Aahu season paddy crops (of 285 hectares) at least during the season there is loss of ₹.1.06/- crore with a production of about 8, 54,000 Kgs of paddy to the entire village has completely stopped cultivation during the Aahu season in want of water.

Conclusion:

The traditional set-ups of Dong Committee and Village Committee in the Bodoland Territorial Region are amongst numerous systems of governing common property resources all across the globe. Over the years, these institutions in the Bodoland evolved and innovated new means of livelihood based on common resources. Incidents such as the acquisition of seven fish ponds nearly 22 years ago by the village committee of Hazira and formalizing Dong Committees by registering them as society in Ambrabati village indicates continuous organizational development of these traditional and community based institutions. However, the pertinent question here is whether these organizational changes in the traditional institutions are enough in meeting livelihood requirements of villagers or not. To deliver on this fundamental function, these institutions require addressing number of challenges such as harmonizing its system with continuously changing state policies, responding continuously changing aspirations of its members, efficient management of continuously shrinking community control over commons and understanding external issues such as adverse impact of climate change and natural disaster especially flooding in the region.

The study of commons and related institutions in two villages of Bodoland reveals that resources in their control such as fish ponds, common paddy fields and irrigation canals are not efficiently managed. Villagers draw much less benefit from commons compared to their potential. Fish ponds in Hazira are degrading which has a direct impact on fish harvest. Similarly, water flow in Gurakhowa dong of Ambrabati has recorded substantial decrease in the last few decades. On the other hand compared to the large number of landless people in both of these villages, the common paddy land for lease is very less. Not all landless families can be accommodated by the common paddy fields in the possession of village committees of these two villages. So, the size of commons per household is also declining. Finally, the high level of distress out of migration in search jobs from these villages indicates that livelihood resources within village boundaries are not sufficient for ever increasing population and their aspirations.

Globally, there is rich literature available on correlation of degradation of commons and distress migration. In the case of Assam, a study by Ratul

Mahanta and Daisy Das in 2012 observed that commons are depleting in the state and the depletion and "decrease of the common property resources have forced rural people to migrate to urban areas [1]". Our study of these two villages re-affirms this trend, which has observed shrinking of commons, inefficient management and external environmental changes adversely affecting productivity of commons. With limited resources and power of the dong committee and village committee, fulfilling social and economical aspirations of its all members may not be possible. But, the regeneration of resources in their control, enhancing productivity by using new and innovative ideas and better management can help to create more livelihood options within the village. Most migrant workers, whom we interacted with, are willing to stay back in the village, if livelihood options are provided.

[1] Mahanta Ratul and Daisy Das, 2012, 'Common Property Resources Degradation and Migration: A Case Study of Assam', Journal of Human Ecology, 38(3): 223-230 (2012)

3 Forest Commons in Uttarakhand and Subsistence Rural Economy: A Study of Two Panchayats

Jeet Singh, Fellow, RGICS

1. Introduction:

Eleven out of 13 districts of Uttarakhand are located in western Himalayan agricultural zone. Most people in this region are dependent on agriculture and livestock for their livelihood. For both of these traditional occupations, people in the area have been dwelling on common property resources such as forest, rivers, streams, mountains, alpines etc. According to Singh (2009) the western Himalayan zone is rich in agro-biodiversity and the unique farming system of the region evolved based on local resources and socio-economic conditions. He further argues that from time immemorial, people of this region have been exploring productive interaction with nature. Various documents of the forest and revenue department recognize the dependence of local people on common resources and to some extent rights and concession to use these resources have been granted to the villagers. Moreover, in many villages, people have been allowed to manage patches of their nearby forest through the Van Panchayat system.

The dependency of these Himalayan people on forest is not limited to their livelihood requirement. Other dependency includes access to physical material required for the life such as water, thatching grass and timber for household use, stone, sand etc. The rich local practices in the region also allow them to perform their pooja and festivals in the region officially in the control of the state forest department. However, various studies show that these natural resources are rapidly degrading in the region. According to the Uttarakhand State of Forest Report for 2001 and 2019[1] the area of dense and moderately

1 State of Forest Report, 2019 (Uttarakhand): https://fsi.nic.in/isfr19/vol2/isfr-2019-vol-ii-uttarakhand.pdf

dense forest has decreased from 19,023 sq km in 2001 to 17,851 sq. km in 2019 . On the other hand the open forest with less than 10% canopy density increased from 4,915 sq km in 2001 to 6,415 sq. km. in 2019 in the state[2]. The Land Degradation/Desertification atlas prepared by Space Application Centre, Ahmadabad found that the rate of land degradation in Uttarakhand is higher compared to the national average. According to the atlas, around 6.48 lakh hectare land in the state is under degradation. The most significant process of degradation observed in the report is vegetation degradation (ISRO, 2016). The vegetation degradation largely refers to the process of deforestation.

Official data from different sources confirm the degradation of natural resources in the state. Naturally it has an adverse impact on rural livelihood and life. Many studies found that natural resources in the control of communities are better managed in the state. However, few other studies have found that even community managed resources such as Van Panchayat have also observed decline in productivity. A study of 45 van panchayats by Pinaki Sarkar (2008) found that even Van Panchayats have lost their charm of effective governance (Sarkar, 2008). The increasing population, inactiveness of people in function of Van Panchayat and many other social and economic factors are responsible for downfall of old age institutions of van panchayat.

The increasing pressure on common property resources has a direct link to the loss of livelihood. With degradation of natural resources, many people find it difficult to earn livelihood in the mountain districts. According to a report of Uttarakhand Migration Commission published in 2018, in the last ten years 3.83 lakh people migrated seasonally and more than 1.18 lakh people migrated permanently. According to the report, 50.16% of these workers migrated to bigger cities within the state and outside the state in search of livelihood[3]. Much of this distress migration can be stopped by simply regenerating natural resources in the rural areas. According to another report by the Migration Commission of Uttarakhand more than 2.75 lakh migrant workers from Uttarakhand went back to their villages due to COVID-19 pandemic (RD&MC, 2019). The good thing is that nearly half of these reverse migrated workers want to stay back in villages. Therefore the prevailing situation can be converted into opportunity by investing funds and manpower in the regenerations of common property resources.

2 State of Forest Report, 2001 (Uttarakhand): http://mahenvis.nic.in/Pdf/Report/report_sofr_2001.pdf
3 RD&MC: http://www.uttarakhandpalayanayog.com/pdf/Chamoli_Report.pdf

Main Reasons of Migration in Uttarakhand	
Reasons of Migration	**Percentage of Migrated workers/people**
Lack of employment/livelihood option	50.16
Poor health system	8.83
Poor educational system	15.21
Poor infrastructure (road, electricity, water etc)	3.74
Low productivity in agriculture	5.44
Wild animal destroying farms	5.61
Other	11.00

Source: Rural Development and Migration Commission, 2018

This study report analyzes policy framework of common property resources in Uttarakhand based on secondary literature and examines interconnectedness of healthy natural resources and subsistence rural economy. For the purpose of this study we have gathered qualitative primary data from two villages namely Dumak and Kalgoth in the Joshimath block of Chamoli district in Uttarakhand. These are two remote villages on the edge of Kedarnath Wildlife Sanctuary and heavily dependent on forest governed by the forest department and van panchayats. This report is based on qualitative data gathered from these two villages using research tools such as focus group discussions, case study and semi-structured interviews.

2. Common Property Resources in Uttarakhand:

The National Sample Survey Organization (NSSO) conducted the first and only survey of common property resources in 1998. In this survey the organization collected data of both de-jure and de-facto commons. At the time of this survey Uttarakhand was part of Uttar Pradesh, so no separate data is available for Uttarakhand state. However, the data collected for Western Himalayan (WHm) agro climatic zone of Uttar Pradesh represent all mountain districts of Uttarakhand. According to this report the mountain people of Uttarakhand are heavily dependent on common property resources as compared to the national average (see table). The estimated total CPR in the mountain district of Uttarakhand is nearly 13.74 lakh hectare which comes around 0.71 Ha CPR per household in the region.

Common Property Resoruces	**Uttarakhand**	**India**
Estimated area of total CPRs	13,74,200 ha	4,20,21,900 ha
Ratio of CPR to total Geographical area	0.61	0.15
Grazing land per HH	0.35 Ha	0.07 ha
Village forest per HH	0.19 Ha	0.05 ha
Other CPR per HH	0.16 Ha	0.19 ha
Total CPRs per HH	0.71 Ha	0.31 ha

Source: NSS, 54th Round, 1999

We don't have any other comprehensive data on CPRs as the NSSO stopped conducting similar survey after its first report. This report is more than two decade old, and many things have changed rapidly after its publication. However, various micro studies reveal that people are still dependent heavily on common property resources in the mountain districts of Uttarakhand. These CPRs took shape in the last two hundred years starting from colonial rule established in 1815. In these many years, local people, governments and other stakeholders confronted and collaborated on a range of issues related to CPRs such as environment protection, commercial exploitation of forest, rights and concession of villagers for life and livelihood etc. A brief policy overview of this confrontation and collaboration is presented here.

3. Institutionalization of Commons (1815-1947)

In 1815 the British government formally started ruling the entire Kumaon and a large part of Garhwal region of Uttarakhand. The king of Tehri managed to retain its power on a relatively smaller part of the Garhwal region which currently falls in Tehri and Uttarkashi district. Before the British rule, people had unlimited right over forest and its produce. The economy of villagers from this mountain region was entirely dependent on biomass (Pathak, 1997). The Himalayan Gazetteer written by Edwin T. Etkinson from 1881 to 1887 describes villagers' dependency on the forest. The historic book has recorded people's dependency on forest for agriculture, livestock rearing, medicinal requirements, trade, cottage industries, fodder, firewood, manure, mineral etc (Etkinson, 1881).

The concept of protecting and preserving the forest was introduced in 1865 when the then government constituted the forest department. However, prior to this the British government conducted land settlement in 1823 that set the foundation of differentiating between private and non-private land. With the promulgation of the first Indian Forest Act, 1878 a large part of Uttarakhand forest was declared reserved (completely governed by government) and protected forest (partially governed by the government). These processes formally started restricting local people from using the forest they were dwelling for generations. In the words of Prof Pathak (1997) "conservation considerations were motivated by the need to ensure continuing supply of timber for imperial needs." A series of policy announcements in the nineteenth century in the name of conservation of forest were actually paving the way for commercial exploitation of timer by the government. Many British timber merchants were active in Uttarakhand clearing forest for commercial use even before constitution of the forest department and promulgation of the Indian forest Act. Realizing the revenue importance of these forests, the then government started regulating in mid nineteenth century. In the words of Tucker (1984) the first colonial forest department organized by the British government in India was to manage supply of timer for railway and other industrial activities. Prior to this, many British timber merchants were active in Uttarakhand clearing forest for commercial use (Tucker, 1984).

While there were lots of resentment and protest against forest and land related policies of the British government, but they were not organized.

The constitution of district civil forest in late nineteenth century sparked the Himalayan resentment. The colonial government issued a notification on 17th October 1893 for creation of 'District Civil Forest'. The fallow land, be-nap land, grazing area and woodlot within the boundary of villages were acquired under this notification to create the district civil forest. It had a direct impact on the life and livelihood of local people. This notification restricted people from freely accessing their own forest. In 1902 the government further divided the district civil forest into closed civil forest and open civil forest. The forest categorized as closed civil forest was equivalent to reserve forest where no rights of local people were entertained. To accurately demarcate the open and close civil forest a fresh forest settlement was carried out from 1911 to 1917. This exercise led to an increase in reserve forest by around 5,000 square km[4]. While villagers had been opposing the notification of 1893, the new settlement started in 1911 did not go well with the local villagers. It helped scattered local protests and resentment to unite against the government.

With this, the British government took the control of all land other than the privately owned land by villagers (Pathak, 1997). The then government had to face lots of resentment and protest of villagers against these policy decisions of the colonial government. The protest turned violent in the second decade of the twentieth century when people started burning the forests. This forced the colonial government to constitute a forest grievance committee in 1921 headed by the Commissioner, Kumaon. The committee consulted extensively with around 5040 people in Garhwal and Kumaon region of Uttarakhand and recorded their grievances (Joshi, undated). The report of the committee documented following main grievances against government control of civil forest under the forest settlement from 1911-1917.

1. Forest boundary pillars often come too close to cultivation or buildings.
2. Lopping restrictions
3. Restrictions on grazing
4. Exclusion of sheep and goats from the reserves
5. Employment of forest guards to enforce numerous rules and regulations and their constant interference with women and children, who under the customs in vogue in Kumaun are the chief people to exercise on behalf of the villagers such rights as lopping, collection of miner produce, grazing, etc.

4 National Institute of Rural Development and Panchayati Raj: http://www.nirdpr.org.in/nird_docs/rss/rss75.pdf

6. Large number of forest cases which have either to be compounded or fought out in a criminal court.
7. Unsatisfactory methods of dealing with indents for timber.
8. Rules regarding fire protection.
9. Strict restriction on the exercise of minor rights to those which are formally recorded in the rights list.
10. Measured land was taken up within the reserves and in some cases inadequate compensation was given or none was given.

The committee in its report recommended many changes in the forest policies in the favour of local livelihood and environmental protection. Two crucial suggestions of the committee were as follows:

(i) To de-reserve the larger part of the reserved forests created during 1911-1917 forest settlements; and
(ii) Lay the foundations for creating community forests that would be managed under a broad set of rules framed by the Government but for which villagers themselves will make the specific rules for everyday use to fit local conditions.

The report of the Kumaun Forest Grievance Committee further created the foundation for the creation of the Van Panchayat System in Uttarakhand. The protest of villagers for their forest rights forced the then government to hand over forest within the proximity of villages to its bona fide residents. Nearly a decade long negotiations and deliberation finally provided for the creation of Van Panchayats.

Along with institutionalization of forest and revenue land, British government also institutionalized the common land and forest in Uttarakhand. These common properties were limited yet well defined. The deputy commissioner of Garhwal Mr. V.A. Stowell (1907) while describing type of land tenure in revenue manuals defines the sanjait land. According to him the sanjait land in a village is undivided common land belonging either to the whole community or common to certain families or co-sharers only. The revised Garhwal Gazetteer written by H.G Walton in 1911 describes the system of expansion of agriculture in the common land. Various land settlements attempted to measure land owned by individuals. Land which was out of cultivation at the time of settlement is

known as be-nap (un measured) land. The government had sole right of such land within the village boundary. The Kumoun commissioner Mr. Trail in the land settlement process of 1880 measured all kinds of land including be-nap land from previous settlements. However, he made it clear that the government will be the sole owner of such land. Such measured waste land was then named as Kaiser-i-Hind land. Boundary demarcated under this settlement is called sal-assi bandobast. Kaiser-i-Hind land was further available for agricultural expansion under the Nayabad system. The nayabad is made of two local words naya+abad (Walton,1911). Describing this type of land, Mr. Walton notes that it represents an area over which the village exercises its right related to pasture and wood cutting.

The colonial government was clear that more than agriculture revenue; it is going to benefit from the commercial exploitation of forest in Uttarakhand. Various rounds of land settlements in the region slowly restricted people from accessing forest for their life and livelihood. However, they created common property resources for the villagers. These commons were further institutionalized in the form of sanjait land, kaiser-i-hind land and van panchayat forest.

4. The Rise and fall of Van Panchayat (1931 to 2020)

The Van Panchayat system is a unique framework to regulate planning, management and monitoring of common forest for villager's use in the mountain districts of Uttarakhand. These forests are crucial for the subsistence economy of mountain people in the state. However, local people had to fight against

coercive forest policies of the British colonial government in the early twentieth century to win this system of community managed forest. Unlike in many other parts of the country, Britishers were least interested in revenue from agriculture in the mountain. They knew thick and healthy forest in the Western Himalayan agricultural zone can yield more revenue for them compared to agriculture. Therefore they started regulating forests in the region from the early nineteenth century. However, up until the late nineteenth century, these regulations were not directly threatening the life and livelihood of local people. In 1877 the then government demarcated the forest and follow-up regulations from 1893 to 1910 started alienating people from the use of forest and forest products. It instigated local people to revolt against the government and its policies related to the forest and forest products. The people's revolt intensified in 1916 and continued up until 1921, when the colonial government decided to constitute a grievance committee to resolve the issue. Based on the recommendations of the grievance committee, the then government agreed to hand over forest in the close proximity of any village to its residents. For the management of such forest the 'Kumaun Panchayat Forest Rules' were issued in 1931 under the Article-6 of the Scheduled Districts Act, 1874.

The Kumaun Panchayat Forest Rules, provided for villagers to ask for the control of their local forest to meet their daily demands. Forest Panchayat constituted under these rules was autonomous body, free to manage forest in its jurisdictions. These van pnachayats had power to frame sub-rules, introduce fees and fines, prosecute offences, develop and execute conservation projects and management for forest products. To perform effectively, these panchayats were given power of forest officers. Nearly 900 Van Panchayats were constituted in the next two decades before independence. In the first two decades after independence around 1800 more Van Panchayats were constituted. In 1974 the then state government of Uttar Pradesh amended these rules. With the abolition of the Scheduled District Act, 1874 new rules were issued under the Article 28 of the Indian Forest Act, 1927. These rules introduced the forest department as a key regulator along with the revenue department. The article 28 of the Indian Forest Act, 1927 provides for the constitution of 'Village-forest' under the supervision of the forest department. The department has the right to withdraw rights and concessions granted to villagers through village forest any time. Therefore, many experts believe that

the amendment to the Panchayati forest in 1974 diluted the entire system. However, these Panchayat continued to enjoy rights related to making sub-rules, developing working plans for the forest, distribution of forest products, collection of fee and fine and management of funds.

With the formation of Uttarakhand as 27th state of India, the entire area where the Van Panchayat system was in place came under the Uttarakhand government. With the motive of implementing Joint Forest Management (JFM) scheme, the then Uttarakhand government brought yet another amendment to the Panchayat forest in 2001. These amendments were opposed and criticized by villagers and activists. Responding to these voices, the first elected government of the newly formed state released a new set of rules of Panchayati forest in 2005. The Uttaranchal Panchayati Forest Rules, 2005 are currently in force with some changes in 2012. These rules also recognize van panchayat as 'village forest' as defined in the section 28 of the Indian Forest Act, 2020. The new rules have reduced the autonomy of these panchayats substantially and confined them as self help groups (forest users). These rules provide for the development of composite plans by the divisional forest officer. Van Panchayats have to develop micro-plan in accordance to the composite plan developed by the forest department for their forest with the help of grass root forest officials. It has also made the forest guard an ex-officio secretary of the Van Panchayat.

Van Panchayts in Uttarakhand

District	No of Van Panchayats	Total Area under Van Panchayats (in Hectare)
Chamoli	1509	327047.5
Almora	2324	77693.25
Bageshwar	822	38782.92
Champawat	654	33649.77
Dehradun	170	6571.275
Nainital	413	32992.49
Pauri	2450	55813.57
Pithoragarh	1621	123609.7
Rudrapryag	509	18379.64
Tehri	1290	14164.86
Uttarkashi	406	3983.989
Total	**12168**	**732688.9**

Source: Compile from Uttarakhand Forest Department

The current set of Van Panchayat rules prioritises the various uses of forest produce. The first and foremost priority is to meet the ecological requirement of the region. Unless this requirement is met, traditional forest rights of local people cannot be granted. The use of forest products for village industries can be a game changer for rural livelihood improvement, but under the current rules, this is the third priority. The Panchayat can use forest products for village industry and commercial exploitation only if the forest department allows them.

The Van Panchayat system in its history of around 90 years has seen many changes. Policy level changes do have bearing on the performance of Panchayats and productivity of the forest. I have not come across any study comparing all policy changes in the Van Panchayat system and their impact on the ground. However, it is clear that over the years, the Van Panchayat system lost its autonomy along with loss for forest productivity.

Annexure-I

Uttaranchal Panchayati Forest Rules, 2005

Main highlights

Legal status:
Rules issued under the sub-section 2 of the section 28 (read with section 76) of the Indian Forest Act, 1927.

Duties of Users:

(1) Provide help in forest fire control in case of incidence of forest fire in the concerned village forest.
(2) In case of any forest offence such as encroachment, illicit grazing or illicit felling, its incrimination shall be immediately given to the Management Committee.
(3) Provide support for protection of old plantations established earlier or plantations carried out by the Management Committee.

Composition of management committee of Van Panchayat:
The management committee of VP shall consist of nine members. Four seats shall be reserved for women out of which one shall be from scheduled caste or scheduled tribe. One seat out of the remaining five seats shall be reserved for the male members of the scheduled castes or the scheduled tribes. The post of Sarpanch (head of VP) will be held by men and women on rotational basis.

Role of the Forest Department:

(1) To Prepare Composite Management Plan for all van panchayats
(2) To help VPs to prepare micro plan and approve the same
(3) To help VPs to prepare annual implementation plan and approve the same
(4) The local forest guard serves as member secretary of the management committee of Van Panchayat.

(5) Manage distribution of forest produces amongst the users and regulate sale of forest produces.
(6) Regulate and approve sub-rules framed by van panchayats,

Management Plan for Van Panchayats:

(1) The divisional forest officer shall prepare a Composite Management Plan for all the village forests/ panchayat forests within his/her control for a period of five years. The plan will be approved by the conservator of forests.
(2) It is obligatory on the part of Van Panchayat to prepare a micro plan on the basis of guiding principles given in the composite management plan approved by the conservator of forests. The micro plan will be prepared with the assistance of concerned deputy ranger/forester or forest guard. The micro plan will be finally approved by the sub-divisional forest officer.
(3) Based on the micro plan the van panchayat will prepare annual implementation plan, which will be finally approved by the forest range officer.

Exploitation and Utilisation of Forest Produce:

(1) No forest produce shall be exploited unless the ecological requirements of the area are ensured by village forest/panchayat forest.
(2) All customary rights of the holders such as collection of fallen fuelwood, lopping of branches of trees, cutting of grass shall continue to be governed under the provisions of micro plan.
(3) After fulfilling the above mentioned two requirements, forest produces may be disposed on prior permission from divisional forest officer for the bonafide domestic use of right holders or the local cottage industries or the village industries or for the work of public utility
(4) After fulfilling above three requirements on the approval of forest range officer and direction of divisional forest officer can dispose forest products for commercial sale.

Power to frame sub-rules:

The Van Panchayat on approval of divisional forest officer can frame sub-rules for the distribution of forest produce among persons entitled thereof, for regulating grazing, cutting of grass and collection of fuelwood, to levy fee to meet its administrative expenditure and for any other purpose consistent with these rules.

5. The Crumbling of Commons (After 1960s)

The forest and revenue department evolved gradually in the colonial rule. By the time of India's independence, both of these departments had extensive records of land and forest owned by them. Villagers were also restricted to their private lands owned by them in the revenue records. However, various working plans of the forest department had granted rights and concession to villagers directly dependent on reserved and protected forests. The only

significant common property resources left was the land under Van Panchayat. At the time of the independence there were around 900 Van Panchayats in the Garhwal region ruled by British. Today this region includes districts Pauri Garhwal, Chamoli, Almora, Nainital, Pithoragah, Bageshwar and Champawat. After independence Van Panchayats were extended in other mountain regions of Uttarakhand.

The fight for forest by people in mountain districts of Uttarakhand is not limited to their livelihood. They also fought against ecological degradation due to commercial exploitation of the forest and industrial expansion in the forests. The people's movement in the early twentieth century and movements like Chipko and Tehri dam after independence are few to mention here. After the independence, the democratic government was expected to review the colonial forest policies of the British government. However, no government paid any attention to it. So, we continued with colonial forest laws and policies. Prof. Pathak (1997) notes that "the provincial and central government never reviewed the situation and there was no exercise to understand the man-forest relationship in the rapidly changing resource use pattern."

The Uttar Pradesh government brought the 'Zamindari Abolition and Land Reforms Act' in 1950 for the management of land. This law provides Gram Panchayat to manage be-naap land in its jurisdiction along with management of common property resources such as grazing land, waste land, pond, river, water streams etc. However, for the eight hilly districts of Uttar Pradesh (now hilly districts of Uttarakhand), the government of undivided Uttar Pradesh brought a separate law. The Kumaon Uttarakhand Zamindari Abolition and Land Reform, 1960 (KUZA act) replaced the UP Zamindari abolition act, 1950 in eight mountain districts of undivided Uttar Pradesh (now mountain districts of Uttarakhand). Under this law, the provision of management of common property resources by Gram Panchayat was removed. So, gram panchayats in the region have no power to control and manage common property resources within the boundary of their villages (Sharma, 2019).

The colonial government started curtailing the forest rights of villagers in the mid nineteenth century. It affected the traditional system of forest management and planning by local villagers. The institutionalization of forest and land management started by British government is continued by the democratically

elected governments after independence. The common trend that has been observed that irrespective of people in power, villagers gradually lost their rights over forest and forest produces. In the last one and half century, the idea of common property resources in these districts of Himalaya has faded.

Various historical documents establish that people living in mountain districts of Uttarakhand have a tradition of dwelling forest for their living, livelihood, culture and recreational activities. However, the state policies concerning forest and related natural resources failed to accommodate these traditions. Successive changes in the Van Panchayat rules are classic examples of this trend. Agrawal (2005) notes the Uttarakhand government tightened its control over Van Panchayats, which eventually dis-empowered the management committee of the Van Panchayats. A study of Van Panchayat by Nagahama et al (2016) found that there is a general lack of people participation in Van Panchayat. Nearly 65% of respondents were not aware of the micro plan developed by the Van Panchayat. The systematic alienation of villagers through successive laws, rules and policies reduced their interest in the conservation of forest. Many district level forest officers are aware that over regulation by the department has been decreasing interest and sensitivity of local people about forest and wildlife. A letter by the Divisional Forest Officer of Kedarnath WildLife Sanctuary to its director on 15th June 2011 raises this concern. In this letter, the DFO observed that in the view of the ruling of the Supreme Court under the Godavarman case, villagers have been denied their scheduled rights in the sanctuary area. This has reduced the sensitivity of villagers towards forest and wildlife.

Total Area and Classification of Area in Uttarakhand State (Hectare)				
	2000-01		**2018-19**	
	Area	**Percentage of total reported Area**	**Area**	**Percentage of total reported Area**
Reported Area for LUS	56,71,698		60,01,924	
Forest	34,65,057	61.1	38,11,662	63.5
Not Available for Cultivation	4,62,491	8.1	4,34,670	7.24
Other Uncultivated land Excluding Fallow Land	8,66,760	15.2	9,30,709	15.5

Total Area and Classification of Area in Uttarakhand State (Hectare)				
	2000-01		2018-19	
	Area	Percentage of total reported Area	Area	Percentage of total reported Area
Fallow Land	1,07,446	1.9	1,77,095	2.9
Net Area Sown	7,69,944	13.5	6,47,788	10.7

http://aps.dac.gov.in/LUS/Public/Reports.aspx

The Schedule Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 is the latest policy that recognizes rights of forest dwellers. Along with individual rights to dwell forest land for agriculture and settlement, it also recognizes collective rights of forest dwellers called Community Forest Rights (CFR). It gives autonomy to the village committee to manage forests for which the village community granted community rights. However, Uttarakhand is one of the worst performing states, in terms of recognizing individual and community forest rights of villagers. As per the progress report up to June 2020, Uttarakhand only recognized 155 individual forest rights and one community forest rights[5]. The state has missed yet another opportunity to involve community in the conservation and management of forest.

Before the colonial government started demarcating revenue and forest land, the entire landmass was common property. People had their customary rules to manage land in their reach. From the point of view of mountain districts of Uttarakhand, the colonial government first attempted to do away with the concept of common property resources. Various rounds of early land and forest settlements carried out by the then government were meant to restrict villagers to the land they cultivate. However, brewing resentment against the colonial government due to coercive forest policies, they slowly started institutionalizing the common property resources along with the institutionalization of forest and revenue land. The colonial government institutionalized the common property resources such as Van Panchayats, Gaon Sanjait land, Kaiser-i-hind land and limited rights and concessions in protected and reserve forests. As discussed above these acknowledged CPR went through many changes after independence. For example in the case of Van Panchayat, the forest department has taken back the control of panchayati forest from villagers. People continue to access rights and concessions granted to them in the

5 Union Ministry of Tribal Affairs, Government of India: https://tribal.nic.in/FRA/data/MPRJun2020.pdf

reserved and protected forest but any relevant change in the Indian Forest Act, 1927 directly affects forests rights of people. The gaon sanjait and Kaiser-i-hind land have been distributed and encroached substantially. Moreover, there is no data available in the public domain regarding the status of these CPRs. All hard earned CPRs institutionalized during the colonial period observed decline in their existence, governance and community ownership in 4-5 decades. The idea of community owned and managed community property resources faded after India's independence due to changes in relevant state policies. However, the Scheduled tribe and other traditional forest dwellers (recognition of forest rights) Act, 2006 created a space for a relatively more autonomous and community controlled community property resources. The provisions related to the recognition of Community Forest Rights (CFR) and Habitat Rights (HR) in the law provide many rights, concessions to the dependent communities. It also provides for management of the forest land by community through Panchayats (independent of the forest department). In the case of Uttarakhand, the execution of this law is very poor, so nothing could be delegated to the community.

6. The Study Area:

For the purpose of this study we have selected two gram panchayats namely Dumak and Kalgoth located in Joshimath block of Chamoli district. Empirical data collected from these two panchayats which are consists of five small mountain villages. Both of these villages are surrounded by the Kedarnath Wild Life Sanctuary. However, both of them dwell separate blocks of this forest. The demographic profile of both of these panchayats is given in the following table.

Demographic Profile of Study Villages		
	Dumak	Kalgoth
Total Population-	401	462
Total Number of Households	81	92
Male-	208	237
Female-	193	225
Children below 14 years -	75	87
SC Population-	0	0
ST Population	0	0
OBC Population-	401	462

Almost all households in both of these panchayats are dependent on agriculture and livestock for their livelihood. This occupation makes them dependent on forest and other natural resources. For generations people from these villages have been dwelling forest around their villages. Up until November 1964 this entire forest was under the revenue department as it was classified as class-I forest. Colonial government paid less importance to class-I forest as they were not commercially viable for them. These are mix forests, usually broad-leaved trees. The biodiversity of the forest is suitable for the subsistence economy. Along with the protected forest villagers have also been accessing van panchayats constituted in both of these Panchayats. The van panchayat in Kalgoth, spread in 72 hectare was constituted in 1972, whereas the van panchayat of Dumak comprises of 105.5 hectare land is relatively new which came to existence in year 2000.

Almost all villagers are small and marginal farmer and highly dependent on forest both protected and van panchayat. It has been observed that out migration for livelihood is not a big issue in both of these villages. Together 12 out of 173 household from these two villages migrated permanently. Moreover, 26 migrated workers came back due to lockdown announced in March 2020 to contain the spread of COVID-19. Since, these two panchayats are among remotest villages in the district not connected with motor road and telephone; so economically well-off people migrate to nearest cities for better health, education and infrastructural faculties.

Livelihood Profile of Study Villages

	Dumak	Kalgoth
Agriculture/Cultivation		
- Households dependent on agriculture only	0	3
- Households dependent on livestock only	0	0
- Households dependent on combination of agriculture and livestock	69	89
- No. of Large farming households	0	0
- Number of medium farming households	0	3
- No. of small and marginal farming households	69	86
- No. of Farm Labourer Households	0	0

Dependency on CPR		
- No of Household dependent on CPR for their life and livelihood	69	92
- No of households dependent on occupation other than farming and livestock but draws benefit from CPR	0	0
- No. of households dependent on occupation having negligible or no dependency on CPR	5	0
Migration		
- No. of households whose member (s) seasonally migrates for livelihood in the cities	0	0
- No. of households whose member (s) migrated permanently for earning livelihood in the cities	7	4
- No. of worker migrated back to the village after lockdown to contain COVID-19	10	16
- No. of reverse migrated worker, who would like to stay back in the village.	10	16

Major Common Property Resources of these two panchayats includes blocks of protected forest under the Kedarnath Wild Life Sanctuary, two separate van panchayats and number of water streams. These two villages dwells a very large area of protected forest, each village has access to more than 5000 hectare of the protected forest. The details of benefits drawn from CPR by these villages are briefly mentioned in the following two matrixes.

CPR Profile of Dumak:

Detail of CPR	Benefits drawn from the CPR	Org. responsible for management	Status of CPR (Degraded or not)
Dumak East and West Beat of the Protected Forest- Kedarnath Wildlife Sanctuary **Estimated Area:** 5284.5 Hectare **De-Jure Owner:** Forest Department **De-Facto Users:** All villagers	**Livelihood:** Fodder, Agricultural implements, water for flour mill, Grazing area, Grazing of sheep in alpines in summer, Grazing of sheep/castles in dense forest, loping/pruning tree for fodder. grazing Bamboo for domestic and commercial **Physical Material:** Fuel, Timber, Dry Leaves, Water for domestic use, sand, stone, use, herbs for local use. **Recreational/cultural/ Religious:** access to alpines for cultural festival once a year, collection of flower and bark of tree, herbs etc for religious purposes.	Officially forest department is responsible for the management. However, Van Panchayat and Mahila Mangal Dal play crucial role in management of the forest	The southern part of the forest area is close to the village. It is dense and in good condition. Villagers used this area for all their routine use. The northern part of the forest is alpine pasture land and seasonally accessed by villagers for grazing, collection of herbs, cultural and religious festivals.
Van Panchayat Forest land **Estimated Area:** 25 Hectare **De-Jure Owner:** Van Panchayat and Mahila Mangal Dal **De-Facto Users:** All Villagers	**Livelihood:** Fodder, Grazing area, **Physical Material:** Fuel, Timber, Dry Leaves, Water for domestic use, water for floor mill, sand, stone, Bamboo (ringal) for domestic and commercial use, herbs for local use, Grass for house roof (Thatching), grass for broom, wild vegetable, fruits, Fibre for ropes, honey, Thatching grass, clay soil for houses, seasonal cattle camping in the forest. **Recreational/cultural/ Religious:** temple and cremation ground,	Van Panchayat and Mahila Mangal Dal under supervision of the forest department	This area has fewer trees. The area is located on large rocks. A substantial part of the forest is used for fodder and grazing land. However, it is well managed by the villagers to ensure maximum harvest of fodder.
There are seven water streams within the boundary of the village **De-Jure Owner:** Van Panchayat and Gram Panchayat **De-Facto Users:** All Villagers	**Physical Material:** Drinking Water, water for domestic animals **Livelihood:** Water of Flour Mill,	Van Panchayat and Gram Panchayat	Reduction in the availability of water has been observed in some of these streams over the years.

CPR Profile of Kalgoth:

Detail of CPR	Benefits drawn from the CPR	Org. responsible for management	Status of CPR (Degraded or not)
Protected Forest Area- Kalgoth Beat (South) **Estimated Area:** 5425 hectare **De-Jure Owner:** Forest Department **De-Facto User:** All Villagers	**Livelihood:** Fodder, water for floor mill, Bamboo for domestic and commercial use, Grazing area, Loping trees for fodder. **Physical Material:** Fuel, Timber, Dry Leaves, Water for domestic use, sand, stone, herbs for local use,	Officially forest department is responsible for the management. However, Van Panchayat and Mahila Mangal Dal play crucial role in management of the forest	Dense forest
Protect Forest Area- Kalgoth Beat (North) **Estimated Area:** **De-Jure Owner:** Forest Department **De-Facto User:** All villagers	**Livelihood:** Pasture for sheep in the summer, **Physical material:** Herbs for local use, **Recreational/ Religious/Cultural:** Access to alpines for cultural and religious celebrations.	Officially forest department is responsible for the management. However, Van Panchayat play crucial role in management of the forest	It is high altitude alpine pasture land mostly covered with snow, negligible tree cover and full with number of herb species.
Van Panchayat Forest **Estimated Area:** 30 Hectare **De-Jure Owner:** Van Panchayat **De-Facto User:** All villagers	**Livelihood:** Fodder, water for flour mill, Bamboo for domestic and commercial use, seasonal cattle camping in the forest, Grazing area, Loping trees for fodder **Physical Material:** Fuel, Timber, Dry Leaves, Water for domestic use, sand, stone, herbs for local use, Thatching grass, clay soil for houses, **Recreational/ Religious/Cultural:** temple and cremation ground.	Van Panchayat and Mahila Mangal Dal under supervision of the forest department	This area has less trees, and commonly used for fodder and grazing.
There are nine water streams within the boundary of the village **De-Jure Owner:** Van Panchayat, Forest Department **De-Facto User:** All villagers	**Livelihood:** Water for flour mill, water for domestic animals **Physical material:** Water for domestic use.	Van Panchayat and Gram Panchayat	Reduction in the availability of water has been observed in some of these streams over the years.

The Dumak and Kalgoth panchayats have access to 5284 hectare and 5425 hectare forest land respectively under the Kedranath Wildlife Sanctuary. Both panchayats have given limited rights and concession in this forest. Until 1964 this forest was managed by the revenue department. Realizing the importance this forest in the catchment of Alaknanda river the government handed it to the state forest department for the management. Even after change in the ownership villagers continue to enjoy limited rights and concession given to them. In 1972 the then Uttar Pradesh government constituted it a wildlife sanctuary, primarily for the protection of Himalayan Musk dear.

There are 45 villages inside the sanctuary and 128 villages outside but within five kilometres from the forest boundary. Dumak and Kalgoth are outside the sanctuary, but both of these villages share boundary with the protected forest. According to the management plan of the sanctuary both of these villages are partially dependent on sanctuary for firewood. In addition, the management plan of the sanctuary provides right to collect firewood, fodder grass, thatching grass, dry leaves, ringal (bamboo) and right to use bugyal (meadows) for sheep rearing in the summer. Moreover, it provides concession to the villagers to get timber for personal use (building houses, agricultural tools), free grazing of cattle, green leave for fodder, access to forest grounds for cattle camping (FD, 2000)

The dependency of villagers on protected forest and panchayati forest is not clearly divided, it overlaps many a time. However, broadly the panchayati forest in these two villages meets many of their requirements such as fodder, thatching grass, clay soil, grazing land dry leave, underwood, stone, water bodies, ringal (bamboo), wood of agricultural tools etc. Villagers are dependent on protected forest for things like timber, green leaves for fodder, sheep rearing, cultural and religious activities. Other than sheep rearing in the alpine region of the protected forest, villagers also access that for religious functions and collection of flower and herbs for their religious activities in villagers.

7. Community Vs Institutional Protection of Forests:

The Kedarnath Wildlife Sanctuary also known as Kedarnath Musk Deer Sanctuary came into existence in 1972 for the protection of a rare wild animal called musk deer found in high altitude of this region. These animals have been exploited for their 'Musk' (Kasturi) for centuries. Other major wild animals found in this region include snow leopard, Himalayan Thar, Black Bear, Brown Bear and Common Leopard. The formation of wildlife sanctuary under the Wildlife (Protection) Act, 1972, substantially changed the way local people were dwelling in forests for generations. Major restrictions on local inhabitants includes following:

1- The green felling for domestic use including bamboo and firewood is completely banned.
2- Complete ban on Silvicultural and tending operations
3- Regulated collection of firewood
4- Complete ban on collection of herbs and other non-wood forest produces
5- Highly regulated system for domestic livestock grazing

Local villagers have observed that the restrictions on use of forest and forest produce gradually increased in the last 4-5 decades. Some of these restrictions were completely against local ecological, social and economic requirements. For example, following the ruling of the Supreme Court, dated 14 February 2000, under the famous Godavarman case imposed restriction even on the collection of fallen, rotten and dead trees, shrubs and grass. This decision was against the provision of the forest settlement where all villages dependent on this forest were allowed to collect wood and timer for various domestic usages such as construction of houses, agricultural equipment, fodder and fuel. Nearly 10 years after imposition of this restriction, the forest department realized that villagers are losing their interest in forest and wildlife due to such restrictions. They also realized that decreasing interest of villagers has adversely affected the overall mission of protecting forest and wildlife. Therefore, the Divisional Forest Officer, Gopeshwar wrote a letter on 15th June 2011 to the Director of Nanda Devi Biosphere Reserve, requesting to adjust rights and concession of affected villagers in some other forests.

The institutional approach of protecting forest and wildlife in India has always been guided by an idea which attempts alienating forest dwellers. The case of Kedarnath wild life sanctuary is not a different story. The Panchayati Forest (Van Panchayat) in Uttarakhand was an alternative model of forest management and governance. The idea of these forests was to rely on knowledge, skill and capacity of forest dwellers for sustainable management of forest without any involvement of the forest department. However, successive amendments to the Panchayat forest rules diluted the entire system. Currently this forest is also in the control of the forest department.

The protection of forest and wildlife is important, but who imbibes this feeling best other than local forest dwellers. Even before issuance of restriction by the forest department, villagers have their own system of protecting forest and wildlife. The Panchayati forest is crucial for both Panchayats selected for this study. It is mainly used for winter fodder and thatching grass. Both villages close a big part of the grass growing area for a certain period of a year to allow grass to grow well. Similarly they have rules which are strictly monitored by women groups in both villages related to ban on green felling, forest fire, collection of herbs from alpine region, rationalizing grazing, fuel-wood collection and rationalizing benefit sharing. Formation of these rules and their strict implementation is highly important for local villagers, as it is directly linked to their life and livelihood. Therefore, the idea behind these self imposed restrictions is to maintain the productivity of resources and create

sense of responsibility amongst its user.

For better harvest of forest produce, these informal rules developed by villages make them discipline and ensure sustainability. Moreover, villagers also have several stories, when they fought against external poachers, encroachers, nomads and herb & timber smugglers. For example, in October 1974, villagers came to know that few poachers of musk deer are camping in the alpine region of the forest. Villagers informed the forest department and joined them in arresting poachers. Later the department gifted a memento to Kalgoth Gram Panchayat for this great job. Moreover, villagers have several stories when they informed the forest department and helped them to evict poachers, smugglers and encroachers.

The above illustrated examples suggest that once there was cordial coordination between the forest department and villagers. Most of these examples are from the 1970s to 1980s. People don't remember any such examples of coordination in the last 2-3 decades. Our enquiry to understand this shift in attitude and trust through FGDs enlightened us that after the 1980s people started realizing that the real owner of the forest is the forest department. It took some years for the forest department to assert its ownership in the forest. But, as the control of the forest department increased, people started pulling back from the role of natural custodian of the forest and wildlife.

8. CPR and Subsistence Economy of the Study Area:

8.1 Sheep and Wool:

Until nearly two decades ago almost every household in these two villages had sheep. Villagers have been enjoying rights and concessions in the nearby protected forest for grazing, camping and collection of fodder for sheep. The alpine region of the kedarnath wildlife sanctuary is accessible for humans and sheep only from the month of May to August rest of the time it is snow covered. Villagers largely use this time to camp their sheep in these high altitude beautiful landscapes. Traditionally sheep rearing had three benefits- (1) selling them for meat (2) extracting wool for local handloom and (3) using male sheep for transporting goods in the mountain.

The economy around sheep rearing was very elaborate. The residual

of traditional handloom can still be found in every household in these two villages. People used to weave their clothes by themselves. They also have a tradition of making warm quilts and waterproof jackets out of sheep wool. Being a tradition, all households were independent in all these activities.

In the last two decades, this entire system of sheep rearing has shrunk significantly. Today very few families in these two villages are continuing with this occupation. Mule and horses introduced nearly 15-20 years ago in the area replaced usage of sheep for transportation of goods. Using mule and horses helped a lot in reducing drudgery. On the other hand in the last 2-3 decades factory made clothes and bed material have completely replaced hand woven woollen clothes. Now sheep brings only cash when sold for the meat. The entire tradition of extracting wool from sheep to processing and adding value in terms of spinning and weaving has disappeared. This highly skilled but cash less industry could not sustain itself in the front of an aggressive and fancy mechanised market. Alternatively, no attempts were made to mechanise and modernise the traditional wool industry of the region.

Villagers were dependent on forest for their main occupation of sheep rearing. Most of the forest is still in good shape and the degraded forest can be regenerated easily. However, this entire occupation has collapsed. The revival of the occupation not only depends on the regeneration of degraded forest around villages, but also demands mechanization and modernization of the wool based industry.

8.2 Agriculture:

Agricultural productivity in mountain villages is any way very less. The land holding is also very less in these two villages which is around average 0.5 hectare per household. The entire agriculture is rain fed and no irrigated land is available in these two villages. Main crops being cultivated in the region are Amaranth, Kidney Beans and Barley. Amaranth and Kidney Beans have high market value, so both of them are grown as cash crops. Other than these two main crops people also cultivate wheat and potato for their own consumption. However, productivity of wheat is very low. Villagers are dependent on markets for grain such as rice and wheat.

Agriculture in these mountain villages have never been self-sufficient due to reasons like low productivity, sloppy landscape and not feasible for main grains such as wheat and rice. Alternatively this area is highly suitable for horticultural and vegetable products such as apple, apricot, walnut, cucumber, coriander, potato, garlic, cauliflower etc. But due to the geographical remoteness of these villages, horticulture never became an occupation.

While agriculture had been a secondary occupation, it has always been integral to the lives and livelihood of common people in the region. With the collapse of sheep and wool based livelihood in the last few decades, the less productive agriculture has become the main occupation of people in the region. As in many other communities, the cattle rearing are part of agriculture in this region. Even today the cow dung is only fertilizer used in agriculture in these two villages. Villagers have been granted rights and concessions to access protected forest for free grazing, collection of green leaves for fodder and camping ground for cattle. Though agriculture is the main occupation in the region, it is not sufficient as I discuss above. Innovation in agricultural practices and harnessing potential of horticulture can help to make this occupation profitable and attractive.

8.3 Village Industries:

A handful of families in these two villages also earn their livelihood from traditional village industries. These industries include water mills, bamboo (ringal) craftsman, and ironsmith. In Dumak there were two watermills and five families were dependent on them. On the other hand there are four water mills in Kalgoth. Both watermills of Dumak were washed away in flood a few years ago. In kalgoth all four watermills are in good condition, but, with the introduction of diesel/ electric mills in the village, these traditional water mills have been neglected.

Ringal (bamboo) was another source of livelihood for few families in both the villages. In the forest around these villages four different types of ringals are available; all of them have distinct usage. A particular variety of ringal is used for making crafts such as baskets, mats and agricultural utensils. This variety of ringal is available in the protected

forest only. People have been granted rights to exploit them for their domestic use, but for the last few years, villagers have been facing resistance from the forest department. With limited supply of ringal and availability of factory made fancy alternatives, this occupation is also in its last days.

Ironsmiths were there in the villages mainly to make agricultural and related tools. They were heavily dependent on fuel wood needed for melting iron. This occupation has also died due to aggressive marketing of factory made utensils and degradation of nearby forest.

Of these three village industries highlighted above, ringal and watermills still have potential. Modernization of watermills can help generate electricity and value addition in ringal based traditional craft can hit the market especially in the tourist season.

8.4 New Occupation:

The fall of traditional occupations around sheep, wool and village industries changed the livelihood pattern in these two selected villages. In the last more than two decades, the government funding through Panchayati Raj System created lots of opportunities for daily wage work within the village boundary. Almost all households in these two villages work as daily wage labourers under various schemes such as MG-NREGA. This is a relatively new source of livelihood which brings cash directly to them. In a sense, all villagers are part time wage labourers irrespective of their land and livestock holding.

These two villages are among remotest villages in the district with no road transpiration. Dumak is nearly 18 km and Kalgoth is about 16km from the nearest motor road. The traditional system of using sheep for transporting goods is no more feasible now; so many young people have started rearing mule/horses for transportation of goods. This has become a means of livelihood for many households in these villages; they offer transportation services to other fellow villagers. In total there are 60 mule/horses owned by different households in these two small villages.

In the last few years, these villages have seen a steadily growing

trend in the influx of adventure/tracking tourists in the region. Though the number of tourists is still very low, the area has huge potential to attract nature and adventure loving tourists. Many villagers have started working as porters, home-stay owners and guides to these

tourists in the region. It is not yet a full time occupation, but many young people do it seasonally.

8.5 Livelihood and Out Migration:

The above data shows that these two villages have access to a large forest and other natural resources to sustain their livelihood, yet people migrated in search of livelihood. During the nationwide lockdown to contain the spread of COVID-19 in early 2020, as many as 26 workers returned back to these two villages. Our study found that all of them are willing to stay back if better options of livelihood are available within the village. Despite marginal degradation of natural resources on which these villages are dependent, the increasing trend of migration can be attributed to two main reasons. The first and foremost reason concluded through various focus group discussions in these villages is the major disruption in the local economy based on agriculture, livestock and other village industries. These disruptions at the micro level were induced by external factors such as social-economic and cultural pressure and lack of capacity of locals to compete rapidly

expanding market. On the other hand micro level factors inducing this economic disruption include poor education, unprepared/ unskilled human resource for social and economic change and lack of technology and innovations. All these factors contributed to the fall of traditional occupations and well established self sustaining communities. So, while these villagers have huge wealth of natural resources in the form of common property, they do not have means to utilize them commercially.

The second reason for our migration concluded through FGDs conducted in these villages is rapidly changing aspirations of common people. The geographical remoteness of these two villages further restricts them to avail comfort, luxury and opportunity out there for other people. The aspiration such as white/blue collar jobs, better education and health wellbeing makes these people to migrate to cities. To stop distress migration from these two villages both of these factors need to be addressed.

9. Conclusion

In the last two centuries, common property resources were institutionalized in Uttarakhand. Many policies to govern these resources were tried and tested to make balance between ecology, commercial exploitation and subsistence economy. Current policies including the Indian Forest Act, 1927, The Environment (Protection) Act, 1986 and Uttaranchal Panchayati Van Niyamawali, 2005 empower state governments to control and manage these resources. While traditional rights and concessions of various communities are recognized, they are regulated and interpreted by the state forest department.

Within this policy framework, the Dumak and Kalgoth gram panchayats of Chamoli district in Uttarakhand have access to huge forest areas rich in biodiversity. This entire accessible forest area is a common property of villagers governed either directly or indirectly (through van panchayats) by the state forest department. The large part of the forest is productive enough to meet local requirements. However, local people believe that their forest has been degraded to a large extent compared to a few decades ago. Villagers have several stories from the 1970s to 1980s when villagers along with the state forest department fought against poachers and illegal herb collectors.

In our FGDs, villagers have argued that the shift of ownership from villagers to government has changed the attitude of local people towards nearby forest.

The change in attitude of villagers towards forest is also a result of their inability to harness the potential of natural resources in the changed scenario due to changes in policies governing these resources, market demands and changing aspirations & demands of young villagers (largely influenced by urban lifestyle). With the continuation of their traditional occupation (without any innovation and technology), villagers cannot stand in the highly mechanised and fancy market system all around. Further they also don't have adequate capital, capacity, training and skills to modify their traditional occupations and explore new occupations using the same resources to satisfy their genuinely changing aspirations and demands.

Another major observation based on our field work suggests that the degradation of natural resources in and around these two panchayats is correlated with the decreasing villagers' dependency on them. Nationally and internationally the role of indigenous people and their knowledge has been recognized to protect, conserve and regenerate natural capital. Therefore it is important for sustainability of communities and ecosystems to recognize indigenous knowledge and practices. In the case of these two panchayats, the state forest department with the help of van panchayats can play a leading role in building capacities of locals and arranging necessary infrastructure to innovate and modify local occupations in a more sustainable manner.

10. References:

- Atkinson Edwin T., 1881, 'The Himalayan Gazetteer or The Himalayan Districts of the North Western Province of India', in vol-3 (Part-6), Cosmo Publication, New Delhi. Accessed from: http://dspace.wbpublibnet.gov.in:8080/jspui/bitstream/10689/15229/2/Title%20Page.pdf
- Sharma Purushottam, 2019, 'Bhumi Sankat se Jujhata Uttarakhand', Viplavi Kisan Sandesh, July 24, 2019, Accessed from: https://viplavikisansandesh.page/article/%E0%A4%AD%E0%A5%82%E0%A4%AE%E0%A4%BF-%E0%A4%B8%E0%A4%82%E0%A4%95%E0%A4%9F-%E0%A4%B8%E0%A5%87-%E0%A4%9C%E0%A5%82%E0%A4%9D%E0%A4%A4%E0%A4%BE-%E0%A4%89%E0%A4%A4%E0%A5%8D%E0%A4%A4%E0%A4%B0%E0%A4%BE%E0%A4%96%E0%A4%82%E0%A4%A1/TMfasi.html
- RD&MC, 2020, 'Janpad Chamoli ke Grameen Kshetro me samajik, aarthik vikas ko sudrid karne evam palayan ko kam karne hetu shifarishe', Rural Development and

Migration Commission, Government of Uttarakhand, August, 2020, India. http://www.uttarakhandpalayanayog.com/pdf/Chamoli_Report.pdf

- ISRO, 2016, 'Desertification and Land Degradation Atlas of India (Based on IRS AWiFS data of 2011-13 and 2003-05), Space Applications Centre, ISRO, Ahmedabad, India, ISBN: 978 – 93 – 82760 -20 -7
- RD&MC, 2018, 'Interim Report on the Status of Migration in Gram Panchayats of Uttarakhand', Rural Development and Migration Commission, Government of Uttarakhand, April, 2018. India.
- Joshi Tarun, 2003, 'Van Panchayat- Niyam evam Vishleshan', Uttarakhand Van Panchayat Sangharsh Morcha, Nainital.
- Nagahama Kazuyo, Kaoru Saito, Misa Masuda, Masahiko Ota , Hem Gairola, Subodh Kumar Kala and Randeep Rakwal, 2016, 'Forest Commons Use in India: A Case Study of Van Panchayat in the Himalayas Reveals People's Perception and Characteristics of Management Committee', Environment and Ecology Research 4(3): 128-139, 2016 http://www.hrpub.org DOI: 10.13189/eer.2016.040304
- Agrawal, A. 2005. Environmentality: technologies of government and the making of subjects. Durham: Duke University Press.
- NSSO, 1999, 'Common Property Resources in India', NSS 54th round, National Sample Survey Organization, Department of Statistics and Program Implementation, Government of India.
- Stowell V.A., 2007 (Reprint 1953), 'A Manual of the Land Tenure of the Kumaun Division', Superintendent, Printing and Stationary, Uttar Pradesh, India, 1953
- Balooni Kulbhushan, Vishwa ballabh and Makoto Inoue, 2007, 'Declining Instituted Collective Management Practices and Forest Quality in the Central Himalayas', Economic and Political Weekly, April 21, 2007.
- Sarkar Rinki, 2008, 'Decentralised Forest Governance in Central Himalayas: A Re-evaluation of Outcomes', Economic and Political weekly, May 03, 2008
- Pathak Shekhar, 1997, 'State, Society and Natural Resources in Himalaya: Dynamics of Change in Colonial and Post-Colonial Uttarakhand', Economic and Political Weekly , Apr. 26 - May 2, 1997, Vol. 32, No. 17 (Apr. 26 - May 2, 1997), pp. 908-912.
- Negi A. K., B. P. Bhatt, N. P. Todaria and Atul Saklani, 1997, 'The Effects of Colonialism on Forests and the Local People in the Garhwal Himalaya', Mountain Research and Development , May, 1997, Vol. 17, No. 2 (May, 1997), pp. 159-168
- Tucker Richard P., 1984, 'The Historical Context of Social Forestry in the Kumaon Himalayas', The Journal of Developing Areas , Apr., 1984, Vol. 18, No. 3 (Apr., 1984), pp. 341-356, College of Business, Tennessee State University
- Walton, H. G., 1911, British Garhwal, A Gazetteer. Allahabad, U.P., India.
- Forest Department UP, 2000, 'Management Plan of Kedarnath Muskdeer Sanctuary from 2000-01 to 2009-10', Wildlife Preservation Organization , Forest Department, Uttar Pradesh.
- Singh Anirudh K., 2009, 'Probable Agriculture Biodiversity Heritage Sites in India: II.The Western Himalayan region', Asian Agri-History, Vol. 13, No. 3 (197-214). https://www.asianagrihistory.org/pdf/research/197-to-214.pdf

4 Metamorphosis of Tank: A Case Study of Tanks in Kesampatti Panchayat, Madurai District, Tamil Nadu

- Dr S. Nirmala

Abstract

The common property resources are even today playing an important role in strengthening the livelihood of the rural poor. However,the number of social, economic,political, geographical and climatic reasons degraded the condition of the CPRs which caused severe livelihood issues to the rural poor whose major income was generated through the common property resources. Irrigation tanks, which are one of the traditional common property resources in India, decline rapidly due to several factors which force the poor to migrate and the non-poor to non-agricultural employment and private tube wells. These factors are responsible for the forced migration of the youth from the village to other states and overseas countries. Hence this study aims to analyze the common property resources particularly the tank system, the pattern of its utilization and the factors responsible for itsdegradation based

on the secondary sources and the direct field visits to the Mamathankulam tank and Pidarikulam tank in Kesampatti village, Madurai District, Tamil Nadu. The study further recommends some policy measures to revive and sustain the tanks.

Introduction

Common property resources such as land, water, forest, fisheries, wildlife and agriculture consist of an important component of community assets in India and considerably contribute towards the people's livelihood sustenance despite the decline in their area and physical productivity[1]. Broadly speaking common property resources are those that are accessible to the entire community in a village and to which no individual has exclusive property rights[2]. Susan and Buck[3] defined that now it is a well-known fact that common property resources (CPRs) are an important component of the natural resource endowment of village communities in developing countries. Common Property Resources can be broadly defined as those resources in which a group of people has co-equal rights that exclude the use of those resources by other people.

Tanks in Tamil Nadu have been supporting rural lives and livelihood for centuries. The well known tank system evolved in this highly water scare region of the country to provide adequate water for lives and livelihood. These tanks are important CPRs even today in this state. This research paper mainly concentrates to understand the present status of tanks and to trace out the causes of degradation of this system based on secondary source information and field visits. It further attempts to detect the extent of and the factors causing degradation. Hence Mamathankulam tank and Pidarikulam tank in Kesampati village of Madurai District are taken for this study.

The Tank System in Tamil Nadu

The tank system is not a modern phenomenon in Tamil Nadu. There are more than 39 thousand tanks in Tamil Nadu at present[4]. Many of the tanks were built by Chola, Chera, Pandia and other kings. In ancient Tamil Nadu, the tanks were the property of the kings and rulers. The farmers were in charge of the maintenance of tanks and supply channels. The Zamindars ensured the proper maintenance of tanks and channels. They are 5300 rain-fed tanks with command are exceeding 100 acres. Some 3600 tanks are linked to larger systems fed by canals drawn from large rivers and storages[5].

1 Dinesh K. Marothia (2002), 'Institutionalizing Common Pool Resources', Concept Publicizing Company, New Delhi
2 Jodha N. S. (2002), "Decline of Rural Commons Role of Population Growth and Public Policies
3 Susan J. Buck (1989) "Cultural theory and management of Common Property Resources" Human Ecology, vol. 17, March 1989
4 Palanisami, K and Easeter K.W, 1983, The Tanks of South India: A Potential for Future Expansion, Economic Report
5 Sustainable Development of Small Water Bodies in Tamil Nadu, K.Sivasubramaniyan, Economic and Political Weekly, Vol. 41, No. 26 (Jun. 30 - Jul. 7, 2006)

In Southern Tamil Nadu, before the British rule, expanding tank irrigation and the interlinking of isolated tanks (and villages) through new channels or diversions brought socially diverse settlers into hydrological, economic, and political units at higher levels under the authority of Maravar (warrior Chiefs)[6] The prosperity level and the size of the villages in semi-arid regions of south India were directly proportional to the size and performance of irrigation tanks[7].

Even British rulers realized the importance of the tanks for irrigation and drinking purpose; hence they also built and efficiently manage many tanks in Tamil Nadu. However, when the British introduced the Ryotwari system of land tenure in 1886, tanks with a command area of 40 ha and above were brought under the control of PWD and smaller tanks with a command area of less than 40 ha were under the administrative control of local bodies or vested with the villagers themselves. The farmers attended routine maintenance works under the kudimaramathu system (a traditional system of community management of irrigation tanks).

Until recently, irrigation tanks account for more than one-third of the area irrigate in Tamil Nadu[8]. The land and water resources of tanks provide not only for irrigation but also trees, fishing, domestic water supply, livestock and several minor uses[9].

However, Tank irrigation has been reducing its importance after the independence of India. During the 1950s, nearly 40% of net irrigated areas in Tamil Nadu were irrigated by tanks, but presently this figure has decreased to less than 20%[10]. There reason for this decline includes following.

a) Changes in the landholding pattern in the tank commands, not only in terms of the sub-division and fragmentation of lands in the tank command but also the vast changes in the caste composition of landowners[11].
b) In early periods, the kudimaramathu system had the support of the Zamindari system that reinforced the then prevailing feudal social relations. With the abolition of the Zamindari system, the newly emerged social relations were no longer conducive to the communal maintenance of tanks[12].
c) Maintenance of the PWD was also another important reason for the decline of communal management - the PWD engineers were not

6 Breckenridge, C.A. (1985). Social Storage and the Extension of Agriculture in South India 1350 to 1750. In Dallapiccola, A. L. (ed.),Vijayanagara: City and Empire, Franz Steiner Verlag, Wiesbaden
7 Someshwar, K. (1999), 'Panchayat Raj Tanks - A Potential for Future Expansion for Irrigated Agriculture in Andhra Pradesh', Journal of Indian Water Resources Society.
8 Balasubramanian R (2006), Institutional Landscapes in Common Pool Resource Management: A Case Study of Irrigation Tanks in South India
9 Palanisami, K, Menizen-Dick, R (2001), Tank Performance and Multiple Uses in Tamil Nadu, South India, Irrigation and Drainage Systems, https://link.springer.com/article/10.1023/A:1012927722965
10 Palanisami, K and Easeter K.W, 1983, The Tanks of South India: A Potential for Future Expansion, Economic Report
11 Janakarajan, S. (1993), "In Search of Tanks: Some Hidden Facts", Economic and Political Weekly, Vol.28, No.26, June 26,
12 Katar Singh (Ed.) (1994), Managing Common Pool Resources: Principles, Policies and Management. Sage Publications India (P) Ltd., New Delhi

empowered to enforce kudimaramathu[13], and the farmers were tempted to believe that with the creation of the PWD the tank maintenance is no longer their duty but it is the state's responsibility[14]. The role of civil societies in the formation of the users association in the tanks maintained by PWD is restricted; hence both traditional and modern tank maintenance systems are ineffective.

d) High levels of taxation and appropriation by the state of allocations for various social institutions, includingtank repairs have also been cited as the reasons for the reluctance of the farmers to take up kudimaramathu[15]. With the decline in the kudimaramathu system, tanks got silted up and the supply and distribution channels were choked.

e) Another factor that caused the deterioration of the tank was the introduction of private wells because it enabled farmers to reduce their dependency on tanks.

f) The influence of urbanization, on the other hand, increased especially since the mid-1990s, and caused the shift of occupational structure from the farming including agricultural labour to off-farm activities, with increased migration to urban areas and increased wage rate in agriculture and the accelerated encroachment of tank foreshore.

The Study

The major objective of this study, based on a recent literature review and from the field research experience at Kesampatti village in Madurai District of Tamil Nadu, is to understand the current status of tank irrigation managed by PWD and the Panchayat and to throw light on the various factors responsible for the deterioration of the tank. Furthermore, the role of the tank farmers' association in protecting the tank as a source of farmers' livelihood and the impact of tank deterioration and a few recommendations to mitigate the adverse impact are also attempted in this study.

The Kesampatti village has 13 tanks which can be divided into two categories. One that are owned by Panchayats and second category of tanks are owned Public Work Department (PWD). Mamathankulam and Kesanambalamkulam are the two PWD owned tanks. All the remaining 11 tanks have been owned by the panchayat. We have selected one tanks for each category available in this village. Mamathankulam from PWD owned and Pidarikulam from the panchayat owned tanks have been selected for this study.

13 Agarwal, A. and S. Narain (Eds.) (1997), Dying Wisdom, Centre for Science and Environment, New Delhi

14 Gomathinayagam, P.; R. Balasubramanian and R. Gopalakrishnan (1994), Kudimaramathu (in Tamil), Irrigation Management Training Institute, Tiruchirapalli (mimeo.)

15 Shankari, Uma (1991), "Major Problems in Minor Irrigation", Economic and Political Weekly, Vol. 26, No. 39, September 28

The Study Area

The present study area falls in the Madurai District of Tamil Nadu is possessing potential irrigation facilities for cropping and good agro-climate conditions in several other aspects. The total area of this district is 3741.73 Sq.km. According to the 2011 census, the Madurai district has a population of 30, 38,252 and has a population density of 812 per square kilometer. The female ratio for every 1000 male is 990. The literacy rate of 89.72% of male and 77.16% of the female is higher than the state literacy rate. The normal rainfall of Madurai District is 367.4mm from northeast monsoon whereas the actual rainfall of Madurai district is 198.7 mm. the normal southwest rainfall of Madurai district is 255.3mm whereas the actual rainfall is 298.4 mm. the total cultivated area of the district is 89,250 ha in 2016-17. The net area sown is 88,066 ha; the area sown more than once is 1184 ha. Paddy, maize, groundnut, coconut, *cholam*(Jowar), green gram, black gram, cotton, sugarcane, mango, banana are the principal crops. The agricultural land is held by 2, 93,578 numbers. They hold 1, 69,534 ha of the land with an average of 0.575 ha. 15 Government canals, 2818 tanks, 2126 tube wells, 39109 open wells were the major sources for irrigation. The total net area irrigated is 44,068hec whereas the total gross area irrigated was 45,155 ha. Vaigai is the major river of the Madurai district.

Map of Madurai District

The Kottampatti Block: Madurai has 13 administrative blocks. Kottampatti block is one of the revenue blocks. It has a total of 27 panchayat villages. This block's total population is 1, 14,339. The male population represents 57342, whereas the female population is 56,997. The total female ratio is 993 which is higher than the district ratio of 990. 299 Sq.km is the density population. The 0-6 age group Kids population is 12,697. The boys represent 6651 whereas the total girls' population is 6046. The total literacy rate is 63%.

Kottampatti has 4 canals spreading to 8 km in length. 4149 wells, 920 wells are used for domestic purpose, only one reservoir, the tanks above 40 ha are 56, and tanks below than 40 ha are 842 are available for irrigation purpose.

Kesampatti Village Panchayat: Kesampatti is a large village located in the Kottampatti block of Madurai District, Tamil Nadu with a total of 1174 families. It has a total population of 4607, of which 2274 are males while 2333 are females as per population census 2011.

In this village, the children population with age 0-6 is 548 which make up 11.89% of the total population of the village. The Average Sex Ratio of Kesampatti village is 1026 which is higher than the Tamil Nadu state average of 996. The child Sex Ratio is 1000 which is higher than Tamil Nadu average of 943.

Kesampatti village has a lower literacy rate compared to Tamil Nadu. In 2011, the literacy rate of Kesampatti village was 63.56% compared to 80.09 of Tamil Nadu. In Kesampatti Male literacy stands at 77% while the female literacy rate was 50.51%. This panchayat has 52 tanks. Periya aruvi reservoir is the only reservoir located in this block. Out of 25 tanks that get water source from Periya aruvi reservoir, 13 tanks are located in Kesampatti village panchayat.

Kesampatti Habitation: The total population of Kesampatti habitation is 2303. The total number of households is 587. The male population represents 1137 whereas the female population is 1166. Hence the female population is higher than that of their male counterparts. The children below 14 years are 461. Of the children population, the boys represent 227 whereas the female population is 234.

Tanks in Kesampatti Habitation: Kesampatti habitation has 13 tanks. The water in these 13 tanks has been used for irrigation, domestic purpose, fishing and other livelihood-allied activities.

Out of 13 tanks, 11 tanks directly depend on the rainwater only for the source of supply, whereas two tanks namely *Mamathankulamand Kesavanambalamkulam* are system tanks that get water from Periya aruvi irrigation system after the construction of the Periya aruvi reservoir.

Since the panchayat tanks were managed by the local panchayat, the tanks have had the tank farmers association which effectively manage the tanks. PWD owned tanks do not have associations as either PWD should directly form the association or should provide NOC to the civil societies to promote the association. As both the activities had not happened in Kesampatti, the tanks owned by PWD do not have associations.

One of the PWD owned tanks, “Mamathankulam” and one of the Panchayat owned tanks “Pidarikulam” have been selected for this study.

Figure 1: Irrigation tanks in Kesampatti Habitation

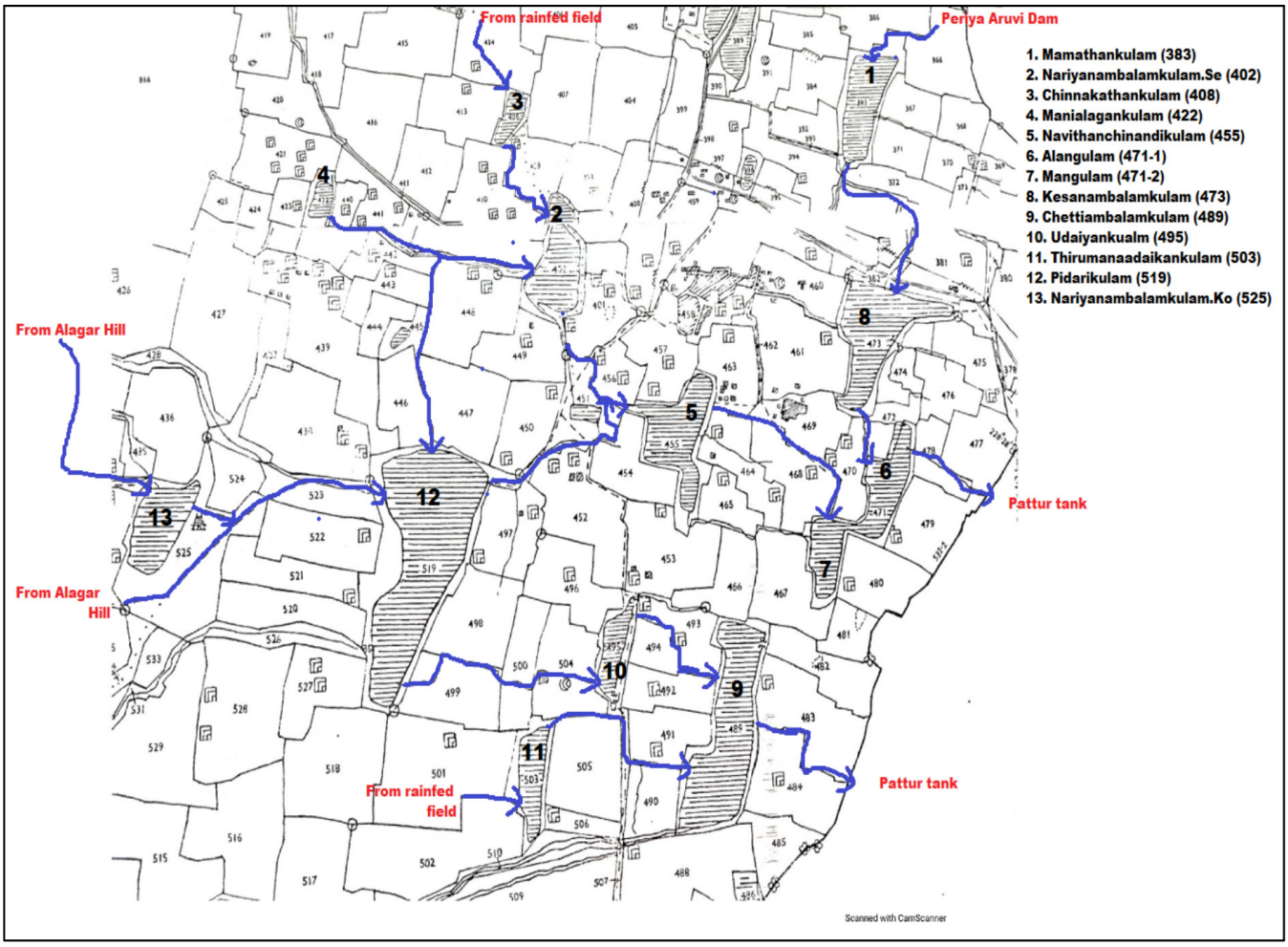


Table 1 Water Flow status of Tanks in Kesampatti Habitations

Sl. No	Name of the Tank	Survey Number	Water in Flow and outflow	
			From	To
1	Mamathankulam	383	Periya Aruvi Dam	Kesavanambalam
2	Nariyanambalamkulam. Se	402	Mani Alagankulam, rain fed field	Navithanchinnandikulam
3	Chinnakathankulam	408	Rain fed field	Nariyanambalamkulam. Se
4	Mani Alagankulam	422	Alagar Hill, rain fed field	Nariyanambalamkulam. Se, Pidarikulam
5	Navithanchinandikulam	455	Nariyanambalamkulam.Se, Pidarikulam	Alangulam and Mangulam
6	Alangulam	471 /1	Navithanchinandikulam, Kesvanambalamkulam	Neighboring panchayat tank 'Pattur'
7	Mangulam	471 /2	Alangulam	Neighboring panchayat tank 'Pattur'
8	Kesanambalamkulam	473	Periya Aruvi Dam, Kesavanambalamkulam	Alangulam
9	Chettiambalamkulam	489	Udaiyankulam, Thirumana Adaikankulam	Neighboring panchayat tank 'Pattur'
10	Udaiyankulam	495	Pidarikulam	Chettiambalamkulam
11	Thirumana Adaikankulam	503	Rainfed field	Chettiambalamkulam
12	Pidarikulam	519	Nariyanambalamkulam.Ko, Mani Alagankulam and Alagar hills	Navithanchinandikulam, Udaiyankulam
13	Nariyanambalamkulam. Ko	525	Alagar Hill	Pidarikulam

The Pidarikulam Tank

The total extent of the *Pidarikulam* tank is 8.68 Ha, whereas there is 12.20 Ha of ayacuts that have the right to use the water for irrigation. The bund length is 505 m whereas the width of the bund is 2.65 m., the tank has two sluices with the Sill level of sluices is 201.400 m. The full tank level is 202.925 m, the top bund level is 204.525 m. the Maximum water level is 203.955 m. As per the government record, the bund condition is below the standard and the 0.16.0 area has encroached by a person.

Pidarikulam tank is located in the south-north direction with 30 acres. It has two sluices. Mango and jasmine are the major cultivation. The *Pidarikulam* tank was once efficiently managed by an association named "*Pidarikulam* Tank farmers' association" (188/93) was first promoted in 1993 and facilitated by PRADAN. 36 ayacuts used the tank for their irrigation purpose. The association nourished well with the support of its members. The association initially involved with tank renovation and rehabilitation with the help from District Rural development agency. Later on, the association sustained its funding.

ater Resources Atlas of Madural District

48.4. PARTICULARS OF TANKS :

48.4.29. Pidari Kulam -Code :KP048TRU29 - Basic Data :

Ayacut	:	12.20.0 Ha
SF No. / Extent	:	519, 8.68.0 Ha
Basin	:	Free Basin
Bund Length (m)	:	505
Bund Width (m)	:	2.65
No. of Sluices	:	2
Sill Level of Sluices (m)	:	201.400
Length of Weir (m)	:	12.20
Length of Byewash	:	Nil
FTL (m)	:	202.925
MWL (m)	:	203.525
TBL (m)	:	204.525
Capacity of Tank (MCFT)	:	0.019
Free Catchment (Sq.Km.)	:	0.74
Combined Catchment (Sq.Km.)	:	0.94
Area of Water Spread at FTL (Sq.Km.)	:	0.0322
Max. Width of Water Spread at FTL(m)	:	400.00
Source of Supply	:	Free Basin
Supply Channels	:	Nil
Supply Channel Length	:	Nil

48.4.29.2. Present Condition :

Tank	:	Fully damaged
Weir	:	Good Condition
Capacity (Mcft)	:	0.019
Bund Length (m)	:	505
Bund Condition	:	Below standard
Encroachment in Extent	:	0.16.0
Encroachment in No's	:	4
Encroachment Nature	:	Guina,Puli

48.4.29.2. Pollution :

There is no Pollution of this Tank.

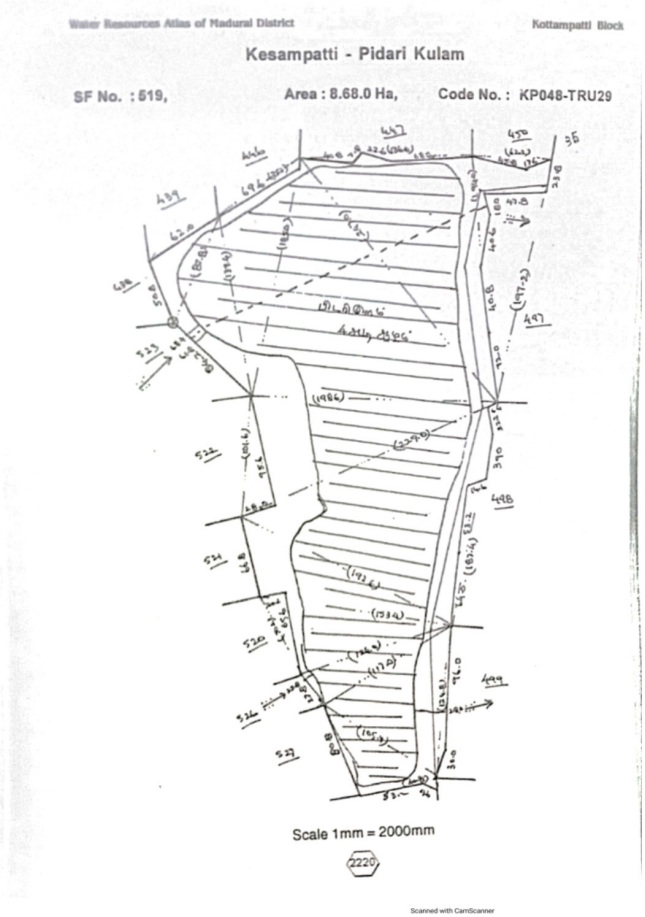
48.4.29.3. Task for Intervention :

Encroachment needs tobe enclosed.

48.4.29.4. Distribution Channel :

There are no distribution channel for this Tank.

★★★



Irrigation Farmers' Association: The association organized a lot of training, conferences to protect the tank and to grow the trees, fishing and herbal planting. When there was some encroachment on the tank bund, The association had petitioned the district collector to take necessary action to remove the encroachment to grow the trees and herbal plants on the tank and to stop the sand smuggling. When some individuals tried to get ownership of some fruitful trees grown on the tank, the association approached the district to collect and prevented the individual enjoyment of the tank and its allied income. When there was a delay in getting the order from the district collector, the association approached the high court to get an injunction restraining from cutting the trees.

Objectives of the Association

- To resolve the conflicts among the ayacuts and farmers
- To take necessary steps to manage the water efficiently
- To instruct the guidelines for the development of agriculture
- To perform well without caste, religious and profit motive
- To tap all the resources provided by the central and state governments
- To develop agriculture with new and technically advanced machinery
- To assist the public during the festival periods
- To action for free education
- To distribute books, notes and uniforms to the poor students
- To motivate people to get social awareness
- To encourage the association members to mingle with the society to enrich in education, culture and economical spheres
- To promote the free reading hall
- To render as maximum social service as possible

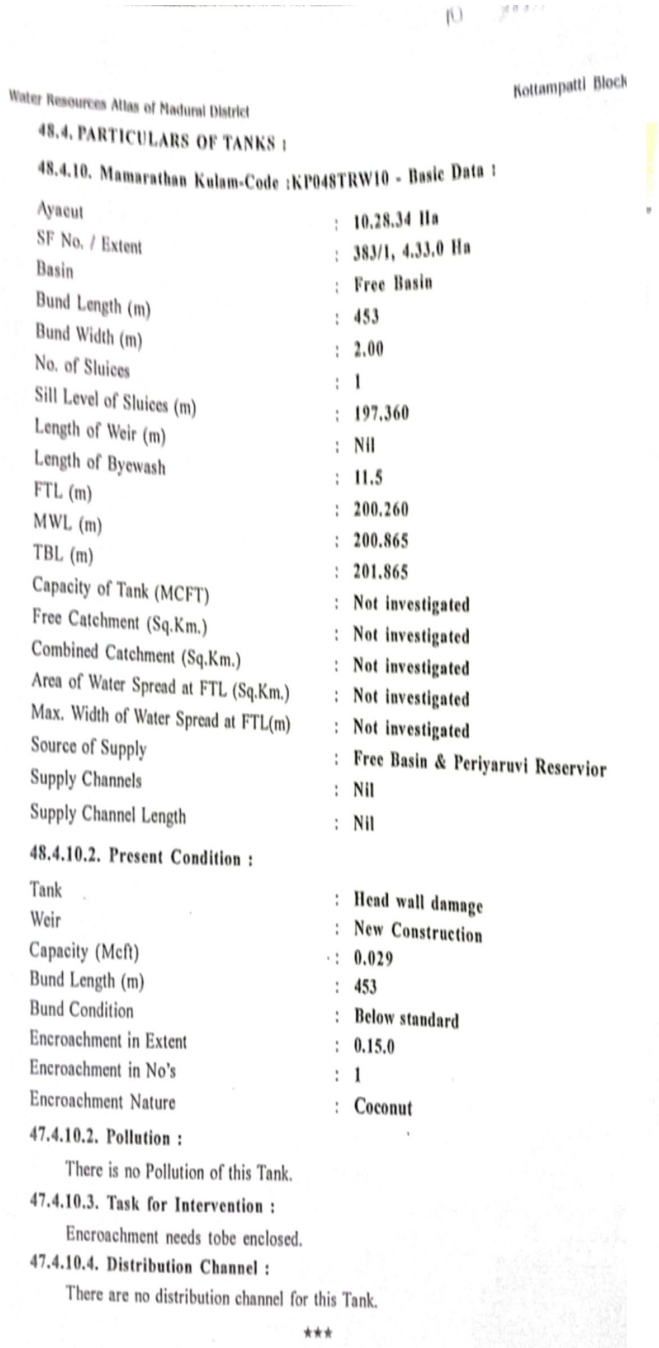
Since the Pidarikulam tank is a major source for the groundwater tablet, 13 pump set-wells have been dug around the tank by individual farmers. Due to the irregular and shortage of rainfall, the farmers slowly depended on their water source which eventually forced the association to inactive.

The Mamathankulam Tank

The total extent of the Mamarathankulam tank is 4.33 Ha, whereas there is 10.28.34 Ha of ayacuts that have the right to use the water for irrigation. The bund length is 453 m whereas the width of the bund is 2 m. the length of the bye wash is 11.5, the tank has only one sluice with the Sill level of sluices is

197.360 m. The full tank level is 200.260 m, the top bund level is 201.865 m. the Maximum water level is 200.865 m. As per the government record, the bund condition is below the standard and the 0.15.0 area has been encroached by a person.

Besides Periya Aruvi reservoir, the Mamathankulam water tank has many channels to collect rainfall water or stream water from the upper basin. The stored water would be taken out whenever necessary through the sluice to the lower area where cultivation takes place. The capacity of the tank would be increased during the northeast monsoon. The water would be released for cultivation or when the tank is full. The additional cropping would be done with the excess water.



Water Resources Atlas of Madurai District — Kottampatti Block

48.4. PARTICULARS OF TANKS :

48.4.10. Mamarathan Kulam-Code :KP048TRW10 - Basic Data :

Ayacut	:	10.28.34 Ha
SF No. / Extent	:	383/1, 4.33.0 Ha
Basin	:	Free Basin
Bund Length (m)	:	453
Bund Width (m)	:	2.00
No. of Sluices	:	1
Sill Level of Sluices (m)	:	197.360
Length of Weir (m)	:	Nil
Length of Byewash	:	11.5
FTL (m)	:	200.260
MWL (m)	:	200.865
TBL (m)	:	201.865
Capacity of Tank (MCFT)	:	Not investigated
Free Catchment (Sq.Km.)	:	Not investigated
Combined Catchment (Sq.Km.)	:	Not investigated
Area of Water Spread at FTL (Sq.Km.)	:	Not investigated
Max. Width of Water Spread at FTL(m)	:	Not investigated
Source of Supply	:	Free Basin & Periyaruvi Reservior
Supply Channels	:	Nil
Supply Channel Length	:	Nil

48.4.10.2. Present Condition :

Tank	:	Head wall damage
Weir	:	New Construction
Capacity (Mcft)	:	0.029
Bund Length (m)	:	453
Bund Condition	:	Below standard
Encroachment in Extent	:	0.15.0
Encroachment in No's	:	1
Encroachment Nature	:	Coconut

47.4.10.2. Pollution :

There is no Pollution of this Tank.

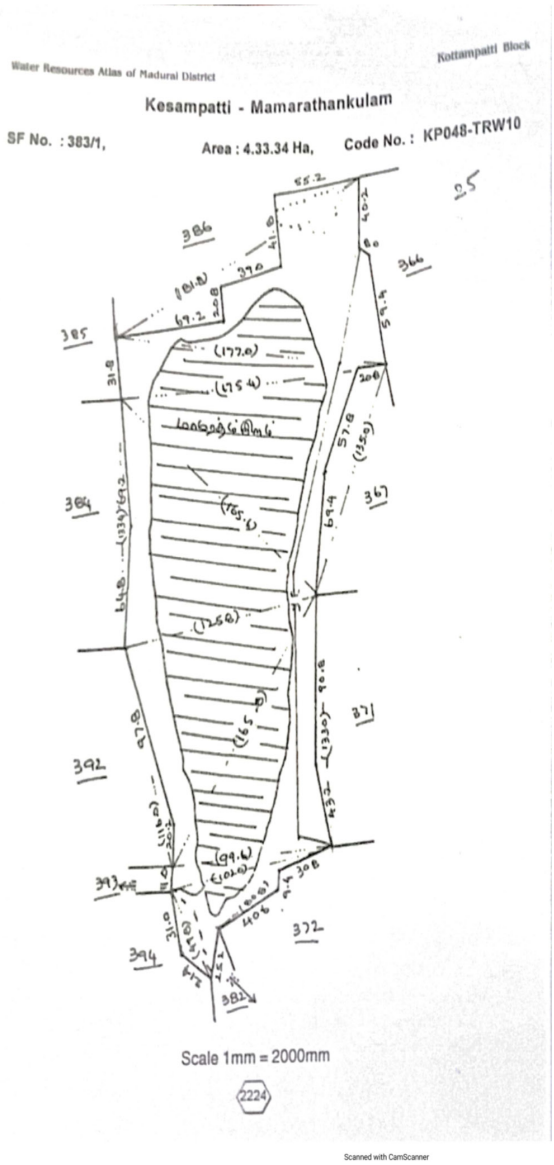
47.4.10.3. Task for Intervention :

Encroachment needs tobe enclosed.

47.4.10.4. Distribution Channel :

There are no distribution channel for this Tank.

***



Traditional System of Tank Governance

Traditionally, caste based roles were assigned for the management and governance of tanks in Tamil Nadu. This is three layer administration. The upper/ dominant caste would involve in decision making and enforcement of rules and regulations, and the middle-level caste would concentrate on accounting and record maintenance. The lower caste particularly the scheduled caste would be appointed as the Neerkatti, Neerpachi and Thotti. Even among the scheduled caste, the Pallars are relatively better in terms of asset ownership. Hence Pallars were appointed as Neerkatti The second higher caste is Paraiyars who would work as Neerpachi and the lowest caste Sakiliyars would be the Thottis.

Normally Neerkatti played the most important role of executing the actual manual work like sluice operation and the field level water distribution and management. Neerpachi would assist the Neerkatti. However, if there is no Neerkatti then the Neerpachi would play the role of Neerkatti. Since there is no Neerkatti in our area, I have been working as Neerpachi and performing the role of the Neerkatti as well. Thoti, the scavenger, was another lower-level worker; he had assisted me in water distribution and announcer. Eventually, the Thoti work also was taken care of by the Neerkatti or Neerpachi.

Mr. Ganesan is an award recipient Neerkatti (water manager) living in Madayinipatti. Madayinipatti village is located 5 km away from Kesampatti. Though Kesampatti has 13 tanks, there has been no permanent Neerkatti residing at Kesampatti as almost all the tanks are smaller in size. Hence the Neerkatti from the neighboring villages were employed as Neerkatti for

Kesampatti village. Ganesan is one of the Neerkatti persons living in a nearby village. He belongs to the scheduled caste community and employed as Neerkatti for several years. Like other Neerkatti, he enjoyed this position as the pride of hereditary.

Since the declined water level of the tanks and the advent of motorized pumps and the private wells kept the ayacuts away from the reliable usage of the tanks, the role of Neerkatti, Neerpachi and the Thoti was performed by a single person. Mr. Ganesan is one such person who is assigned with all three works. He says, “my works start at the onset of the monsoon. I would walk around the tank to inspect the supply channels, the condition of the tank bund and the field channels. If there is any repair required, I would inform all the ayacuts. A necessary decision would be taken by the upper caste ayacuts to repair the channels. Once the tank started filling with water, I would watch the level of the water keeping the pillar or the standing tree as an identification mark. In earlier days we celebrated Madai (sluice) Pongal prior to the opening of the sluices. I would open the sluice at 6 am and close at 6 pm because the irrigation at night is curbed.” I am expected to guard the crops against the cow, sheep and goat as they may eat the crops. There had been a key used to open the sluice, but nowadays the key is not used hence a big boulder is used to arrest the water flowing out. No one else except Neerkatti is vested with the right to move the boulder. After the harvesting, we would celebrate the Kathiraruppu (Harvest) Pongal to thank God. When the tank becomes empty, the tank bed would be leased out, at that time the Neerkatti/Neerpachi would be given preference. Besides, the Neerpachi/Neerpachi could enjoy the fishing, yields from trees on the tank bund, and leasing the temple lands for cultivation. However, these privileges are oblivion day by day. After the harvesting, I would be paid in kind according to the irrigated area. My remuneration would be 4 Padis (5 Kg) of paddy for every 60 cents per season.

Though many families of the Neerkatti were migrated to the cities and many Neerkatti reluctant to perform the Neerkatti work as the remuneration is inadequate, I continue as Neerpachi of our area. As a token of commemoration for my service as Neerpachi, I have twice received award such as “Distinguished Rural Engineer Award” by The Honorable President of India through Center for Science and Environment, “Best Traditional Water Harvesting and Conservation

Techniques" by the National Bank For Agriculture and Rural Development, as the Best Neerpachi. The moments I received the award made me feel proud of being a Neerpachi".

Factors responsible for the Deterioration of the Tanks

Though Kesampatti has 13 tanks, it had gradually witnessed several open wells both in the common area and in the dry land. In those days, bullock power was used to take water from the wells. That was the first alternative source for tanks. Technological innovations such as electrified motor and bore-wells relieved the farmers from their dependency on tank water. In pre-British Tamil Nadu, the ownership of the tanks was vested with the local community. British governance slowly moved the ownership from the local community to the Government. This paradigm shift of the ownership kept the community away from the maintenance of the tanks. Besides this, some other factors are also responsible for relegating the importance and usage of the tanks. Kesampati tank is not exceptional from the deterioration. This study attempts to focus on the various factors responsible for the deterioration of the tank system in Kesampatti village. The factors are discussed below:

a) Monsoon Failure

Tamil Nadu experienced frequent droughts which subsequently affected the performance of the Mamathankulam tank also. The tank got filled with full water only once every 3-5 years. The tank has not reached its brim for a decade. The shortage of water in the tank areas has resulted in the growth of the thorny shrub Prosopis juliflora. The farmers let the tree grow in the tanks to sell them once for a while. This poor performance of the tank made the farmers earnestly re-consider

agriculture and accelerated them to exit from cultivation and keep their children away from agriculture which caused the proliferation of non-agricultural sectors.

b) Diffusion of Energized Wells

As discussed earlier, the diffusion of electrified wells led to the declining importance of tanks for farmers. The farmers' dependency on the tanks for irrigation got reduced due to the frequent use of the energized wells. The farmers were indifferent to participate in common work for tank maintenance such as cleaning supply channels, field channels and strengthening tank bund before starting the tank season. This declining trend of the required work for the tank maintenance led to the deterioration of tank structure and the storage capacity of the tank is shrunken.

c) Encroachment of Tank Foreshore

The encroachment of the tank foreshore was made for various reasons. The foreshore land was used for cultivation purpose. Normally the tanks were gradually encroached for the development of physical infrastructure such as the construction of factories, building houses. Laying roads and construct check-dams. This tank encroached for the cultivation purpose. It is recorded in the Government record that the encroachment was done for cultivation purpose. The impact of the encroachment of tank foreshore seems to be very large because it drastically reduces the quantity of the stored water in the tank.

Mr Raja, the Panchayat President of Kesampatti village said, "The Mamathankulamtank has not been filled with adequate water after the construction of the reservoir. If my memory is not mistaken, the tank has not been filled for around 17 years resulting in gradual encroachment of the unfilled tank beds to cultivate dry crops. The farmers were forced to convert their cropping pattern from paddy into orchards due to the shortage of water. Even a case was filed in the Madurai High court. The case was argued in such a way that the new, as well as the direct ayacuts, emerged in the head end of the reservoir were benefited, whereas the tail end, as well as the indirect ayacuts, suffered from the inadequate water for their cultivation. The earlier irrigable areas of theMamathankulam tank were shrunken after the construction of the reservoir. The water level in the wells around the tank has gone down hence the means of the tank getting recharged was stopped.

d) Siltation

The siltation has contributed to the reduction of the capacity of the tank.It is reported that 25% of the tank was encroached resulting in the reduction of 30% of the water storage. The reduction in the storage capacity made the tank not store full water even there is a good amount of rainwater is recorded.

e) Development of Non-agricultural Sectors

The overall economic development of the study area is the prime factor for the deterioration of the tank. The development of the non-agricultural sectors declined the importance of agriculture as the primary occupation. The young generation who were the first generation of the college and technical education shifted their dream-occupation from agriculture to non-agriculture jobs.

f) Adverse Effects of the Government Program

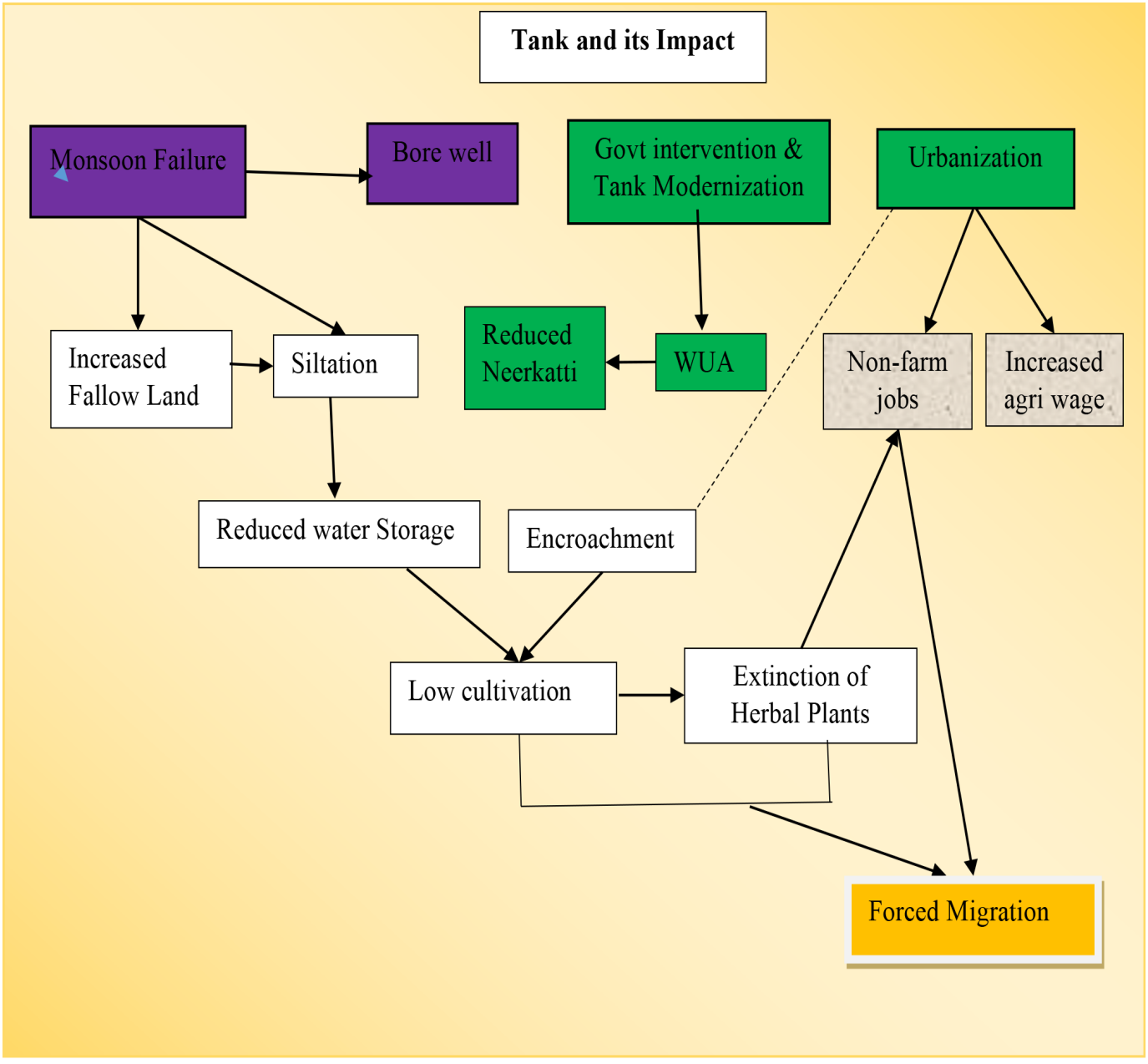
Sometimes the deterioration of informal tank institution is, ironically, caused by the efforts taken by the government to improve and modernize tank structures. The Neerkattis (Water manager) was in charge of the sluice operation, water management and distribution. Traditionally the Neerkattis were selected from a particular Scheduled Caste in a hereditary system. They were paid in kind (paddy) by farmers according to the irrigated area. The role of Neerkattis was slowly obsolete once the public work department introduced water users associations. When any reservoir is constructed or any tank renovation activity is supported by the funding organizations, the Public Works Department (PWD) was responsible for large-scale tanks with more than 40 Ha of command area (ayacut).

Therefore, the civil societies which are involved in the promotion of water users associations are not allowed to form associations for the tanks which are under the control of PWD. The PWD officials are responsible for promoting the association for the tanks which are under the control and maintenance of PWD. While forming the water users associations, the official of PWD did neither consider nor consult the existing informal institutions. This leads to the disuse of the expertise of the Neerkattis. Moreover, the PWD would neglect the WUAs once the renovation or construction activity is completed. Hence

the WUAs are formed by the civil societies are functioning property, whereas the WUAs formed by the PWD are defunct in the same village in due course of the time.

After the construction of the Periya Aruvi reservoir, out of 13 tanks in Kesampatti panchayat, the two tanks Mamathankulam and Kesavanambalamkulam came under the control of the PWD. Hence the civil societies were not allowed to form the water users association in these two tanks. At the same time, the renovation of the other tanks was done by the associations formed by the civil societies.

Figure 2: Tank and its Impact



A Case on "the status of Tank – Past and Present"

Chinna Azhagan is around 70 years old who is an ex village administration officer and he is one of the ayacuts as well as a farmer of 7 acres growing mango and coconut trees with the help of a well. He recalled:

'There were 900 tanks available in Kottampatti blocks. Among the 900 tanks, 52 tanks were available in Kesampatti panchayat. The Kesampatti habitation had 13 tanks. The number of ayacuts was lower than the number of acres fifty years ago; however, the number of ayacuts was higher than the number of acres at present. It is due to the split of the joint family system and the division of the land among the heirs.

These tanks got the water flow from the Periya Aruvi system from Alagar Kovil hills which is located 7 km from Kesampatti village. The Periya aruvi system starting from Alagar Malai hills runs through Kesampatti village feeding 25 tanks in a series. These tanks were normally used for single crop paddy cultivation and managed by Neerpaichies (traditional water manager). Until 1965, the water was used by these 25 tanks; the villagers enjoyed fishing rights in the tanks. The farmers took silt from the tanks to use as manure in their fields. However, a reservoir was constructed during 1965. This drastically affected the water inflow into the tanks fed by the Periya Aruvi system and other rights enjoyed by the villagers.

The reservoir was constructed by the Government based on the calculation about the excess water. However adequate water was not reaching the 25 tanks that were served by the stream prior to the construction of the reservoir. Ten out of the twenty-five tanks originally fed by the Periya Aruvi stream became dysfunctional due to the non-arrival of water. Mamathankulam is one of the tanks that was severely affected by the construction of the reservoir. There was no well in Kesampatti prior to the construction of the reservoir, however, there were 30 wells, out of which 15 wells have motor pumps sets. The water in the wells also is not available throughout the year and more pathetically most of the wells are dried up during the summer season. The water level of the wells around the tank has gone down which slowly kept away the farmers from their regular cultivation.

Impact of the Deterioration of Mamathankulam Tank

The following are the adverse impact of the deterioration of the Mamathankulam tank:

- The decline of the cultivation,
- Private cultivation in the Encroached areaof the tank
- Extinction of the herbal plants,
- Depletion of the groundwater level,
- Change in the cropping pattern from paddy to orchards and Migration

A Case on 'Migration'

Murali is a 32 years old working as an assistant cook in The Imperial Hotel, New Delhi. His forefathers were involved in agriculture. Their major livelihood was depended on the cultivation of their land. They were one of the ayacuts of Mamathankulam. His father decided not to involve his son in agriculture as it seemed not to be a promising profession. Murali told

'My father repeatedly insisted to study well as the family is decided to come out of agriculture. However, I am not able to study well; hence I decided to go for employment. When I was 20 years old, I found no regular income in my home town, hence decided to migrate to a major city. My relative was in New Delhi and directed me to come to New Delhi for employment. Though I was initially reluctant to go away from Kesampatti, I had no other options for earning. I went to New Delhi and started working in Andhra Bhavan. I worked in Andhra Bhavan for 5 years, and then I moved to the star hotel "The Imperial Hotel". I worked at the hotel for the last 5 years. Now I am 30 years old and wanted to marry. But my parents found it difficult to find a bride for me as the parents in my native area hesitate to marry off their daughter to a resident of New Delhi as the place is far away from the village.

I returned to my village during the COVID-19 lockdown. I was not paid for the last three months hence I wish to involve in agriculture with my forefathers land. But my father warned me that agriculture is not an income-generating business and our land became fallow land hence forced me to go back to New Delhi after the lockout lifted. If I can involve in agriculture, I could have married and lived happily in my village. But now I am forced to migrate to New Delhi though I prefer to stay in my village".

A Case on 'Extinction of the Herbal Plants'

Periyakathan aged around 65 years who is both a traditional medical practitioner and an agricultural farmer living in Kesampatti panchayat. He practiced traditional medicine for more than 40 years. He used to get all the medicinal herbs from the bund of the Mamathankulam. He recalled:

Since our village is located the downhill of the Alagar hill which is meant for the place for thousands of medicinal herbs. I used to collect several medicinal herbs from the bund of the Mamathankulam tank. The collected herbs would be dried up and made to powder. I used these powders for curing many chronic diseases such as diabetes, pressure, cancer, ulcer, menses issues etc. Despite the minimum amount I charged from the patients, I earned a good amount of money which enabled me to send my son to the medical college to pursue medical science. Many women also involved in the collection of the medicinal herbals grown on the bund of the tank. There was a time where there were no diabetic patients in our village. All these happened due to the availability of the herbs on the tank. However, the water level in the tank was declined due to many reasons which eventually made the herbal plants get extinct.

Now only a few herbal plants are still available on the bund, whereas many important plants are disappeared. The women who engaged in the herbal collection were forced to leave the collection which severely affected their livelihood. Now they became earning-less and I am travelling to Sivangangai district to collect the herbs. I am paying a considerable amount of money for travel. This is an additional financial burden. And I am afraid that if the same condition of the tank continues, the remaining herbs too will be extinct soon.

Conclusion and Recommendations

It was quite natural that villagers who had been earning their livelihood on tank-related work became increasingly reluctant to continue their works because their income depended on the performance of tank irrigation and they did not even have any income when the tank failed during a severe drought. All these impacts forced the young generations to move away from agriculture to non-agricultural employment. Since Kesampatti is a small village where attractive semi-skilled employment is not available, the youths are migrated to other cities of Tamil Nadu, the major cities of India such as New Delhi, Mumbai etc and even to other countries like the United Arab Emirates, Singapore etc. these migrants are one of those who were vehemently affected during the COVID-19 pandemic.

The new water users association can be formed with the facilitation of the civil societies for the Mamathankulam tank. The knowledge and the experience of the Neerkattis can be used by the association. The public consultation with all the stakeholders can be organized to collect the opinion of all the stakeholders.

The user association can work together to de-silt the tank. The de-silt will be used by the ayacuts as manure in their land. The association can be in-charge to inspect the encroachment. Therefore, the tank operation and management can be given to the water user associations and the local government can be empowered to promote sustainable tank management.

The emergence of private wells has reduced the participation of the private well owners in the collective action of the tank management. Hence the community well system can be promoted and the private well owners can be approached to follow the community well system.

The association can bring the experts to analyze the availability of water and based on the analysis, the experts can recommend crop diversification. The crop diversification will enhance the income of the farmers and reduce the water demand.

During the water scarcity time, the proportionate reduction in the cropping area depending on the availability of tank water could reduce discriminated water usage. When this system is followed, both the head-end and the tail-end ayacuts will reap equal benefits. Commercial fish culture and tree cultivation in the tank will mitigate the risks of crop failure in the low rainfall years. This supplements the household income of the poor of the panchayat.

Table: 2. List of Ethnomedicinal Plants in Kesambatti village, Eastern Ghats of South India.

The table shows the vernacular names, Binomial names, Family Names, Useful parts, disease healed, and method of preparation for the ethno medicinal plants that were collected.

S. No	Vernacular Name	Scientific Name	Family Name	Useful Parts	Method of Preparation	Disease cured
1	Thalaisuruli	Aristolochia indica var. magna Benth	Aristolochiaceae	Entire Plant	Juice	Snake bite, Blood purification
2	Sivanar Vembu	Indigofera aspalathoides var. uniflora (Buch.-Ham. exRoxb.)	Fabaceae	Leaf	Paste	Karaipan, Soriyasis, Skin disease
3	Nari Miratti	Crotalaria verrucosa L., Sp.	Fabaceae	Leaf	Juice	Skin disease, Kidney Disease, Stomach problems
4	Kaviz Thumbai	Trichodesma indicum var.	Boraginaceae	Leaf	Juice	Skin Disease
5	Nayuruvi	Achyranthes aspera var. australis (R.Br.) Domin, Biblioth. Bot.	Amaranthaceae	Whole Plant	Paste and Juice	Karaipan, Soriyasis, Skin disease,Kidney Disease, Stomach problems
6	Vettukaya Poondu	Tridax procumbens var. ovatifolia B.L.Rob. & Greenm.,	Asteraceae	Whole Plant	Juice	Lung Disease and Wounds
7	Veli Paruthi	Pergularia daemia subsp. garipensis (E.Mey.) Goyder, Kew Bull.	Apocynaceae	Whole Plant	Juice	Snake bites, Periods, Lung disease, Cold, Cough, Stomach problems
8	Sirukanpeelai	Aerva lanata (L.) Juss. ex Schult., Syst. Veg.,	Amaranthaceae	Leaf and Root	Juice	Kidney Stone, Eye Disease
9	Kattukkodi	Cocculus hirsutus (L.) W.Theob., Burmah [Mason], ed	Menispermaceae	Leaf and Stem	Juice	Body cooling, Gastric Problems,Pain Rejuvenator
10	Thannir vittan Kizangu	Asparagus racemosus Willd., Sp. Pl., ed.	Asparagaceae	Root	Juice	Sugar Problem

5 राजस्थान के डांग क्षेत्र में सामुदायिक संसाधनों का अतीत एवं वर्तमान

- Mr. Jagdish Gurjar and Mr. Samay Singh

डांग क्षेत्र

अरावली पहाड की एक श्रृखला जो पूर्वी राजस्थान के 03 जिले सवाई माधोपुर, करौली और धौलपुर के खंण्डार, सपोटरा, करौली, मण्डरायल, मासलपुर, बसेडी, धौलपुर और सरमथुरा, तहसीलो के बहुत से गांवो को जोड़ती है उसे डांग के नाम से जाना जाता है। यह पूरा क्षेत्र मध्यप्रदेश की सीमा से लगा हुआ है और अधिकतर हिस्से में चम्बल नदी दोनों प्रदेशों के बीच सीमा रेखा तय करती है। यह पूरा क्षेत्र पथरीला है और डांग स्थानीय भाषा में पत्थर को कहा जाता है। डांग क्षेत्र उत्तर में घौलपुर जिले से शुरू होता है और दक्षिण में करौली तथा सवाईमाधोपुर जिले तक फैला है। यह क्षेत्र शुष्क तथा अभावग्रस्थ क्षेत्र है जहां पानी, खेती की जमीन तथा पेड़ अच्छादित वन भूमि का बड़ा अभाव है।

डांग क्षेत्र के पूर्व और दक्षिण दिशा में चंबल नदी बहती है डांग के समीप ये नदी राजस्थान व मध्यप्रदेश कि सीमा को निर्धारित करती है। डांग व चंबल के बीच कि दूरी को बीहड कहते है । डांग के बीहड़ों को डकैतो/बागियों कि शरणस्थली भी कहा जाता है। बावजूद इन सभी प्राकृतिक एवं भौगौलिक विषमताओं के यहां के ग्रामीण सदियों से पशुपालन एवं कृषि कार्य से अपनी आजीविका चला रहे हैं। पशुपालन यहां एक मुख्य व्यवसाय सदा से रहा है। डांग के लोग दूध और धान को डांग की पहचान मानते रहे हैं।

स्वाभाविक है कि दूध और धान के लिए इन ग्रामीणों को स्थानीय प्राकृतिक संसाधनों पर ही निर्भर रहना पड़ता है। गांव के आस-पास का वन क्षेत्र सदियों से इन्हें चारा और ईंधन मुहैय्या करता है। इसके अलावा पानी जैसे महत्वपूर्ण संसाधन की पूर्ति हेतु इस शुष्क क्षेत्र के लोगों ने कई पारंपरिक तरीके विकसित किये। इस पूरे क्षेत्र में वर्षात के पानी को ताल और पोखर जैसे मानवनिर्मित ढांचों में इक्कट्ठा कर रोज की जरूरत के पानी की आपूर्ति की जाती है। इसके अलावा यहां मृदा का क्षरण बड़ी तेजी से होता है। पथरीली जगह होने की वजह से कम बारिश में भी मिट्टी आसानी से बह जाती है। पानी और मिट्टी के संरक्षण के लिए क्षेत्र में पैगारा जैसे पारंपरिक ढांचे बनाने की प्रथा है। पैगारा, पत्थरों से बना चैकडेम जैसा ढांचा है जो वर्षात में तेजी से बह जाने वाले पानी और गाद को पत्थरों के ऊपर रोककर खेत बनाता है।

समय बीतने के साथ-साथ ग्रामीणों की इन परंपराओं और आजीविका के संसाधनों में भी बड़ा बदलाव आया है। लोगों के अधिकार क्षेत्र में आने वाले सामुदायिक संसाधनों के प्रबंधन एवं उनकी उत्पादकता में आये बदलाव ने लोगों की आजीविका को भी बड़े स्तर पर बदला है। विषम परिस्थितियों में भी दूध और धान उत्पादक यह क्षेत्र अब पत्थरों की वैध और अवैध खदानों के लिए जाना जाता है। बड़े स्तर पर स्थानीय वनों और सामुदायिक चारागाहों का विघटन हुआ है। यही कारण है कि अब बड़ी संख्या में लोग या तो काम की तलाश में पलायन करते हैं और या खदानों में मजदूरी करते हैं। इस शोध में डांग क्षेत्र के करौली जिले के दो गांव- गोपालपुर एवं श्यामपुर के सामुदायिक संसाधनों का अध्ययन किया गया है। इस अघ्ययन के जरिये यह समझने का प्रयास किया गया कि डांग क्षेत्र के सामुदायिक संसाधनों के

विघटन के क्या-क्या करण रहे हैं और उनके विघटन से लोगों की आजीविका एवं जीवन में क्या प्रभाव पड़े। इस शोध अध्ययन में गुणात्मक शोध विधियां जैसे लक्ष्य समूह साक्षत्कार, केस स्टडी तथा साक्षत्कार के माध्यम से शोध क्षेत्र की सूचनायें एकत्रित की गई।

डांग के सामुदायिक संसाधन-

वर्तमान करौली जिले के अंतर्गत आने वाला डांग क्षेत्र हमेशा करौली रियासत के अधीन रहा। स्वतंत्रता से पूर्व करौली राज्य तमाम अन्य राज्यों की तरह ब्रिटिश छत्रछाया में ही रहा। 1906 में प्रकाशित पूर्वी राजपूताना गैजेटियर के हिसाब से जमीन और वन जैसे संसाधनों के प्रबंधन के लिए करौली रियासत की कभी भी स्पष्ट नीति नहीं रही। उन्नीसवीं शताब्दी के अंतिम 50 सालों में इस राज्य में काफी राजनैतिक अस्थिरता रही, यह भी एक वजह है जिसके कारण इन संसाधनों को लेकर कोई ठोस योजना नहीं बनी। डांग क्षेत्र उस समय भी करौली रियासत का सबसे पिछड़ा और दुर्गम क्षेत्र था। गैजेटियर के अनुसार सूखा, अकाल, पानी की भारी कमी और रियासत को दिया जाने वाले कर न चुका पाने के चलते तब भी बड़ी संख्या में लोग यहां से पलायन करते थे। अधिकतर लोग उस समय निकटवर्ती रियासत ग्वालियर की ओर पलायन करते थे[1]।

1895-96 में अंग्रेजी हूकूमत की मदद से पहली बार रियासत में भूमि बंदोबस्त का कार्य पूरा किया गया। सन् 1899 में रियासत ने अपने कर वसूली की पद्धति का पुर्नवलोकन किया और नई पद्धति शुरू की। इस पद्धति को 'लम्बरदार' पद्धति कहा गया जहां गांव से राजस्व वसूलने के लिए गांव स्तर पर 5 वर्ष के लिए मुखिया नियुक्त किया गया। लेकिन इस वर्ष डांग में अकाल और सूखा पड़ा जिससे कई गांव के गांव खाली हो गये थे ।

रियासत द्वारा बीसवी सदी में शुरू किये गये नये राजस्व व्यवस्था में गांवों को दो वर्गों में विभक्त किया गया। कम खेती वाले गांवों को 'खलसा' के गांव कहा गया और अधिक खेती वाले गांवों को गैर-खालसा गांव कहा गया। खालसा गांव में राजस्व वसूली के लिए मेहते की नियुक्ति की गई। मेहते की जिम्मेदारी थी कि वह किसानों के खेती का राजस्व व पशुपालकों से पशु चाराई का राजस्व वसूल कर राजा के खजाने में जमा कराये। इस कार्य को अंजाम देने के लिए मेहते को कुल एकत्रित राजस्व का एक छोटा हिस्सा मिलता था। हमारे फील्ड वर्क के दौरान लोगों ने बताया कि मेहते का उद्देश्य रहता था कि उसके गांव से अधिक से अधिक राजस्व एकत्रित हो, ताकि उसका मेहनताना भी अधिक हो। चूंकि डांग में पहले से कृषि अधिक लाभकारी नहीं रहा इसलिए मेहते पशुपालन से राजस्व में वृद्धि का यतन करता था। अधिक पशु-पालन हो, इसके लिए मेहते की देख-रेख में वनों से संबंधित पारंपरिक नियमों का कठोरता से पालन होता था।

बड़े गांव जहां खेती की जमीन अधिक होती थी और खेती से राजस्व भी अधिक आता था वहां पर जागीरदार की नियुक्ति रियासत द्वारा की जाती थी। जागीरदार को अधिकार था कि वह पूरे गांव का राजस्व खुद रख ले लेकिन इस एवज में उसे राजा के कुछ निश्चित सिपाहियों को वेतन तथा कुछ घोड़ों को

[1] https://www.indianculture.gov.in/gazettes/gazetteer-eastern-rajputana-comprising-native-state-bharatpur-dholpur-and-karnauli

चारा उपलब्ध करनावा होता था। अप्रैल 1949 में करौली रियासत पर भारत गणराज्य ने संम्प्रभू अधिकार स्थापित किया और यह रियासत राजस्थान प्रदेश का हिस्सा बना। आजादी के बाद स्वतंत्र भारत के वन एवं भूमि कानूनों ने मेहते और जागीरदार व्यवस्था का स्थान लिया।

आजादी के बाद बने और अंगीकार किये गये भूमि तथा वन कानूनों के हिसाब से डांग क्षेत्र में भी निजि भूमि के अलावा अधिकतर भूमि राजस्व तथा वन विभाग के नियंत्रण व स्वामित्व में है। हालांकि स्थानीय ग्रामीण अपने आस-पास के प्राकृतिक संसाधनों से जुड़े रीति-रिवाज एवं परंपराओं को कुछ हद तक जिंदा रखे हुए हैं। जाहिर है कि अब इस क्षेत्र में भी मेहते तथा जागीरदार की कोई भूमिका नहीं है, लेकिन वन, जल तथा भूमि संरक्षण से संबंधित तमाम प्रथायें एवं रीति-रिवाज आज भी प्रचलित हैं। आजादी के बाद क्षेत्र के सामुदायिक भूमि संसाधनों को तीन वर्गों में बांटा जा सकता है। ये वर्ग हैं- 'वन भूमि' जो वन विभाग के नियंत्रण में है, 'सिवाई चक भूमि' यह भी वन विभाग के नियंत्रण में है तथा 'चारागाह, इस भूमि के प्रबंधन की जिम्मेदारी ग्राम पंचायत की होती है।

सिवाई चक भूमि सरकार के नियंत्रण वाली भूमि है, हालांकि सरकारी दस्तावेजों में इस नाम से कोई भूमि वर्गीकृत नहीं है। यह शब्द जयपुर राज्य के रिकार्ड से लिया गया है, जहां निजि भूमि के अलावा सारी भूमि राजा के नाम लिख दी जाती थी। यहां सिवाई का संबंध राजा तथा चक का अर्थ भूमि के टुकड़े से है। आजादी के पूर्व इस गैर आबादी वाले भूमि पर राजा का नियंत्रण होता था। ग्राम श्यामपुर के भूमि संबंधी आंकड़ों से पता चलता है कि आजादी के बाद सिवाई चक भूमि को धीरे-धीरे वन भूमि में परिर्वतित कर भूमि को वन विभाग के सपुर्द किया गया।

वन एवं राजस्व कानूनों का निःसंदेह ग्रामीणों पर असर हुआ है, लेकिन हमारे फील्क वर्क के दौरान ग्रामीणों ने अपनी भावनाओं को व्यक्त करते हुए कहा कि सिवाई चक की जमीन उनके गांव के नियंत्रण में होती तो ज्यादा बेहतर प्रबंधन होता। हालांकि ग्रामीण आज भी तमाम प्रतिबंधों के बीच वन भूमि, सिवाई चक भूमि तथा चारागाह का उपयोग अपनी आजीविका के निर्वहन के लिए करते हैं। वन तथा सिवाई चक भूमि पर ग्रामीणों का नियंत्रण नहीं है इसलिए ग्रामीण इन दोनों प्रकार की भूमि के संरक्षण एवं संवद्र्वन हेतु कोई योजना बनाने में असमर्थ हैं। इसके आलवा अधिकतर लोगों को वन विभाग के प्रबंधन से संतुष्टि नहीं है।

सामुदायिक प्राकृतिक संसाधनों के प्रबंधन में आये परिर्वतनों तथा उनकी घटती उत्पादकता ने स्थानीय ग्रामीणों की आजीविका पर बड़ा असर डाला है। पशुपालक वर्ग को पशुओं के लिए चारा की पूर्ति करना कठिन होता जा रहा है। इसके अलावा अवैध अतिक्रमण तथा पत्थरों की खदानों ने भी आम ग्रामीणो का संसाधनों तक पहुंच तथा उनकी उत्पादकता को प्रभावित किया है।

अध्ययन क्षेत्र

पूर्वी राजस्थान के डांग क्षेत्र में किया गया यह शोध अध्ययन राजीव गांधी इंस्टीट्यूट फॉर कन्टमपरेरी स्टडीज द्वारा सामुदायिक संसाधनों पर किया जाने वाला एक बहु राज्यीय शोध परियोजना का हिस्सा है। डांग क्षेत्र की विशिष्ट भौगोलिक परिस्थितियों को देखते हुए और आज भी लोगों की इन संसाधनों पर निर्भरता के चलते करौली जिले के डांग क्षेत्र के दो गांव - श्यामपुर तथा गोपालपुर को इस अध्ययन के लिए चयनित किया गया। इस शोध में इंस्टीट्यूट को फील्ड डेटा इक्कट्ठा करने में स्थानीय संस्था - ग्राम गौरव संस्थान ने मदद की। शोध परियोना के लिए फील्ड डेटा कलेक्शन माह अगस्त से अक्टूबर 2020 तक किया गया। अध्ययन क्षेत्र के चयनित दो गांवों का विवरण निम्न है।

श्यामपुर एवं गोपालपुर

तकरीबन एक हजार जनसंख्या वाले श्यामपुर गांव पूर्वी राजस्थान के करौली जिला की मंण्डरायल तहसील में आता है। यह गांव जिला मुख्यालय से 30 किमी0 तथा प्रदेश की राजधानी जयपुर से 210 किमी दूर है। करौली डांग क्षेत्र का एक मुख्य जनपद है। ग्राम पंचायत-श्यामपुर, तहसील- मंण्डरायल, जिला-करौली, राजस्थान राज्य कि राजधानी जयपुर से 210 कि.मी. पूर्ण दिशा में डांग में स्थित है जिला मुख्यालय से इस गांव कि दूरी 30 कि.मी. है। अध्ययन क्षेत्र का दूसरा गांव गोपालपुर जिला मुख्यालय करौली से मात्र 5 किमी0 दक्षिण दिशा में स्थित है। 188 परिवारों से आबाद यह गांव करौली तहसील के अंतर्गत आता है।

	श्यामपुर	**गोपालपुर**
कुल जनसंख्या	996	972
कुल घरों की संख्या	190	188
पुरूष	440	529
महिला	386	443
14 साल से कम उम्र के बच्चों की संख्या	170	170
अनुसूचित जाति जनसंख्या	350	0
अनुसूचित जन जाति जनसंख्या	0	0
ओ0बी0सी0 जनसंख्या	630	957

190 परिवारों के श्यामपुर गांव में अनुसूचित जाति एवं अन्य पिछड़ा वर्ग के लोग निवास करते हैं। पिछड़ा वर्ग के परिवारों की सख्ंया सर्वाधिक है। फील्ड वर्क से पता चलता है कि अधिकत्तर भारतीय गांवों की तरह यहां भी लोग पशुपालन एवं कृषि के संयुक्त व्यवसाय से अपनी आजीविका चलाते हैं। अध्ययन क्षेत्र का दूसरा गांव गोपालपुर भी श्यामपुर जितना ही बड़ा है। हालांकि यहां मुख्य रूप से अन्य पिछड़ा वर्ग के निवासी वास करते हैं। दोनों गांवों के ग्रामीणों का व्यवसायिक विवरण निम्न तालिका में दर्ज है।

श्यामपुर तथा गोपालपुर का व्यावसायिक एवं आजीविका विवरण		
	श्यामपुर	गोपालपुर
कृषि/ खेती		
केवल कृषि पर आश्रित परिवार	15	30
केवल पशुधन पर निर्भर परिवार	10	3
कृषि और पशुधन के संयोजन पर निर्भर परिवार	165	110
बड़े कृषक परिवारों की संख्या	0	0
मध्यम किसान परिवारों की संख्या	72	10
लघु और सीमांत कृषक परिवारों की संख्या	95	175
खेत मजदूर परिवारों की संख्या	23	25
खेती और पशुधन के अलावा अन्य व्यवसाय पर निर्भर परिवारों की संख्या जो सामूहिक संसाधनों पर निर्भर है	0	0
उन परिवारों की संख्या जिनकी अपनी आजीविका हेतु सामूहिक संसाधनों पर नगण्य या कोई निर्भरता नहीं है	0	0
ऐसे परिवारों की संख्या जिनके सदस्य साल के कुछ महीनो मैं आजीविका के लिए शहरों के लिए पलायन करते हैं	5	80
ऐसे परिवार की संख्या जिनके सदस्य शहरों में आजीविका कमाने के लिए स्थायी रूप से चले गए	4	0
कोविड-19 की रोकथाम के लिया देशव्यापी तालाबंदी के बाद उन मजदूरों की संख्या जो गांव वापस आ गए	5	70
वापस आये प्रवासी कामगारों (रिवर्स माइग्रेट वर्कर) की संख्या जो अब गांव मैं ही रहना चाहते हैं	20	5

अधिकतर ग्रामीणों के पास छोटी या मझोली जौते हैं। गोपालपुर में लघु और सीमांत किसानों की संख्या श्यामपुर से ज्यादा है। श्यामपुर गांव की नाप कृषि भूमि के आंकणों के हिसाब से यहां कुल 748 बीघा यानि कि लगभग 467 एकड़ जमीन है जो 190 परिवारों में बंटी हुई है। इसमें से मात्र 150 बीघा जमीन ही सिंचित भूमि की श्रेणी में आती है। वहीं दूसरी ओर गोपालपुर की नाप कृषि भूमि 901 बीघा है जो शत प्रतिशत सिंचित है। दोनों गांवो में कुछ परिवार पूर्णतः भूमिहीन हैं या ना के बराबर भूमि है। ऐसे 23 परिवार श्यामपूर तथा 25 परिवार गोपालपुर में कृषि मजदूर हैं। इसके अलावा श्यामपुर गांव में 500 भैंस, 725 बकरियां 10 भेड़, 8 बकरियां तथा 10 सुअर अलग-गलग परिवारों ने पाले हैं। गोपालपुर में अपेक्षाकृत ज्यादा किस्म के मवेशी हैं। इस गांव में 150 गाय, 400 भैंस, 300 बकरी, 125 भेड़ तथा 5 ऊंट हैं।

कृषि और पशुपालन दोनों ही व्यवसाय सामुदायिक संसधनों पर निर्भर हैं। कई पीढ़ियों से स्थानीय ग्रामीण आस-पास के तालाब, झरने व जंगल से प्राप्त लकड़ी, घास एवं ईंधन की वजह से इन व्यवसाय को बखूबी कर रहे हैं। हालांकि कुछ दशकों में इन संसाधनों की गुणवत्ता, उत्पादक्ता एवं क्षेत्रफल में काफी कमी आयी है। प्राकृतिक संसाधनों में आई इन कमियों तथा अन्य तमाम सामाजिक एवं आर्थिक परिर्वतनों के कारण कुछ ग्रामीण अब अन्य व्यवसाय भी करने लगे हैं। मसलन कि कुछ परिवारों के सदस्यों स्थानीय पत्थरों के खानों में मजदूरी करने लगे हैं। अभी कुछ दशकों से गांव में पत्थरों का काम जानने वाले मजदूर देश और राज्य के अन्य भागों में भी पलायन करने लगे हैं। हमारे शोध में पता चला कि श्यामपुर गांव के 5 परिवार के सदस्य अस्थाई रूप से आजीविका की तलाश में हर वर्ष पलायन करते हैं। इसके अलावा गांव के 4 परिवार स्थाई रूप से पलायन कर चुके हैं। वहीं दूसरी ओर गोपालपुर में अपेक्षाकृत ज्यादा लोग आजीविका के लिए पलायान करते हैं। गोपालपुर के 80 परिवारों से कम से कम एक सदस्य साल में कुछ महीनों के लिए पलायान करता है। हालांकि इस गांव में स्थाई रूप से किसी ने भी पलायन नहीं किया है।

अस्थाई रूप से पलायन करने वाले श्यामपुर के सभी मजदूर कोविड के दौरान वापस घर आये। जबकि गोपालपुर के 80 प्रवासी मजदूरों में से 70 इस दौरान वापस अपने घर आये। श्यामपुर के सभी प्रवासित मजदूरों का कहना है कि यदि गांव में ही बेहतर आजीविका के साधन उपलब्ध हों तो वे पलायन नहीं करेंगे। गोपालपुर की तस्वीर इस मामले में थोड़ा भिन्न है। हमारे फील्ड वर्क के दौरान 70 प्रवासित मजदूरों मे से सिर्फ 5 मजदूरों ने ही गांव में वापस रहने की इच्छा जताई।

श्यामपुर के सामूहिक सांसाधन एंव उनकी वर्तमान स्थिति

स्थानीय समुदाय के अनुसार यहाँ का मुख्य व्यवसाय पशुपालन है इसके लिए वन सपंदा (पेड़, पौधे, घास, जड़ी बूटी) अति आवश्यक रहते है अरावली कि पहाडी पूर्व व पश्चिम से आने वाले मानसून को नियमित करती है इसलिए डांग का समाज संपूर्ण जैविक विविधता व वन संपदा का संरक्षण अपने संस्कारो में सजोये रहा है। और यहां के समाज की सांस्कृतिक व्यवस्था यहाँ के पेड़ो की रक्षा, सुरक्षा में संस्कारित रहा है जो (देवबनी, रक्तबनी, काकड़बनी) धराडी, पीपल, गुलर, बड़, जाल, नीम यहाँ के पूजनीय पेड रहे है। गांव के जंगल में कुचक झरने बहते है वहां लोग अपने देवी देवताओ की पूजा अर्चना करने गांव में खुशहाली रहे जिसकी कामना करते है आसाढ़ में इन झरनो के किनारे देवताओ को याद करके बरसात

शीघ्र हो इसकी कामना करते है पारम्परिक वनो कि उपयोगिता कि हकदारी नई पीड़ी को बुजुर्गो से ज्ञान होता है।

श्यामपुर के ग्रामीणों की आजीविका के सम्वर्धन हेतु 242 बीघा की चारागाह जमीन, 2780 बीघा की वन भूमि तथा 732 बीघा की सिवाई चक जमीन उपलब्ध है। सिवाई चक जमीन अधिकांशतः गांव की सीमा से लगी या गांव के अंदर ही उपलब्ध सामुहिक उपयोग में लायी जाने वाली जमीन होती है। इस श्रेणी की जमीन का प्रबन्धन का अधिकार स्थानीय ग्राम पंचायत के पास होता है। श्यामपुर में उपलब्ध मुख्य सामुहिक संसाधनों को विवरण निम्न तालिका में दिया गया है।

श्यामपुर के मुख्य सामुदायिक संसाधनों का विवरण

सी0पी0आर0 का प्रकार	लाभांश	प्रबंधनकर्ता	स्थिति
चारागाह जमीन **अनुमानित क्षेत्रफल-** 242 बीघा **कानूनी मालिक-** ग्राम पंचायत **वास्तविक उपयोगकर्ता-** गांव के पशु पालक व गांव	पालतु जानवरो को चारा पानी एवं जलाने को सुखी लकड़ी एवं घर बनाने एवं खेतो की मेड बंदी करने के लिए पत्थर उपलबध छोटे बडे पेडो से गोंद,, छाया एवं जानवरो के लिए हरि पत्तियां उपलब्ध होती है ।	ग्राम पंचायत व गांव के लोग	अनुमानित 80 प्रतिशत क्षेत्र अतिक्रमित है और बाकी का क्षेत्र भी क्षमता से कम उतपादन देता है।
वन विभाग (जंगलात) **अनुमानित क्षेत्रफल-** 2780 बीघा **कानूनी मालिक-** वन विभाग **वास्तविक उपयोगकर्ता-** गांव के पशु पालक व गांव	पालतु जानवरो को चारा पानी एवं जंगली जानवर का संरक्षण	वन विभाग	अनुमानित 60 से 70 प्रतिशत क्षेत्र अतिक्रमित है और बाकी का क्षेत्र भी क्षमता से कम उतपादन देता है।
सिवाई चक जमीन **अनुमानित क्षेत्रफल-** 732 बीघा **क़ानूनी मालिक-** ग्राम पंचायत **वास्तविक उपयोगकर्ता-** गांव के पशु पालक व गांव	पालतु जानवरो को चारा पानी एवं जलाने को सुखी लकड़ी एवं घर बनाने एवं खेतो की मेड बंदी करने के लिए पत्थर उपलबध छोटे बडे पेडो से गोंद, छाया एवं जानवरो के लिए हरी पत्तियां उपलब्ध होती है ।	ग्राम पंचायत व गांव के लोग	अनुमानित 80 प्रतिशत क्षेत्र अतिक्रमित है और बाकी का क्षेत्र भी क्षमता से कम उतपादन देता है।
ताल **अनुमानित क्षेत्रफल-** 30.35 बीघा **कानूनी मालिक-** ग्राम पंचायत एवं गांव तथा वन विभाग	जंगली एवं पालतु जानवरो को पीने का पानी एवं खेती के लिए भी पानी काम में लेते है एवं आस.पास के क्षेत्र हरियाली रहती है	वन विभाग व ग्राम पंचायत एवं गांव	अनुमानित 30 प्रतिशत क्षेत्र अतिक्रमित है और बाकी के ताल में भी गाद भरने की वजह से पानी कम

वास्तविक उपयोगकर्ता- गांव के पशु पालक व गांव			रूकता है।
एनिकट **अनुमानित क्षेत्रफल-** 15.20 बीघा **कानूनी मालिक-** वन विभाग **वास्तविक उपयोगकर्ता-** गांव के पशु पालक व गांव	जंगली एवं पालतु जानवरो को चारे पानी की जरूरत मे सहायक	वन विभाग	ठीक स्थिति में है

गांव के सामुदायिक संसाधन जिसे स्थानीय स्तर पर सामलात देह कहा जाता है में धौक, बरबरा, कालाखेर, सफेद खैरी, रौंज, थौर, बेर, जाल, गनगेर, जड़खेर, बास पेड़ सहित धामन, सेरन, पड़वा, गवान, बरू घास व अन्य वनस्पतियो में पवार, ऊंगा, आधा शिशी, धतुरा, आॅक, गोखरू, कटेली, लाल चमोली, दोब आदि उगते हैं। इन सभी वनस्पतियों का स्थानीय स्तर पर किसी न किसी रूप में उपयोग होता है। वन्य जीवों में यहां रीछ, बाघ, चीता, जरख, बघेरा, बिल्ली, सुअर, रोज, खरगोश, निलगाय सांभर, हिरण, गीदड, सियार आदि पाये जाते हैं। कीडो में साॅप, गोर्रा, पाटागोई, चिती, दुगई (चाकलेन) गिरगिट, बिंछु, अजगर, गदेवा आदि मिलते हैं।

श्यामपुर कॉमन प्रोपटी रिसोर्स में दिनो दिन कई प्रकार के पेड़ो में कमी आ रही है यहाँ के बुजुर्गो से बात करने पर पता लगा है कि सरयाली, शेरण, आन्दण जैसा घास अपना अस्तित्व खो चुके है यहाँ के जंगलो में आये दिन बाघ से भेट व दहाड कि सुनाई नित होती थी वह अब कभी-कभी ही हो रही है। ये माना जा रहा है अब गांव के वनस्थानों पर सभी प्रकार कि संपदाओ में कमी आई है ।

स्थानीय परिस्थितीकी तंत्र को स्थानीय ग्रामीणो से समझने कि जब कोशिश कि तो पता लगता है मानवीय दखल व औपचारिक कानून व्यवस्था का दखल नही हो तो यहाँ के वनो में कमी नही आती यहाँ पशुओ के द्वारा अपने भरण पोषण के साथ-साथ पौधो के पेड़ो के घास के बीज का एक जगह से दुसरी जगह स्थानांन्तरण करते है पशु पक्षियो का वन संपदा से खाद्यान आपूर्ति है और पक्षियो कि बीट व पशुओ के गोबर से वन संपदा को खाद मिलता है ।

श्यामपुर गांव अपने प्राकृतिक संसाधनों के अति एवं अवैज्ञानिक दोहन के अलावा लगातार घटते क्षेत्रफल से भी जूझ रहा है। सामुदायिक संसाधनों के क्षेत्रफल में कमी मुख्यरूप से अतिक्रमण एवं सिवायचक जमीन का वन भूमि में तब्दील होने से है। गांव के संबंधित राजस्व दस्तावेजो में दर्ज सिवाईचक जमीन विक्रम संवत् 2015 (1958) में 3534.11 बीघा व चरागाह भूमि 265.03 बीघा थी। यह भूमि विक्रम संवत 2075-76 (2019) में घटकर क्रमशः 732.08 बीघा और 242.13 बीघा रह गयी है। इस दौरान सरकार ने सिवाईचक और चारागाह भूमि का एक बड़ा हिस्सा वन भूमि में तब्दील कर दिया।

जमीन का प्रकार	जमीन का रकबा विक्रम संवत् 2015 (बीघा में)	जमीन का रकबा विक्रम संवत् 2034-37 (बीघा में)	जमीन का रकबा विक्रम संवत् 2055-58 (बीघा में)	जमीन का रकबा विक्रम संवत् 2075-76
	सन 1958			सन 2019
निजी खातेदारी जमीन	477.12	703	748.03	748.03
चरागाह	265.03	242.13	242.13	242.13
सिवायचक	3534.11	884.13	732.08	732.08
वनभूमि	0	2691.17	2801.39	2780.10
सड़क	21.07	21.07	21.07	42.36
कुल क्षेत्रफल	**4297.33**	**4541.5**	**4544.7**	**4544.7**

स्रोत- राजस्व विभाग, तहसील- मण्डरायल

स्थानीय ग्रामीणों के नियंत्रण वाली भूमि को वन खातो में तब्दील करने की वजह से अब यहाँ मवेशी चराना या ग्रामीणो के अन्य उपयोग पर पाबंदी है। पिछले कई दशकों में वन विभाग द्वारा अधिग्रहित भूमि पर कई परियोनाओं के तहत् वन तैयार करने की कोशिस की लेकिन यह योजना आज तक सफल नहीं हो पायी। इसके अलावा, ग्रामीण समुदाय दबंग व्यक्तियों या व्यक्तियों के गिरोह द्वारा सामुदायिक भमि पर अतिक्रमण से भी परेशान है। गांव के अधिकतर संसाधनों के बड़े हिस्से पर किसी न किसी व्यक्ति या समूह ने अतिक्रमण किया हुआ है।

गोपालपुर के सामूहिक सांसाधन एंव उनकी वर्तमान स्थिति

गोपालपुर में मुख्यतः वन भूमि, चारागाह तथा सिवाईचक सामुदायिक संसाधन प्रमुख हैं। इसके अलावा चारागाह भूमि में एक ताल यानि बड़ी झील भी बनायी गयी है, जो गांव की जल आपूर्ति का मुख्य श्रोत है। चारागाह तथा सिवाईचक भूमि मिलाकर 350 बीघा से भी अधिक है। इस गांव में वन भूमि अपेक्षाकृत कम है।

इन सामुदायिक संसाधनांे में बबूल, नीम, खेजड़ा, पीपल, रोंज, शीशम एवं पहाडी में धौ के वृक्ष मुख्य रूप से पाये जाते हैं। ग्रामीणों का कहना है कि कुछ दशकों पूर्व तक यह पूरा क्षेत्र इन वनस्पतियों से घना जंगल था जो अब काफी ह्रास हो चुका है। इन पूर्ववर्ती घने जंगलों में जंगली जानवरो जैसे सियार, भालू, लोमड़ी, नीलगाय, बघेरा, जंगली सूअर, हिरण, आदि विचरण करते रहते थे। इसके अलावा छोटे-मोटे कीड़े-मकौडे जैसे सांप, गौएरा, नेवला आदि भी पाये जाते हैं।

गोपालपुर के मुख्य सामुदायिक संसाधनों का विवरण			
सी0पी0आर0 का प्रकार	**लाभांश**	**प्रबन्धनकर्ता**	**स्थिति**
चारागाह जमीन **अनुमानित क्षेत्रफल**- 204 बीघा **कानूनी मालिक-** ग्राम पंचायत **वास्तविक उपयोगकर्ता-** गांव के पशु पालक व गांव	पालतु जानवरो को चारा पानी एवं जलाने को सुखी लकड़ी एवं पर्यावरण	ग्राम पंचायत व गांव के लोग	कृषि भूमि से सटी सीमा पर अतिक्रमण
वन विभाग (जंगलात) **अनुमानित क्षेत्रफल-** 85 बीघा **कानूनी मालिक-** वन विभाग **वास्तविक उपयोगकर्ता-** गांव के पशु पालक व गांव	पालतु जानवरो को चारा पानी एवं जलाने को सुखी लकड़ी घर बनाने हेतु पत्थरए जंगली जानवर भी विचरन करते है एवं पर्यावरण	वन विभाग	कृषि भूमि से सटी सीमा पर अतिक्रमण
सिवाई चक जमीन **अनुमानित क्षेत्रफल-** 150 बीघा **कानूनी मालिक-** ग्राम पंचायत **वास्तविक उपयोगकर्ता-** गांव के पशु पालक व गांव	पालतु जानवरो को चारा पानी एवं जलाने को सुखी लकड़ी घर बनाने हेतु पत्थरए जंगली जानवर भी विचरन करते है एवं पर्यावरण	ग्राम पंचायत व गांव के लोग	अधिकांश भाग में अतिक्रमण
ताल **अनुमानित क्षेत्रफल-** 5-6 बीघा (चरागाह में) **कानूनी मालिक-** ग्राम पंचायत एवं गांव **वास्तविक उपयोगकर्ता-** गांव के पशु पालक व गांव	पालतु जानवरो को पानी एवं बालक बालिकाओ को स्नान के माध्यम से तैरना सिखना ।	ग्राम पंचायत व गांव के लोग	गहराई कम है
एनिकट **अनुमानित क्षेत्रफल-** 4.5 बीघा (जंगलात में) **कानूनी मालिक-** वन विभाग **वास्तविक उपयोगकर्ता-** गांव के पशु पालक व गांव	जंगली एवं पालतु जानवरो को चारे पानी की जरूरत मे सहायक	वन विभाग	ठीक है

जब ये जंगल पेड़ों से अच्छादित थे इन जंगलो में स्थानीय समुदाय को अपने मवेशीयो को चारा चराने के लिए जगह उपलब्ध थी एवं जलाऊ लकड़ी एवं अन्य घरेलू काम जैसे चार पाई बनाना, हल बनाना तथा घर बनाने के लिए लकड़ी जंगल से प्राप्त कर लिया करते थे। सभी गोपालक जंगल में आपसी भाईचारे से बैठकर गाय, भैस, बकरी चराते एवं अपने वनो के हित में चर्चा करते एवं वनो कि रक्षा करने का जनमानस में भाव पैदा करते रहते थे ।

घना जंगल होने के कारण अच्छी बरसात होती थी जिससे कि लोगो कि खेती बाड़ी में नमी बनी रहती थी जिससे खेती-बाड़ी भी अच्छी होती थी। स्थानीय साधनो के संरक्षण में जंगली जानवरो की महत्वपूर्ण भूमिका रहती थी। लोग जंगल में विचरण करने वाले खूंखार जानवरों की डर से रात को गलत तरीके से या चोरी-छिपे जंगलों को नुकसान नहीं पहुंचाते थे।

आजादी से पूर्व तक गोपालपुर गांव में भी स्थानीय संसाधनों जैसे कृषि भूमि, वन तथा चारागाह पर राजा का अधिकार होता था। ग्रमीणों को इन सांसाधनों के उपयोग करने पर राजा को कर देना होता था। इस गांव में भी मेहते की देख-रेख में ही सामुहिक संसाधनों का प्रबंन्धन होता है। सामुदायिक संसाधनों के संरक्षण एवं संवर्धन हेतु प्रचलित स्थानीय नियमों की निगरानी मेहते की देख-रेख में होता था। आजादी के बाद ये सभी संसाधन राज्य सरकार के अधीन हो गये। लोगों को उनके उपयोग पर कर देने से भी मुक्ति मिली लेकिन आगामी कुछ दशकों से इन संसाधनों का तेजी से ह्रास हुआ। जहां पूर्व में ग्रामीण संसाधनों के प्रबंन्धन में शामिल थे, आजादी के बाद यह जिम्मेदारी खुद सरकार ने ले ली। फलस्वरूप स्थानीय ग्रामीणों को जंगल के उपयोग पर तमाम प्रकार की बंदिशें भी लग गयी।

सामुदायिक संसाधनों से संबंधित नियमों एवं प्रबंधन में हुए बदलाव तथा तमाम अन्य सामाजिक एवं आर्थिक कारणों के चलते अब ग्रामीणों का वनों व अन्य संसाधनों के प्रति सामूहिक मोह लगभग खत्म हो गया। इसी का फायदा उठाते हुए कुछ लोगों ने जंगलों को काटना, अवैध रूप से खनन करना और खेती के लिए भूमि अतिक्रमण करना शुरू कर दिया। सामुदायिक संसाधनों के इस व्यक्तिगत एवं मनमाने दोहन का सीधा असर स्थानीय पर्यावरण एवं आम लोगों की आजीविका पर पड़ा है।

सामुदायिक संसाधनों का प्रबंधन

आजादी से पूर्व डांग क्षेत्र राजाओं के नियंत्रण में रहा है। हर गांव में पशुपालकों और किसानों से कर वसूलने हेतु राजाओं ने महेते (पटेल) नियुक्त किये हुए थे। महेते राजा के प्रतिनिधि के तौर पर जोताओं और पशुपालकों से कर इकट्ठा कर राजा के खजाने में जमा करवाते थे। महेते को सम्मान के तौर पर उसी राशि में से इस कार्य हेतु एक छोटा हिस्सा मिलता था।

गांव के आस-पास अच्छे जंगल होने पर पशुपालक पशु रखते, पशुओ को अच्छा चारा मिलने कि अवस्था में महेते के द्वारा निर्धारित पशुचराई देते। श्यामपुर गांव के श्री बाबुलाजी, रामद्यालजी, छोटेलालजी सहित बहुत से लोगो ने बताया कि गांव के जंगलो के किसी भी प्रकार का अवैद्य नुकसान ना हो इसके लिए गांव के मेहता कि देखरेख में बहुत से कानुन बने हुए थे जिसके चलते ग्रामीण बहुत से वृक्षो को सदाबहार रखने के लिए काटने कि बजाय पूजा करते थे। पशुपालक या गांव का अन्य व्यक्ति किसी वनस्पति को अनावश्यक नुकसान न पहुंचाये इस हेतु तमाम प्रकार के नियम कानून प्रचलित थे। पशुपाकों को जंगल में पशुचाराने के लिए जंगलों का वर्गीकरण किया हुआ था।

असाढ में बरसात शुरू होते ही ऐसे जंगल में गाय, भैस, बकरी को चराना उचित माना गया यहाँ झाडीनुमा पुराने धौक जैसे पेड अधिक मात्रा में हों। अधिकांशतः इन पेड़ों के आस-पास हरी दुब भी खुब उगती है, जो पशुओं के लिए घौक की पत्तियों के अलावा उचित चारा होता है। ऐसे इलाकों में पशुओं को बरसात के तीन महीने गुजारने आवश्यक होता था। बरसात के तीन माह गुजर जाने के बाद पशुओं को उस क्षेत्र में चराया जाता था जहां उगने वाली घास की उम्र कम होती और उनके बीज तुरंत पकने लगते हों। शरद ऋतु में ऐसे जंगलों में पशुओं को चराने का रिवाज था जहां विशाल पेड़ अधिक मात्रा में होते थे। इन पेड़ों में पतझड़ के कारण इन दिनों उनकी पत्तियां जमीन पर गिरी होती, जिन्हें पशु आसानी से चर लेते हैं। इन्हीं जंगलों से ग्रामीण ग्रीष्म काल के लिए सुखी पत्तियों को चारा के लिए संग्रहित कर घर लाते हैं। गरमियों के दिनों में मवेशी अधिकतर झरनों के इर्दगिर्द खुले जंगल में चरने जाती हैं और सर्दियों के दौरान संग्रहित चारा घर पर खाती हैं।

ग्रामीणों में सामुदायिक संसाधनों के उपयोग हेतु तय नियमों के अलावा, पारंपरिक व्यवस्था में गांव से बाहर के व्यक्ति या समूह द्वारा अनाधिकृत उपयोग हेतु भी विस्तृत नियम व व्यवस्थायें थी। यदि किसी अनाधिकृत व्यक्ति, समूह या गांव उनके अधिकार क्षेत्र के अंतर्गत आने वाले संसाधनों का उपयोग करता तो सम्पूर्ण गांव उन पर दबाव डालकार नुकसान की भरपाई या हर्जाना भरने को मजबूर करता था।

ग्रामीणो ने बताया कि उनके और प्रकृति के बीच गहरे संबंध को उनके संस्कारों में झलकता है। ऐसे बहुत से अलिखित प्रकृति संरक्षण के नियम थे जो एक पीढ़ी से दूसरी पीढ़ि तक पहुंचते थे। इन सभी नियमों का उनके जीवन, आस्था एवं आजीविका से गहरा संबंध था। उदाहरण के लिए बच्चों को सिखाया जाता था कि चीटियों, कबूतर, चिड़िया, गिलहरी, गिरगिट, मोर, तोता, आदि को चुग्गा डालना पुण्य का कार्य है। इसके अलावा जिन पेड़ो कि कटाई छटाई से वृध्दि रूक जाती हो उनकी कटाई छटाई नहीं करने हेतु सख्त नियम थे। पानी के श्रोतो को साफ रखने के लिए झरनो, तालाबों और अन्य श्रोतों के पास जूते-चप्पल ले जाना वर्जित था।

वन संरक्षण संबंधी कानूनों के आने के बाद धीरे-धीरे इन पारंपरिक सामुदायिक संसाधनों के प्रबंधन की व्यवस्था में शिथिलता आने लगी। वनों पर वन विभाग का अधिकार होने से ग्रामीणों को वहां पूर्व की भांति मवेशी चराने, घास व लकड़ी इत्यादि कक्ट्ठा करने पर प्रतिबंध लग गया। इसके चलते ग्रामीणों ने भी उन वनों के संरक्षण और संवद्र्वन पर ध्यान नहीं दिया। नये नियमों व कानूनों के तहत् वन संरक्षण एवं उनके

उपयोग में स्थानीय ग्रामीणों का कोई दखल नहीं है। इस कारण भी लोगों का जंगलों के प्रति मोह भंग हुआ है। पर्यावरण संरक्षण से संबंधित उपरोक्त छोटे-छोटे पारंपरिक नियमों की आधुनिक वन कानूनों या प्राकृतिक संसाधनों के संरक्षण संबंधी योजनाओं में अनदेखी की गई। ग्रामीणों का भी संसाधनों पर अधिकार सीमित होने लगा है, इसलिए इन पारंपरिक नियमों की वे भी ज्यादा परवाह नहीं करते हैं।

सार संक्षेप

वन, कृषि भूमि और पानी के अभाव के बावजूद पढ़ियों से डांग क्षेत्र के लोग कृषि और पशुपालन से अपनी आजीविका चला रहे हैं। संसाधनों के इसी अभाव के चलते उन्होंने प्रकृति से प्राप्त संसाधनों का उचित उपयोग करने की कला विकसित की है। पथरीला और शुष्क क्षेत्र होने के बावजूद यहां के लोग धान एवं दूध की पैदावार के लिए जाने जाते हैं। पत्थरों के उपर वर्षा जल और बहती गाद को इक्टठा कर कुछ ही सालों में लहलहाते खेत तैयार करने की पारांपरिक पैगारा पद्वति डांग क्षेत्र के लोगों की जीवटता को दर्शाता है।

खेती के अलावा पशुपालन इस क्षेत्र का मुख्य व्यवसाय रहा है। इस व्यवसाय के लिए पीढ़ियों से लोग स्थानीय वनों, झरनों, तालाबों और चारागाहों पर निर्भर रहे हैं। इन वनों के उपयोग से संबंधित तमाम अलिखित नियमों की श्रृंखला दर्शाती है कि वनों के स्थायित्व और आर्थिक लाभ के बीच का तालमेल यह समज सदियों से बनाता आ रहा है। इन स्थानीय नियमों तथा प्रबंधन के तरीकों के फलस्वरूप ही इस विकट तथा सूखे क्षेत्र में पशुपालन जैसा व्यवसाय फला-फूला है।

इस शोध अध्ययन के दौरान ग्रामीणों ने माना कि पिछले कुछ दशकों में उनके आस-पास के वनों व पेड़-पौधों का बड़ी तेजी से ह्रास हुआ है। वनों के इस विघटन का सीधा असर उनके पारंपरिक आजीविका स्रोत पशुपालन और कृषि पर पड़ा है। पशुपालन इस क्षेत्र में इतना कठिन हो गया है कि कई गांवों के पशुपालकों को अब साल के कुछ दिन पशुओं सहित पलायन करना पड़ता है। वनों के विघटन से चारे की बड़ी समस्या हो गई है। इसके साथ ही जमीन में नमी कम होने से पानी की समस्या भी दिन ब दिन बढ़ती जा रही है।

ग्रामीण मानते हैं कि संसाधनों के स्वामित्व तथा उसके प्रबंधन में हुए संस्थागत बदलावों के अलावा स्थानीय स्तर पर लोगों के व्यवहार और जरूरतों में आये बदलावों के कारण भी वनों और पर्यावरण का ह्रास हुआ है। एक और जहां वन क्षेत्र में सरकारी प्रतिबंधों ने लोगों का वनों से मोह भंग किया वहीं दूसरी और भातिकवादी दौड़ में दबंगों ने सामुदायिक संसाधनों पर अतिक्रमण करना भी शुरू किया। क्षेत्र में मिलने वाले कीमती पत्थरों की खानों ने हाल के कुछ दशकों में अतिक्रमण और अवैध खनन को और अधिक प्रोत्साहित किया।

वनों सहित अन्य सामुदायिक संसाधनों का विघटन न तो पर्यावरण और ना ही स्थानीय लोगों के लिए हित में है। जरूरत है कि इन संसाधनों का बेहतर संरक्षण और उपयोग किया जाय। तमाम कारणों की वजह से आज अधिकतर सामुदायिक संसाधनों का व्यक्तिगत उपयोग हो रहा है। जब तक इन संसाधनों पर

सामुदायिक अधिकार स्थापित नहीं किये जाते हैं, तब तक संसाधनों के अवैज्ञानिक दोहन पर रोक लगाना भी मुश्किल है। लगातार विघटित हो रहे संसाधनों से स्पष्ट है कि मात्र संस्थागत नियमों से वनों के विदोहन पर रोक नहीं लगाई जा सकती है। अतः जरूरी है कि संस्थागत नियम-कानून स्थानीय पारंपरिक व्यवस्थाओं और ज्ञान से भी सीख ले।

Revival of CPRs: Answer to Livelihood Crisis and Environmental Degradation

Jeet Singh, Fellow, RGICS

The environment conservationists have been arguing that the people dependent on forest and other natural resourcese causes destruction of biodiversity[1]. This destruction is termed as 'biotic interference'. The term 'biotic interference' is used to describe the assaults made on the forest by local communities seeking fuel, fodder, other forest produce and using forest land for agriculture [2]. From the time of British colonial rule an elaborate policy framework and institutional mechanism enforces this on the daily basis. However, this idea of alienating people from natural resources to protect the environment has rapidly evolved in the last few decades. The introduction of laws such as The National Forest Policy, 1988, The Panchayat (Extension to Scheduled Area) Act, 1996 (PESA), The Biological Diversity Act, 1992 and the Scheduled Tribe and other Forest Dwellers (Recognition of Forest Rights) Act, 2006 (FRA) are few attempts to recognize symbiotic relationship between human and nature.

The United Nations Human Rights Council on 17th March 2021 adopted a resolution that calls for a human right based approach to conserving and restoring natural spaces[3]. The resolution of the council recognizes that the discrimination against people who are directly dependent on products of forests, rivers, lakes, wetlands and oceans for their food, fuel and medicine is one of the major causes of degradation and loss of biodiversity. This conclusion of the UNHRC has direct connection with mass distress migration from rural areas after the degradation of their native natural wealth. In our country one set of laws and policies (such as The Indian Forest Act, 1927) pursue the classic conservationist approach. However, relatively new laws mentioned above support the idea of the newly adopted UNHRC's resolution. The tension around ownership and usage of Common Property Resources in India is the localized manifestation of the above mentioned global and national debate

on approaches and methods to regenerate degraded natural resources. In the backdrop of macro policy debates on regeneration of natural wealth and observations/evidences drawn from our field study, here we attempts to highlight factors responsible for CPR degradation and suggest possible solutions.

Factors Responsible for Degradation of CPRs

This study of the Common Property Resources tried to bring together case studies from different states and to find factors behind degradation of CPRs. A lot of studies have been done on significance and extent of CPR degradation. This study takes account of all those academic works and attempts to find causes of CPR degradation to suggest an actionable framework for environment regeneration and sustainable livelihood. Major factors identified by responsible for CPR degradation are as follows:

1. **Fall of Traditional Institutions:** CPRs are embedded in traditions and culture. Therefore, every indigenous community has one or more traditional systems of CPR governance. Though, informal and unwritten, the traditional institutions played an important role in governing CPR for centuries. The role of these institutions was to ensure sustainable use of resources and benefit sharing. Often, these institutions had strong community participation leading to effective planning, implementation and monitoring. Institutions in Bodoland, Uttarakhand and Rajasthan reveal that the focus of these traditional institutions was on regeneration of CPR for better yield. Our study reveals that wherever such institutions were available either they vanished or diluted by other newly emerged parallel institutions. This change in CPR governance led to loss of community grip on management of natural resources on which they were dependent.

2. **Emergence of Bureaucratic Institutions:** From the nineteenth century onward various modern institutions were created with intention to bring effectiveness in governance. Similar thing happened in the sector of governance of natural resources. The first institutional mechanism in this sector was the constitution of the forest department. These institutions brought in professionals and scientific knowledge but ignored indigenous people and their traditional knowledge. The

absence of locals and their knowledge in the CPR management did not work effectively in protecting and regenerating natural wealth. In fact the institutional focus moved from regeneration to protection. This approach further alienated people from natural capital. While these institutions had strong bureaucratic structure and rules, they always remained under staffed and underfunded.

3. **Community Fragmentation:** The character of community in rural areas as a unit has tremendously changed over the period. The social, cultural, economic and political transition of rural communities due to internal and external factors has also changed mutual human relations and relation with nature and material. In the case of CPRs the direct dependency of people on these resources is now highly uneven. Therefore, the common responsibility of the community to conserve and regenerate these resources is also perishing. Rural communities were able to sustain their traditional institutions to govern CPR for a long time because social, cultural and spiritual values were attached to these natural resources. The diversification of rural aspirations and livelihood options and commoditization of natural resources have weakened the entire value system attached to CPRs.

4. **The expansion of the cash based market:** The role of cash in rural subsistence economy was very limited. The material gain in the form of fuel, fodder, timber, herbs, NTFPs, water, fish, vegetables, fruits, nuts, grazing, recreation services etc from CPRs to run life and livelihood had a central role in rural economy. However, over the time the entry of a cash based market economy in rural areas changed the pattern of subsistence economy. The obvious attraction towards sophisticated market based economy significantly changed the aspirations of rural youth. In the case of Uttarakhand, we have observed that inability of CPRs to meet changing aspirations of local youth led to vanishing of local livelihood and high out migration for non farm livelihood.

5. **Lack of trust between owner and user of CPRs:** Today most of the CPRs are owned by government agencies especially the state forest department. State agencies are empowered to govern these resources. In most cases the governance objective of the forest department

to protect natural resources by decreasing biotic interference. On the other hand a large rural population is still dependent on these resources for their life and livelihood. To meet their daily demand, people have been using most of CPRs de-facto. In many cases as documented from Odisha, Tamilnadu and Uttarakhand institutions responsible for governance have gradually curtailed traditional CPR rights of communities. So, there is a continuous tension between de-jure owners and de-facto users of CPR on the issue of conservation.

6. **Encroachment:** People's voice in planning and management of CPR has been reduced significantly. Therefore, there is no local control and monitoring to check encroachment on public resources. Sometimes powerful people in villages encroach in CPR land for higher gain. But, it is also common amongst poor people. People dependent on livestock often camps in the common property and stay there for a longer time.

7. **Diversion of Land for Development Projects:** Diversion of forest land for developmental projects such as mining, hydro power projects, roads, railways, industries etc is very common. Many such projects take away CPR land. The decrease in the size of CPR in India is largely because of developmental projects and encroachment.

8. **Ownership:** The ownership right has been a crucial issue ever since the British government started regulating land other than agriculture in the second half of the nineteenth century. In many states people were given ownership rights of some CPRs, but over the years these rights have been diluted. However, people continue to use these resources without any ownership. In some cases especially in and around reserve forests, people's rights are notified. But, these rights have not been revised with increase in local population. Moreover, the ownership control of the state forest department often undermines the role of people in protecting and regenerating natural resources.

9. **No innovation in CPR based Livelihood:** The traditional idea of CPR is to support life of locals and rural subsistence economy. Continue discussing CPRs within that framework when the world has changed enormously does neither help locals nor regenerates natural capital.

While many traditional relations with CPRs are still relevant, many new livelihood options can be explored to meet ever changing aspirations of rural youth. CPRs still have high relevance for sustenance of agriculture and livestock but new options such as eco-tourism and harnessing traditional knowledge and practice under the Biological Diversity Act, 1992 can be explored.

10. **Scattered and Informal:** One of the major challenges with CPRs is that their traditional forms (structure, organization, ownership, rules, values, usage etc) are highly localized. Land being a state subject and forest in falls in the concurrent list of the constitution, various central and state laws and regulation applies to these resources. Furthermore, CPR is a not a legally and administratively defined concept rather it is an academic construct. The non recognition of CPR as a policy idea creates space for land and forest laws of the central and state governments to ignore tradition, culture and ecological knowledge associated with such resources.

Our qualitative study of Common Property Resources in selected states highlights policy level factors along with social, institutional and economic factors associated with the degradation of CPRs. Though the list of factors listed here is not exhaustive, they indicate interrelation between various factors and situations leading to degradation of commons. The list can be further developed and analyzed to theorize it. Yet, it is very clear from the finding of this study that CPR cannot be regenerated without the local community and people cannot contribute unless they are recognized as stakeholder.

The Approach and Strategy:

From the time of British government, forest dwelling communities in various parts of the country have been arguing that their traditional system for dwelling natural capital has a symbiotic relationship with biodiversity regeneration. But mainstream forest conservation laws in India ignored this argument. This tension led to many movements, struggles and conflict on the issue of ownership rights of forest and forest products in the last more than 200 years. Various scientific studies across the globe in the last few decades helped to generate evidence to show that the issue of biodiversity conservation cannot discard economic and cultural claims of local population on natural wealth.

The latest study in this series has been published by the United Nation Food and Agriculture Organization (FAO) and Fund for the Development of the Indigenous Peoples of Latina America and the Caribbean (FILAC)

The joint study report 'Forest Governance by Indigenous and Tribal People' by FAO and FILAC released in March 2021, found that forest under the control of indigenous people are more protected than forest under control of government agencies. The study carried out in various countries of Latin America and Caribbean found that factors such as collective territorial tenure, community forest management, revitalization of traditional knowledge and strengthening grass root organization help in social inclusion and reduce inequalities. This further leads to improvement in the health of the forest[4]. The case studies of Uttarakhand and Assam in this study reaffirm this conclusion. In Assam the collective ownership of fish ponds and irrigation canal fetch a lot of economic resources to the community. Studies of Van Panchayats in Uttarakhand reveals that the forest under the control of Van Panchayats are in much better condition compared to the exploitative forest under the forest department. On the contrary the example of Rajasthan reveals commons have drastically degraded in Karauli district because people's control and management role has been revoked after the independence.

The above mentioned studies and observations are clear that the regeneration of resources cannot be done by restricting people from accessing their traditional rights. On the other hand a latest study carried out by the Swiss Academy of Science found that biodiversity conservation can help significantly in achieving all 17 Sustainable Development Goals[5]. The report states that biodiversity is the wealth of the poor so conservation of biodiversity directly helps in achieving SDGs such as eliminating poverty, hunger, health wellbeing and unemployment. Both of these major findings are complementary to each other and call for a shift in perspective from biodiversity protection to regeneration. The protection approach creates walls between natural allies, which further leads to conflict and destruction. Whereas the regeneration approach brings together all allies and creates a platform for collective action.

The shift in the approach from biodiversity protection to biodiversity regeneration, if funded well has huge potential to address issues related to climate change, employment, poverty reduction, biodiversity regeneration etc. With this approach India can achieve the following three major goals.

- One, it will provide employment and income to millions of jobless population. A large unskilled and semi-skilled labour force can be employed in activities related to regeneration of natural resources.
- Two, in the long run, regenerated natural resources will bring higher rural economic growth and livelihood sustainability.
- Three, it will help in achieving climate change and biodiversity regeneration goals and meet international commitments

The regeneration of natural resources is not at all a new strategy; India has a long history of implementing schemes and programs to regenerate degraded natural land, forest and water bodies. Major schemes implemented by the government of India includes Drought Prone Area Program (DPAP) in 1970s, National WasteLand Development Program in 1985, National Watershed Development Program in 1990s, Social Forestry and Joint Forest Management Program in 1990s, Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) in 2005, CAMPA fund in 2001 and Green India Mission in 2014. Currently the MGNREGS , CAMPA and Green India Mission are major programs under which resource regeneration activities are carried out. Despite all these programs, India's natural capital is continued to be degraded. As per the latest data on land degradation and desertification published by ISRO, about 29.32 per cent of the total 328.72 million hectare of the county's geographical area is degraded and deserted. The total degraded and deserted land accounts for 82.62 mha of forest, non-forest and agriculture land spread across the country. Disturbingly, the degradation of land resources is continued to increase. The data suggests that the degraded land increased from 81.46 mha in 2003-05 to 82.62 mha in 2011-13. Therefore, serious review of schemes and programs addressing the problem (employment and environment) and solutions (Natural Resource Regeneration) is required.

Historically, the Common Property Resources played a crucial role in sustaining subsistence economy along with sustainability of biodiversity. Numerous such wonders across the globe could sustain themselves for centuries because of the rich traditional ecological knowledge and institutions created around them by CPR dwellers. The effectiveness of these institutions rests in the rich and deep rooted values, norms and perspective. The revival of CPR and related

community led institutions can still play an important role in challenges like climate change mitigation and adaptation along with sustainable livelihood. It is high time to recognize and promote the symbiotic relationship between subsistence rural economy and biodiversity regeneration. Reactivating and promoting systems of CPR governance is an effective way to realize this goal.

CPRs are closely associated with local culture, customs and traditions. Therefore, it has no common nomenclature, concept and practices. As our study from different states observes that CPRs are locally defined, so in most cases the idea, concept, structure and values associated with CPRs varies from region to region. Various policies and rules before and after the independence attempted to dilute and discard the governance system of common property resources. Yet, CPRs are in the memories of rural CPR dwellers. In fact various studies on CPR found that, after losing on community ownership, a large population of rural India is a de-facto user of these natural capitals. The revival of CPR requires a shift in perspective from protection to regeneration of biodiversity. Further it needs to recognize economic, cultural and traditional stakes of CPR dwellers. Last, but not the least, new options of sustainable livelihood needs to be explored to harness energy, skill and aspiration of the young population.

---

[1] IUCN, 2019, Forest Rights Lost: Evictions Loom over a Million of Adivasis, Accessed from https://www.iucn.org/news/world-commission-environmental-law/201903/forest-rights-lost-evictions-loomover-a-million-adivasis, Accessed on 08.07.2019

[2] Bhaviskar, 1994, 'Fate of the Forest: Conservation and Tribal Right', Economic and Political Weekly, September 17, 1994

[3] United Nation, General Assembly, Human Right Council, Resolution in 46 general assembly 22 feb to 23 March 2021 (A/HRC/46/L.6/Rev.1), Available from: https://undocs.org/pdf?symbol=en/A/HRC/46/L.6/REV.1

[4] Chako S., 2021, Forests under Indigenous People more protected, says new report', Down to Earth, 30 March 2021, Available from: https://www.downtoearth.org.in/news/environment/forests-under-indigenous-people-more-protected-says-new-report-76193

[5] Obrecht A, Pham-Truffert M, Spehn E et al (2021) Achieving the SDGs with Biodiversity. Swiss Academies Factsheet 16 (1)

RAJIV GANDHI
INSTITUTE FOR CONTEMPORARY STUDIES

Rajiv Gandhi Institute for Contemporary Studies

Jawahar Bhawan, Dr Rajendra Prasad Road,
New Delhi 110 001 India

T 91 11 2331 2456, 2375 5117 / 118 | E info@rgics.org W www.rgics.org

Please visit us at: www.rgics.org rgics rgics