Yet to be Freed

Agariyas' Lives and Struggle for Survival in the Little Rann of Kutch





Charul Bharwada
Vinay Mahajan

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After brief experience in the corporate sector, they began studying and understanding issues of natural resource dependent marginalized communities for better and effective interventions by the state and people's organizations. In order to share the findings of their studies with people; besides reports, they also write and compose songs.

Time has come
to free the Agariyas from generations of
'illegal' and 'unrecognized' status,
despite being the true producer.

To free the Agariyas from
debt, exploitation, poverty & uncertainty.

Time has come
to grant them a dignified future
in the 21st century.

Are we ready to Act?

Preface

While it's impossible to imagine our daily meals to be complete without salt and while salt remains part of our daily lives in many other ways; lives of the people making the salt remain both beyond concerns and imagination for most of us.

Like many other communities of Gujarat, Agariyas have also remained largely 'invisible' to the state and policy makers. For the same reasons, they have always been a subject of interest and concerns to both of us. But we never had an opportunity to get closer to them and their issues. This National Consultation gave us that much awaited opportunity to look into their lives, to understand their issues. Most rewarding in this whole process has been the personal learning from their unbelievable ability to remain dignified in such adverse conditions; their ability to continue to dream - dream for a better future despite perpetual threats and uncertainties of livelihood.

Agariyas are part of the same society we live in. Part of the same constitution that we all share. And thus they have the same Right to Livelihood and Dignity that we all have. This paper focuses on the Agariyas of the Little Rann of Kutch whose livelihood is threatened by multiple factors – market, resource and a conservation project.

We take this opportunity to thank all those who have helped us in many ways during the study. We would like to specially acknowledge Agariya Hit Rakshak Manch, Ahmedabad and the National Consultation team for all their support.

We hope this paper will be able to make a small contribution in realizing Agariyas' dreams and rights.

Charul Bharwada
Vinay Mahajan

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List of Abbreviations

AHRM	Agariya Hit Rakshak Manch
BOBP	Bay of Bengal Project
CEC	Central Empowered Committee
CERC	Consumer Education and Research Centre
CESC	Centre for Environment and Social Concerns
CSMCRI	Central Salt and Marine Chemical Research Institute
GEER	Gujarat Ecological Education and Research Foundation
LRK	Little Rann of Kutch
MoEF	Ministry of Environment and Forests
^{o}B	Degree Beaume (Sallinity measure for brine)
PA	Protected Area
PIL	Public Interest Litigation
PIO	Public Information Officer
RTI	Right to Information Act
SC	Supreme Court
WAS	Wild Ass Sanctuary
WLPA	Wild Life Protection Act

1.0 Background

Every map of Gujarat illustrates an area with dotted lines, labeled the Rann of Kutch – the Greater and the Little. For those who have not seen the Ranns, it is often an image of a desert - a landscape with sand and dunes. For those who have, it is a vast flat land mass in the winters and summers and a big lake in the monsoon. Most people may imagine it to be an area devoid of life and activity. But, the reality beyond these dotted lines has an interesting history and a complex present with many rulers, communities, animals and birds having diverse uses and of strong relations with this landmass.

Agariyas, the traditional salt makers living on the edge of the Little Rann of Kutch (LRK) is one such community having a unique livelihood relation with the Rann. Despite age old ingenious skills in making salt in the Rann and their significant contribution to meet salt needs, Agariyas, the traditional salt makers remain socio-economically poor; perpetually exploited; ecologically threatened due to the proposed Wild Ass Sanctuary and administratively unattended and uncared.

This paper is an exploration in Agariyas' livelihood system and their constant struggle for survival beyond the dotted lines of map. It briefly describes geological history and ecology of the Little Rann of Kutch and diverse livelihoods practiced around it. Through various historical documents, it attempts to bring out that salt making in the Rann has been centuries old occupation. It shows how irrespective of the ownership and scale of the salt making units, the primary producer on the ground is always Agariya. It further goes on to explore the economics of salt making from the Agariyas' perspective and various threats faced by them including the Wild Ass Sanctuary.

1.1 Overview of Salt Making in Gujarat

Gujarat is the largest salt making state of India. It accounts for more than 70 per cent of India's total salt production. Salt production in Gujarat gained momentum in the early fifties, when the Government of India decided to attain self-sufficiency in salt production. Subsequently, new areas were explored over the years and Gujarat emerged as the leading salt producer in the country. Gujarat is the only Indian state which uses both sea brine and sub-soil brine as the source of salt respectively known as marine and inland salt. Both types of brines are used in LRK.

Over the years, there has been reduction in the inland salt production. In 2005, Gujarat's total salt production was 15 million tons of which 3.3 million tons was inland salt, about 22 per cent of total production.[2] (Table 1) 31.46 per cent of the total recognized and 46.96 of the unrecognized salt making units are inland.[3]

Table – 1 : Salt Production in Recognized and Unrecognized Sector in Gujarat: 2005

Type of Unit	Salt area per unit	Salt Type	No of units	Area	Actual area worked	Land Used	Production ('000 tons)	Productivity (Tons/acre)
Recognized								
Category I	More than 100 acres	Marine	449	276920	173757	62.74	11287.2	61.03
		Inland	129	48022	11180	23.28		-
Category II	10 to 100 acres	Marine	10	595	286	48.07	57.7	94.75
		Inland	11	681	323	47.43		-
Category III	Less than 10 acres	Marine	27	6297	5195	82.50	357.1	68.74
		Inland	86	16119	8098	50.24	1301.5	160.72
Unrecognized								
Category IV	Up to 10 acres	Marine	1134	-	8130	-	1360.8	167.38
		Inland	940	-	8894	-	1543.8	173.58
						Total Production	15908.1	
Source: Annual Report, 2005-06. Salt Department, Government of India. (p. 14-15)								

It is estimated that the salt industry of Gujarat employs about 1 lakh people. 30,000 to 40,000 of them are employed in the LRK. Salt production in the inland is highly labour intensive and per unit employment in the Rann is much higher as compared to the marine salt. Accepted production norm for the larger salt making units is 50 tonnes per acre. As can be seen from the Table 1 that the per unit production in the category IV, the 'unrecognised' category, is usually more than double the recognized category.

2.0 History and Ecology of the Little Rann of Kutch (LRK)

The Little Rann is spread over an area of 5180 sq km.[4] Little Rann of Kutch is a unique and interesting land mass having dual characteristics of saline desert and wetland. Despite all its richness, most people subconsciously equate the Rann with desert. In reality, LRK is a special geological formation, unique in the world. Rann word owes its origin to Sanskrit word *'Irina'*

[2] Salt Department, Annual Report, 2005-06

[3] BOBP Study, 2006:41. Those salt making units which have lease, licence and registration are called 'recognised' units. Those small producers, who have been making salt without getting registered with the Salt Department (as legally it was not necessary for the small salt producers to register) are known as 'unrecognizsed' units.

[4] Singh et. al. 1999:8 GEER Ecology Study

meaning 'the waste'. In north of the Little Rann is the Greater Rann of Kutch. At one time the Greater Rann was an extended shallow arm of the Arabian Sea. Rann was an estuary,[5] a meeting place of great Himalayan Rivers and the Arabian Sea.

Interestingly, the Rann lands are formed by the sediments brought down by the mighty Himalayan Rivers like Yamuna, Saraswati and Indus. The vast area of the Greater Rann, around 19,000 sq km, is the result of complex natural processes which went on for a long period.

Many evidences have been found to support that earlier Greater Rann was an estuary.[6] Rann is described as a great lake by the chroniclers of Alexander the Great in 325 BC when he came to this region. Al-Beruni (970-1039 AD) recorded that a branch of Indus met Arabian Sea near the western edges of Kutch.[7] Archaeological excavations of Dholavira have indicated that Dholavira was a port and it is likely that Kori Creek and Dholavira were connected by means of a sea-route.[8] In 1935, Peter Clutterbuck, British Inspector General of Forests, found "a small isolated patch of mangrove" in Banni near Kavadia on the east of Lodhai, another proof of the sea earlier.[9]

The process of silt deposition went on for thousands of years till both Indus and Yamuna changed their courses westward and eastward respectively. With time, the fresh water flow has stopped but the saline water from Kori creek and Gulf of Kutch still keeps flooding the Ranns. During the monsoon, eastward flow of water from the Gulf of Kutch inundates large parts of LRK transforming it into a huge seasonal lake which begins drying by September and becomes a dry saline land mass by November. It is these natural characteristics and geological history of Rann formation that make Rann a great natural supplier for the sub-soil brine to make salt.

Besides the mud flats, Ranns also have several elevated plateaus or islands locally known as *Bets*. LRK has 74 such bets. Pung is the largest bet spreading over 30.5 sq. km. and Mardak is the highest bet at 55 metre above the mean sea level. Sizes of these bets vary. (Figure – 1) Cumulatively the area of bets is about 185 sq. km.[10] whereas all the parts of the Rann have highly saline soil and saline ground water due to which the Rann lands have no vegetation; many of the bets have had good potable water and vegetation, including grasslands. These habitable conditions on the bets have always attracted several bird and animal species on the bets including the famous Wild Ass. For the same reasons some of the bets have also become good breeding grounds for animals like Wild Asses and grazing grounds for the livestock of traditional pastoralists. Due to the harsh living conditions, there are no permanent human habitations in the Rann or in Bets except on Nanda bet.

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[5] Estuary is an area or a zone where rivers and the sea meet.

[6] Watson, 1886; Rushbrook, 1958; Singh, 1999.

[7] For more details see Rathod, 1959:243-258.

[8] Dholavira is an archeological site of harappan civilisation in the east of Khadeer island. This is the largest and one of the best sites of Indus valley civilisation found till now. Initial work on this site began in 1970 and the excavation work is still going on.

[9] Mahajan and Bharwada, 1997:8.

[10] Dixit, 2005:7

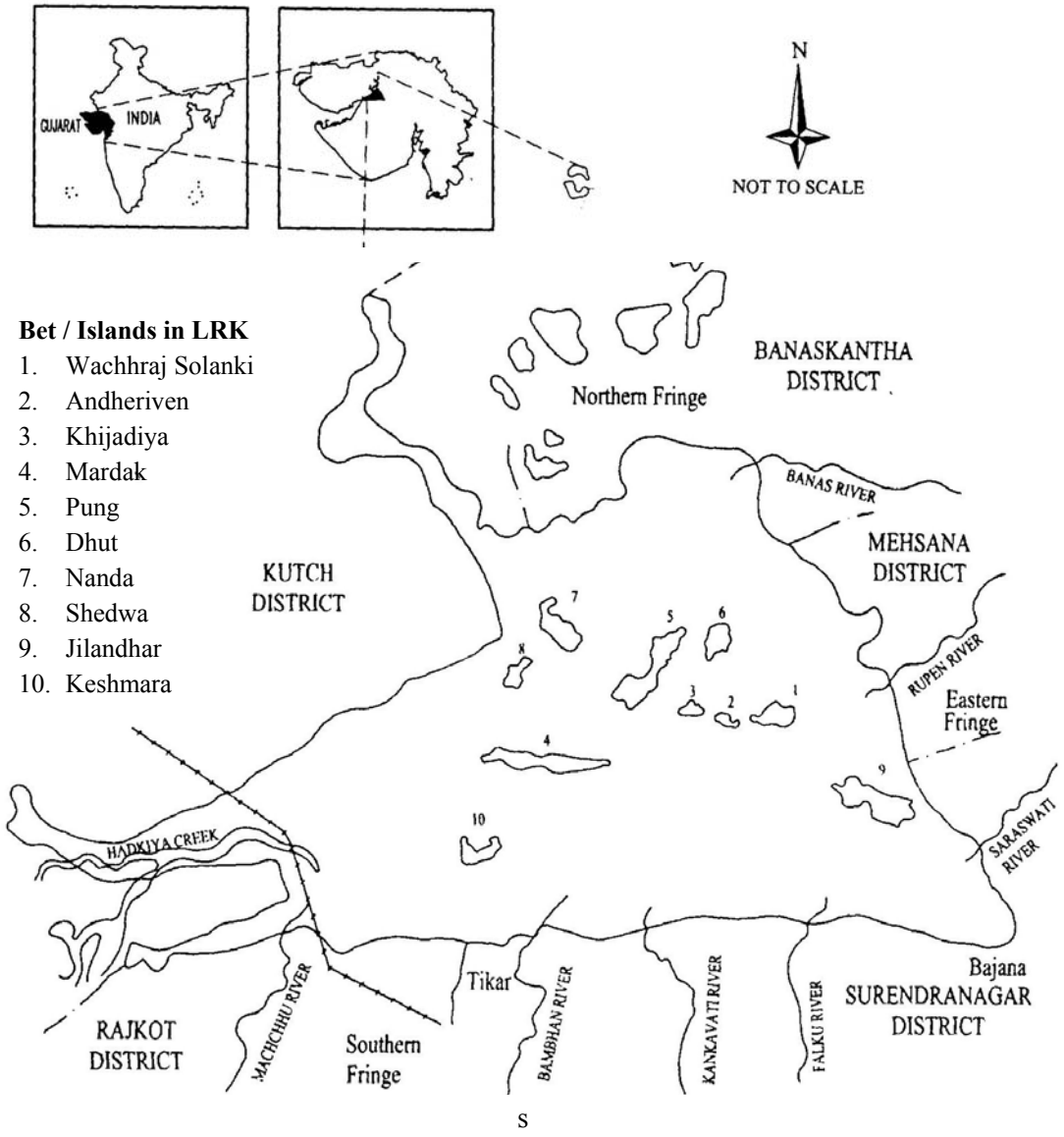

Figure – 1 : Little Rann of Kutch

(Source: GEER Ecology Study)

LRK was also an important route for travel across various princely states that ruled in the areas along its periphery. Late 19th century account of LRK in the Gazetteer of Kathiawar shows that there were five main routes through the LRK connecting Kutch and Kathiawar and people used to travel on the horses and camels through the Rann and in boats during the monsoon. Besides these main routes, people also used several smaller routes for walking through the Rann.[11]

2.1 People and Livelihoods in and around Little Rann

There are several traditional communities like Chunvalia Koli, Miyana, Sandhi, Wagher, Jat, Rabari, Bharwad, Patel, Darbar, Ahir, etc. living in the 106 peripheral villages spread across five districts along the LRK and are involved in diverse occupations. Agriculture still remains the

[11] Kathiawar Gazetteer, 1886 Reprinted in 2005 page 21 in reprint.

primary occupation in this region. Other occupations are agricultural labour, salt and charcoal making, fishing, pastoralism etc. Agriculture is largely rainfed. Cotton, Jowar (sorghum), Bajra (millet), Wheat, Jeera (cumin), Groundnut, Castor, some pulses and seasonal vegetables are grown here.

Most of the villages around the LRK are socio economically backward due to scarce water, fragile natural resource and poor land conditions of the area. Agricultural productivity is low and there is no industrial development. Education level among the people is low. A recent survey of 248 Agariyas by Agariya Hit Rakshak Manch (AHRM)[12] brought out that more than 50 per cent Agariyas are illiterate with the highest rate of illiteracy among the Agariyas of Surendrangar. Education level among the Agariyas of Patan and Rajkot is comparatively higher. (Table 2)

Table – 2: Level of Education Among Agariyas in LRK

Details	Kutch	Patan	Rajkot	Surendranagar	Total
Illiterate	32.3	25.9	17.9	71.1	56.4
Literate	0.0	0.0	1.7	0.9	0.9
1st to 5th class	36.9	61.6	49.6	15.8	27.0
6th to 10th class	26.2	11.6	29.1	11.2	14.5
> 10th class	4.6	0.9	1.7	0.9	1.3
	100.0	100.0	100.0	100.0	100.0
Analyzed and compiled from the survey data of AHRM survey, July 2007 (n=248)					

Of various livelihood activities pursued by the people here, salt making, fishing, charcoal making and pastoralism have strong dependence on the resources of LRK. Interestingly, all these activities are seasonal. Salt making begins after the rains till the mid summer (September to May). Fishing is practiced during the monsoon (July - September) when the Rann becomes one of the largest wet lands. Various grasses on the bets are used by the pastoralists for their livestock. Most of the studies indicate that the salt making is one of the largest economic activity for the people living in the peripheral or fringe villages.[13]

3.0 Salt in LRK: Long History and Traditional Occupation

3.1 History of Salt Making in Rann

Specific characteristics of many areas within the LRK have made it possible to make salt from the sub-soil brine besides marine brine. Various historical documents suggest that this is an age old activity in the Rann. Early history of salt making is not known but it is believed that large scale salt making has been going on in the areas of Patadi, Jhinjuwada and Kharaghoda since 10th century.[14] Salt making in the Dhrangadhra region is also quite old. When the Jhala rulers

[12] Ahmedabad based forum that works with Agariyas for their rights, livelihood, health and other issues.

[13] SAVE, undated; GEER Ecology Study, 1999; BOBP, 2006; Iyengar, 2001; Dixit, undated

[14] Campbell, 1887:27

arrived in north Gujarat around 1200 A.D. and later made Patadi and Mandal as their capital; V*adagara* salt making was already a well developed activity in this area.[15] Later they developed their salt works at Kuda which were lost by them in bloody conflicts among various rulers.[16] But the rights of the salt pans were reinstated to Halvad ruler Jashwantsinh by the emperor Aurangzeb through a detailed *firmaan.* [Appendix – 1] From the *firmaan* it appears that in 1669 the salt was taxed but probably taxes were low. There were at least 125 salt pans under the Jhala rulers in Halvad.

Traditionally, Vadagara salt has been preferred for edible purpose and references of its superiority can be traced back to Meerut-I-Ahmadi which states that "the salt resembles pieces of sugar and is exported to Malwa . . . Gujarati word 'agar' means 'saltern' which is a form of the Sanskrit word 'akar' meaning mine."[17] In those days 2 types of salt were made in the Rann - Vadagaru and Ghasiyun. Vadagaru, or the crystal salt derives its name from Bada or Vada Agar meaning big salt pans or big salt probably due to big crystals of this salt. Local people and specifically Agariyas still consider this to be of superior quality salt as compared to free flow iodized salt of present times. Describing the physical quality of Vadagara salt Vakil writes,

> "The quality of salt manufactured at these works is known in the Presidency as Vadagara or Baragara salt. Vadagara salt is a cubical crystal from half an-inch to a three fourth inch in thickness built of a number of smaller crystals. In colour it ranges from pale brown to pure white. The crystals in some instances are very transparent but yellowish to gray in appearance. The opaque crystals are whiter and grayish in colour. A good quality of Vadagara salt is extremely hard, and for this reason it is very much valued for transport over long distances. The loss of Vadagara is considerably less than in the smaller conical sea salt." (Vakil, 1924:63)

Ghasiyun salt was made from the saline spring or the pits in the Rann or elsewhere by its natural solar drying. Today, both these traditional types of salts have undergone some changes. Vadagaru is modified and is called Podavalu or Poda salt having smaller crystal and whiter appearance. Ghasiyun is replaced by Karkach salt.

Traditionally *Chunvalia* Koli community has been known for its excellent salt making skills and their specialisation in salt making is also referred to in more than century old document, Kathiawar Gazetteer of 1886 which describes the method of making the salt and states that it was a family activity where women and children also participated in the production.[18]

> "After the ground has been cleared of dust, salt pans are made in the Ran and small wells dug by their sides. The pans are filled with water from these wells, and their bottoms trampled until they become firm. The salt pans are thereafter daily watered, till, at the end of about a fortnight, crystals are formed which are broken by trampling. The watering is continued for a month when the produce is raked into a heap, and, under the superintendence of a state officer, called salt commissioner, is sold at a fixed price . . . to

[15] Jhala, 1977:48

[16] Vakil, 1924:2

[17] Vakil, 1924: 2

[18] Kathiawar Gazetteer, 1886:199.

> license-holders belonging to Dhrangadra and other states who bring a license from their chiefs to buy fixed quantities of salt and sell it within fixed limits." (Watson, 1886:262)

As it can also be seen from the above description that the salt was not a state monopoly item under the princely rule and the licenses were held by the people from other states too. Vadagara salt of Kuda, Dhrangadhra and Kharaghoda were well known. In some places like in Dhrangadhra Agariyas worked as daily wage earners on the state run *agars*.

> "The manufacture of salt is carried on by Kolis called Agariyas about a mile and a half from Kuda in the Dhrangadhra state. The manufacture, for which there was formerly more than one salt pan, was an important source of revenue till, in 1877, (when) Government forbade the export of salt except when indented for by other Kathiawar states. The salt works belong to the state, and the workers are labourers. They work for nine hours a day and take no holidays. The women and children only occasionally help. Their average earnings are about £10 (Rs. 100) a year." (Watson, 1886:262)

In many other places Agariyas made their own salt and used to pay small royalty to the state. This salt was sold at low price and specific occupational groups like farmers; tanners etc. were even allowed to collect Ghasiyun salt for free.

> "Salt was formerly of little or no value in Kathiawar. The states within whose limits it is produced charged a small royalty on the manufacture and paid no regard to its distribution. Salt hawkers attended the works with pack-bullocks or donkeys, and carried salt for sale to the interior paying a nominal sum for the salt and charging for it in proportion to the distance they had to carry it. Husbandmen, tanners and fish-curers were allowed to gather as much natural sea-water salt or Ghasia as they pleased. It was not until the question of excising the salt was raised in 1879, that salt was regarded as a source of revenue." (Watson, 1886:93)

In the native states of Kathiawar, the salt was produced and sold both by the State and the people. It is only when the British Government intervened and took control of salt production, distribution and began heavy taxation that the salt became monopoly of the Victorian rule. Oppressive control of British rule on salt making and its distribution in India is now well researched and documented.[19] To secure their heavy duties on the salt, a customs line was established across the whole of India.

> "In 1869, it (customs line) extended from the Indus to the Mahanadi in Madras, a distance of 2300 miles; and it was guarded by nearly 12,000 men…It consisted principally of an immense impenetrable hedge of thorny tress and bushes."

After 1880 A.D. the salt production and distribution in the LRK was highly restricted and in order to exercise complete control over salt manufacturing and its market, by 1900 the making of Vadagara salt was completely banned by the British Government which was lifted in 1924 but only for the native states. People were still barred from making it. British rule had imposed

[19] For a detailed and interesting insight into how the salt was viewed and exploited by the British empire to amass huge revenues at the cost of the health and survival of the Indian people, read Roy Moxhom's *The Great Hedge of India.* 2001. Constable Publishers. London. Or visit www.roymoxhom.com

severe restrictions on the native states for expanding their sources of revenue including salt. Appendix - 2 gives additional information related to Kathiawar's salt making.

Both Kathiawar and Kutch which were fully self sufficient and exporting the salt earlier had to agree to stringent conditions with regard to salt. Kutch situation is well captured by Rushbrook which is somewhat similar to that of Kathiawar.

> "Kutch's natural supplies of salt are probably unequalled in any other part of the world. In the course of the nineteenth century the British Government found that the old Mughal duty on salt was valuable source of revenue if systematically collected; and they began to take under their own control the existing salt supplies. Kutch with its unlimited natural facilities for salt production, its many ships, and its excellent sea communications, could easily have competed successfully in the Indian market with the Government establishments. It (Kutch) was not permitted to do this. In 1885 the durbar was obliged to sign an agreement, pledging itself to refrain from exporting salt to any part of India; and so to regulate the trade with foreign ports outside India so that no salt could find its way back. Vessels carrying salt as even part of their cargo from Kutch were forbidden to call at any Indian ports: salt could only be loaded into vessels sailing directly to the foreign port to which the salt was consigned. The result was to kill any possibility of using Kutch's natural resources in salt commercially." (Rushbrook, 1958:253)

3.2 Rann and Salt in the Folk Songs

Another interesting way to see the salt making as a historical occupation in the region is through the songs of this region which are widely known and sung by Agariyas and others even till date. For example, the song *Agariyo Agnani* is complain of a village girl to her parents for marrying her off to an Agariya and all the drudgeries and hardships involved in being wife of an Agariya.

અગરીયો અજ્ઞાની માડી, મુને અગરિયાને શીદ આલી	Oh mother, the Agariya is ignorant and illiterate, why did you marry me to him?
કુઇઓ ગળાવતો ને ટાપા તણાવતો, ઝીલો લેવડાવતો દાડી, માડી મુને . .	He makes me dig salt wells, pull the mud from the well and toss it out.

Another song describes how the salt pans of Odu city have brought prosperity to many of the people though it makes them dark by working in the sun and makes life difficult, it gives them money to be able to buy various things from the market.

સારા પરતાપ સેર ઓડુ અગરના, ભવની ભાંગે ભીડ રે, ગાંગડો વા'લો લાગે	The *agars*, salt pans of Odu town bring good luck. It brings lifetime respite to all of us. [And therefore] We all love the crystal of salt.
પૈસાનો સાબુ બજારે મળશે, ઉજળા થઇ ઘરે આવો, ગાંગડો. . .	By paying, you can get the soap from the market. [through the money earned from salt] Go, wash, get fairer and then come home.

Yet another song *Chal Bhabhladi* is a discussion between the sister in law with her younger brother in law. Here when the younger brother in law tells the *bhabhi*, sister in law to go to the Rann, she shares her difficulties and fears of living in the Rann and working in the salt pans.

Gheladia re Agariya is song that describes how passionately the Agariyas are involved in the salt making in the Rann.

રણમાં કુયું ગાળતા'તા રે, ઘેલડીયા રે અગરીયા...	Those passionate Agariyas, salt makers were digging salt wells in the Rann. . .
પાટામાં પગલી પાડતા'તા. . . પારેવે સંદેશો મોકલાવતા રે. . .	They were tamping the pans. Sending messages through pigeons.

A poem by the poet Rabhadia brings out various aspects of Rann, rulers, cropping, salt making and characteristics of various towns and villages around the Rann during the time of princely states. It describes how the land of Rann is land of salt and land of God fearing nice people. A deeper study of the poems and folk songs of this region can bring out many salt related aspects of history. Through these few songs, it is easy for us to understand that the relationship of Agariyas and Rann is an old one so is the salt making activity in the Rann.

3.3 Dandi March and Post 1947 Developments

Most of us have read about Dandi Yaatra in our history books but probably have not understood its significance. It is against such restrictions and its impact on the Indian people that Gandhiji had initiated his famous Dandi March which was followed by the Gandhi – Irwin pact in 1931. As demanded by Gandhiji, the British Government allowed, after almost 200 years of total control over salt of India, the people living in the villages adjoining salt areas to make or collect salt for domestic use and sale in their respective villages. It is only after the Dandi yaatra and Gandhi - Irwin pact that people of India and so also the Agariyas of LRK got their rights for independent salt making.

Despite many natural sources for salt making and known traditional technologies in many parts of India, including the LRK, due to British policies, India was heavily dependent upon the salt imports till the independence in 1947.

On 23 April, 1948 the new Indian Government took immediate steps for increasing production and improving its reach across the country keeping in view the interest of the small salt producers who had become the labourers at the mercy of British Government till now. This allowed the individuals and groups to set up salt works of less than 10 acres and freely produce salt in any land to which they had lawful access.[20] No licenses and no applications were required for this. In fact, it was explicitly conveyed that "no applications for license need to be sent to any Government authority in such cases." In order to benefit small producers, these 10 acre Agariyas were also exempt from any cess.[21]

It is under this provision made by the Government of India that many Agariyas began salt making in LRK in small salt pan units of up to 10 acres and locally they came to be known as *'dus acre Agariyas'*. As envisaged by the Indian government, the small producers - hard working

[20] Aggarwal, 1956:533

[21] Ibid: 534

Agariyas and their families were able to gain from this provision and also provide salt for the nation.

This policy also explains the rapid expansion of numerous unlicensed and non lease holding Agariyas in the LRK who were in a way re-granted their rights to make salt immediately after the independence. Except this policy, from 1947 till date most of the efforts and policies on salt have remained large producer and market centric and the interests of the small producers have generally taken a backseat. Brief chronology of policy related matters can be understood from Appendix 3.

4.0 Salt and Agariyas in the LRK

4.1 Salt Works

Salt is not made all over the Rann lands but in the places where good quality sub-soil brine is available and where sea brine can be drawn into pans. As per the geographical spread of current salt making areas in LRK, there are 6 salt zones in the Rann. (Figure 2) Presently two types of salts are produced in the Rann - a modified version of Vadagaru called 'Poda' salt and Karkach. As indicated in the Figure 1. Poda salt is made in Dhrangadhra, Kharaghoda and Santalpur regions on the South-east, East and North of LRK respectively where the sub-soil brine has high salinity of more than 15^0 B.[22] Karkach is made in Aadesar, Maliya and Halvad region on the North-West, West and South of LRK where generally lower degree marine (approx. 3.5^0 B) and sub-soil brine (less than $8\text{-}10^0$ B) is used. Predominantly people from 102 peripheral villages are involved in the salt making in respective zones as evident from Table - 3 and the list of the villages is given in Appendix 4.

All the salt production in the LRK is done manually. Salt making in the Rann requires special skills and only those, with long experience gained through generations, get involved in it. Average production of crystal salt is 1500 tones per 10 acre unit whereas Karkach productivity is more, about 2000 tons. Total annual salt production in LRK is generally around 30 lakh tons, about 20 per cent of India's total salt production. Last year in 2006-07, total salt production in LRK was 26 lakh tons of which 14 lakh tons, 54 per cent, was crystal salt and 12 lakh tons was Karkach.

There are no private ownerships of the salt lands in LRK. Salt is produced on the leased public lands. Usually, the lands are allocated for 20 year lease period. Respective district collector has the powers to allocate lands up to 140 acres. More than this has to be approved by the State Revenue Department. [23] The process of giving new lease has been halted in the LRK since 1997 due to the Wild Ass Sanctuary.

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[22] ^{0} B is degree Beaume – measure of the salinity of brine. Normally the sea brine has salinity of 3.5^0 B. Salinity is measured by Beaume meter.

[23] SAVE Report, p.33

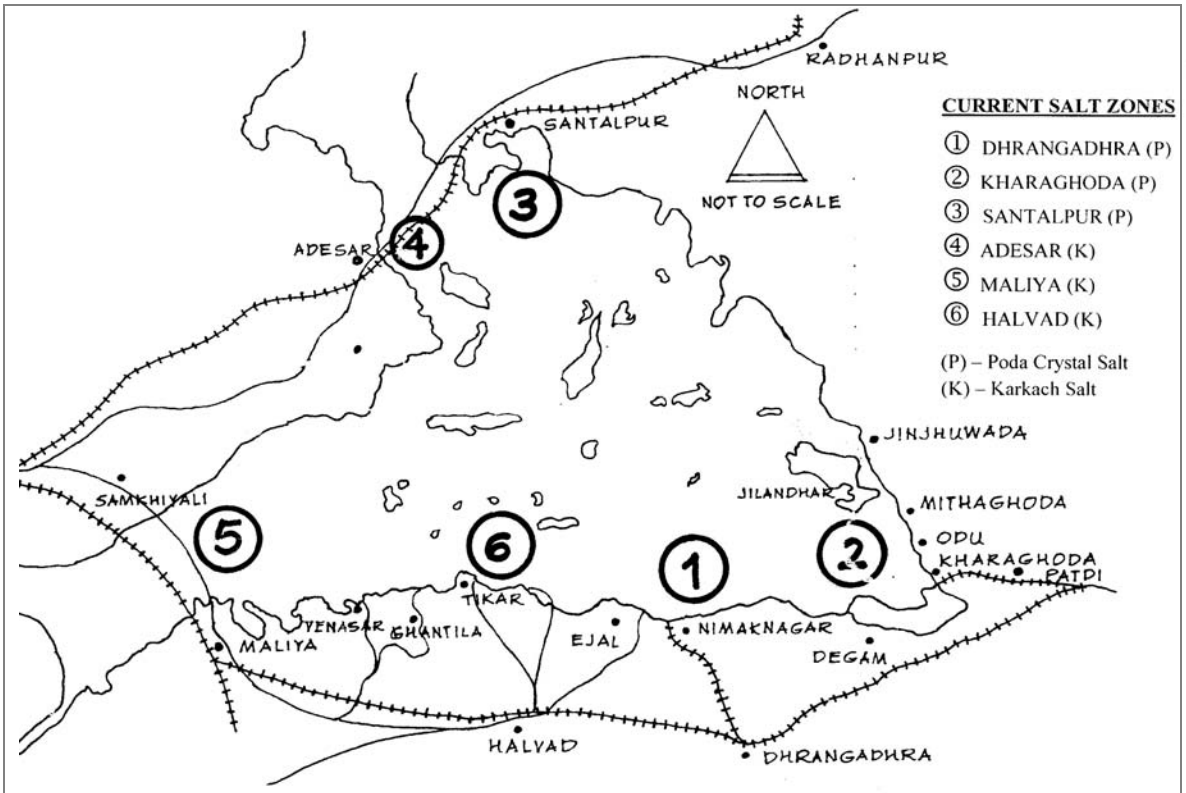

Figure – 2 : Current Salt Zones in Little Rann of Kutch

Table – 3 : Salt Production in the LRK Villages: Estimated Spread & Involvement

District	Talukas	Villages~	Communities (In Descending Order of involvement)$	People involved in^		Total
				Production	Transport	
1. Surendranagar	Kharaghoda	25	Koli, Darbar, Dalit, Muslims	15341	7675	23016
	Dhrangadhra	23	Koli, Darbars, Dalit			
	Halvad	15	Koli, Miyana, Dalit, Darbar			
2. Patan	Santalpur	12	Sandhi Muslims, , Koli, Darbar, Ahir, Dalits.	19031	9928	28959
3. Kutch	Adesar	09	Sandhi Muslim, Ahir, Dalit, Kolis	1488*	744*	2232
4. Rajkot	Maliya	18	Koli, Miyana Muslim, Dalit	3629	1785	5414
	Total	102	-	39489	20132	59621

~ Based on the field work and the information provided by the Agariyas and AHRM field workers.

$ For example, in Kharghoda Kolis constitute the largest number of salt makers followed by Darbars, Dalits and Muslims.

^ Relevant figures from 'Gujarat no Mitha Udyog, 2002' published by Industries Department, Govt of Gujarat.

**Figures for Kutch are worked out from the total of inland and marine assuming 20 per cent of the total to be for inland salt*

4.2 Types of Salts in LRK

Four types of salts have been made in LRK - Ghasiyun, Vadagaru, Poda and Karkach.

Ghasiyun is an earlier variety which is stopped since many decades. This salt was made by solar drying of the brine from the springs and creeks. The resultant salt had all the impurities as all the salts present in the brine precipitated together. This was the lowest quality salt, albeit easiest and quickest to make.Other 3 types of salts are extracted from marine or sub-soil brine and are produced on the principle of Fractional Separation. At different degrees of concentration of brine, different salts get separated.[24]

In the Rann, the brine is concentrated up to 24.5^0 B in the condenser[25] before releasing it to the crystaliser[26] where it is further concentrated till around 29^0 B to separate out Sodium Chloride, NaCl or the edible salt. After harvesting the salt, bittern[27] is thrown out.

Table – 4 : Comparative Production Parameters of Vadagara and Poda Salts

Characteristics	Vadagaru Salt	Podawalu Salt
1. Base	Salt crystals are formed over soil and that is why the shape, size and hardness is better (as told by the Agariyas) Also called 'salt over soil' process.	Crystals are formed over salt layer below. Also called 'salt over salt' process.
2. Formation of seed crystals	By breaking the first salt layer with feet into fine particles.	Around zypta
3. Crystal properties	More organized, harder and larger	Smaller in size
4. Quality of the salt	Some taint from the soil. So the colour is slightly brownish or yellowish.	Pure white
5. Productivity	More by 100 tons or so	Lesser productivity
6. Price	Little less by Rs. 1.5-2 per quintal	Higher
Compiled by authors based on discussions with Agariyas		

Vadagaru, originates from Bada Agar. In this the seed crystals[28] are made by breaking the initial layer of salt formed over the crystallizer bottom. In **Poda** salt, the initial layer is kept and the

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[24] $10 – 17^0$ B Carbonate and Sulphate of Calcium.

$17 - 24.5^0$ B Calcium Sulphate (Gypsum)

$24.5 – 29^0$ B Sodium Chloride (common edible salt)

$> 29^0$ B Chlorides of Sodium, Potassium and Magnesium; Sulphate of Magnesium; complete solidification of the brine.

Source: CSMCRI, Bhavnagar; SEWA, Ahmedabad; and Industries Commissionerate, Gandhinagar; *Bhumigat pani dwara udyogic mithu banavvani padhtiyo*.

[25] Condenser is the part of salt pan unit where salinity of brine is raised up to 24.5^0 B by solar evaporation, before brine is admitted to crystaliser.

[26] Crystaliser is part of the salt pan unit where salt crystals are formed from the concentrated brine between 24.5^0 B to 29^0 B.

[27] Bittern is the concentrated mother liquor that remains after 29^0 B.

[28] Seed crystals are first crystals formed that grow in size during the season with constant accretion of salt around them.

seed crystals are made on the twigs of *zypta,* local vegetation, spread on the crystallizer filled with brine. Both Vadagaru and Poda are crystal salts and some of their differences can be understood from Table 4. The quality of crystal is better in Poda salt as the crystals are formed over the initial salt layer unlike in Vadagara where these are formed directly on bottom of the crystallizer, on the soil. This gives better whiteness to poda salt, adding to its market value. Both in Vadagaru and Poda only one crop is taken at the end of the season. Salt is harvested between April to June well before the expected arrival of the monsoon. Vadagaru and Poda need less sub-soil brine and thus all those areas where there is less brine, these salts are prepared. Since past few years, Vadagaru is stopped and only Poda salt is made mainly due to market preference for poda salt due to its higher whiteness.

Karkach salt is fine grained conical shaped, crushable salt. Unlike in Vadagaru and Poda, there are multicrops of Karkach salt. In a season, 8 to 12 crops of Karkach are taken till the onset of monsoon in June. Relative risk in Karkach is less as in case of early monsoon or unseasonsal rains the loss is only of last one crop.

4.3 People

Today, besides the traditional Kolis, various other communities are also involved in salt making in LRK. Chunvalia Koli community still remains the largest at about 60 per cent followed by various Sandhi, Miyana and other Muslim communities which form 35 per cent of Agariyas and the rest 5 per cent include people from Darbar, Ahir, Rabari, Bharwad and Dalit communities.[29] (Table 3) Every year after the monsoon they migrate to Rann for a period of 7 to 9 months which ends in May – June before the onset of monsoon. Chunvalia Koli, Miyana and Sandhi are classified under Other Backward Classes (OBC) and Denotified Nomadic Tribe (DNT). However, many of them are not aware of their DNT status which prevents them from accessing several Government schemes meant for them. Rabari and Bharwad families who belong to traditional pastoral caste are classified under OBC and semi nomadic groups.

It is very difficult to know the actual number of people involved in the salt making and in related activities in the LRK. However, various estimates put this number from 20,000 to 50,000. Recently published Gujarati booklet on Agariyas put their number at 35,000 (Acharya, 2006:8) Compilation of various official reports suggest that the number of people involved in salt making from the 102 villages on the periphery of LRK will be little more than 59,000. This number does not indicate only salt producing Agariyas in LRK but includes all those involved salt related activities like transport, loading-unloading, and also those Agariyas who migrate to Kutch or other places. In June 2007, Industries commissioner put this number to be 48,399.[30]

Our own field work; discussions with leaders about number of *patas* made annually in various areas; discussions with the field workers of Agariya Hit Rakshak Manch (AHRM) and a brief

[29] Figures from the BOBP Study, page: 46. Details of communities are based on the field work and our personal discussions with Agariyas.

[30] In an answer to an RTI application by AHRM, the Industries Commissioner gave following information through a letter dated 21-06-2007. District wise numbers of Agariyas – Banaskantha 3399; Patan 7000; Kutch 19,000; Surendranagar 15,000 and Rajkot 4000.

analysis of the applications made to the Settlement Collector by Agariyas in 2006 suggest that there may be around 10,000 producer Agariya families in the salt making in Little Rann.

4.4 Agariya: Producer or Worker?

Conventionally, organization of salt production is understood using category - I to IV having various types and sizes of salt lease.[31] (Table 5) This gives an impression that except in category IV, generally Agariya is a regular worker employed by the lease holding companies or traders. But in reality, it is a very complex relation and there are different arrangements between Agariyas, the lease holder and the salt trader which always leaves confusion between Agariya as 'producer' versus Agariya as 'worker'.

Conventional method grossly over shadows the actual role played by the Agariyas in each of these categories. Field observations show that whether the salt lease is under a company, a trader, a co-operative or an individual; irrespective of total holding size, all the salt works get divided in to 10 acre units and salt producer is always Agariya. Most often, the finance for production is also raised by him from the salt traders pushing him into unending cycle of debts.

Table – 5 : Categories of Salt Units and Agariyas' Involvement in LRK

Category	Unit holders	Production Method	Salt production & capital raising by	Agariyas' Relation with the Unit holder
Category I [More than 100 acres]	Public and Private Ltd. Companies	Manually Leased land divided into 10 acre units.	Agariyas	Agariya may be a regular employee OR their total leased land is divided into 10 acre units and sub-contracted to Agariya.
Category II [10 to 100 acres]	Private traders or manufacturers		Agariyas	Rarely an employee. Generally total leased land is divided into 10 acre units and sub-contracted by the lease holder to Agariya.
Category III	Co-operative Societies [Only Agariyas as members.]		Agariyas	Total land divided into 10 acre units where each unit is managed by the member Agariya or sub-contracted by the member Agariya to another Agariya or is rented at an annual fees to another Agariya.
Category IV [Up to 10 acres]	Small salt producers (Agariyas)	Manually	Agariyas	Traditionally making salt in a fixed location for generations [till brine availability]. Salt making at different locations On rent from a 10 acre Agariya.
Compiled from official documents and information collected from the field and AHRM.				

Despite being the 'real' producer for generations, they have had neither any tenurial nor remunerative security. He neither gets the benefits of being a producer in terms of access to institutional credit, tenurial security, insurance etc. nor does he get any advantages offered to a worker or a labourer in terms of fixed wages or income and other securities. For example, Dashrathbhai was born in the Rann, so was his father and grandfather. For decades they have

[31] Categories – I: More than 100 acres; II: 10 to 100 acre; III: Up to 10 acres; IV: Unrecognized small salt producers up to 10 acres.

been making salt in the same place. Salt making community, salt traders and the whole village know their location and occupation. Sadly, they exist neither on paper nor on any of the official records due to the 'shadowed' arrangements made with the traders or lease holder. Various production arrangements found between the lease holder and producer Agariya in the LRK can be broadly classified into 3 types.

1. Contract system: A relation in which the lease holder or salt trader, often the same persons, agrees to finance the production cycle of Agariya including his food expenses during the season on the condition that entire salt produce will be sold to him at a pre-decided purchase price. Generally the Agariya gets his first installment after the crystallizer is filled with brine for the first time in the season. All the cost of production is borne by Agariyas which include – machine repair, diesel expenses, well and salt pan making, labour cost etc. Transportation of the salt out of Rann is generally the responsibility of the lease owner or salt trader. At the end of the season, final settlement is done against the total production.

Often, the Agariyas end up in losses which are carried forward for the next year. As per the AHRM field workers' observations, 90 per cent of Agariyas are tied to the production under this system.

2. Worker-cum-contract: The lease holder hires an Agariya family for salt production. All the production costs are borne by the lease holder. In such an arrangement the Agariya family gets Rs. 2 to 3 less per ton as compared to those in the first category.

3. Salary: The lease holder appoints an Agariya family at a fixed monthly amount and all the production related expenses are met by the lease holder. Average monthly salary varies from Rs. 2000 to Rs. 3000.

Arrangements 2 and 3 are negligible in LRK. Earlier in case of Hindustan Salt Works and Dhrangadhra Chemical Works, the Agariyas were employees and were given all the due benefits as a worker. Since past some years, these works are closed. However, Hindustan Salt has a land lease of 23,000 acres which it gives to Agariyas on a seasonal rent varying from Rs. 50 – 60 to Rs. 5,000! per pata in the recent years. Rents are decided on ad-hoc basis which leads to such an unusual variation. Last year, HSL allowed 40 patas in their land.

5.0 Salt Production Process and Economics

To most people, manual salt making appears to be very simple system – making pans, spreading the brine, drying it and harvesting the salt. But it is far more creative and complex subject to many risks.

5.1 Before the Season Begins

The salt making in Rann is done by Agariyas, the salt makers, who seasonally migrate to the Rann every year from the villages on the periphery of the Rann after the monsoon. During the monsoon, entire Rann is flooded with water.

Before leaving for the Rann, Agariya has to arrange for finances with a salt trader for the entire cycle of production. He gets this financial support on the condition of selling his produce at a pre-decided price to the trader. This deal is always finalized and fixed on Satam – Aatham festival, around mid August. Very few Agariyas can finance their own production. Salt trader

finances Agariyas based on the market conditions. Year to year there are wide fluctuations. Agariya is often unsure whether he will get finance or not. In 1998, in Santalpur region, there were around 500 production units that reduced to 170 in 2006-07 and in 2007-08 it again reached 500.

In Dhrangadhara, Kharaghoda, Adesar and Halvad most Agariyas are local. Where as in Santalpur and Maliya, some Agariyas also come from far off places like Bhavnagar, Amreli and Jamnagar. (Table 6)

Table – 6: Characteristics related to Production System in Various Zones of LRK

Details	Dhrangadhra	Kharaghoda	Santalpur	Adesar	Halvad
1. Salt made	Crystal poda	Crystal poda	Crystal poda	Karkach	Karkach
4. Agariyas from where	Local	Local	Mostly local but some from Kharaghoda	Local	In Halvad: Local
2. Distance of salt pans from the village	5 - 10 km.	15 - 45 km.	10 - 18 km.	10 - 20 km.	8 - 12 km.
3. Residential status during the salt making season	daily up down	In the Rann near salt pan	In the Rann except Jajam due to Army restrictions	In the Rann near salt pan	In the Rann near salt pan
4. Brine Degree (^{0} B)	18 - 20	18 - 24	16 - 20	16 - 18	9 - 12
5. Bore Depth (in feet)					
5a. 10 years ago	50	70	45	50	30 to 35
5b. Now	75	150	200	190	60
6. Average wells per pan (number of wells)	50% - 1 well 50% - 2 wells Not more than 2 wells	50%- 1 well 25%- 2-3 wells 25%- 6-7 wells Maximum upto 10-12 wells	50%- 1 well 50%- 2-3 wells	50% - 1 well 50% - 2-3 wells	90% - 1 well
7. Distance of wells from the pata	90% 20 to 40 feet 10% 0.5 km.	75% less than 20 feet 20% 2 to 3 km.	90% - 20 to 40 feet 10% - 0.5 km.	90% - 20 to 40 feet 10% - 0.5 km.	very close - 20 to 40 feet
8. Fuel used per salt pan (Barrels per season)	7 to 10	8 to 12	7 to 12	7 to 10	5

Compiled by authors based on discussions with Agariyas and AHRM karyakartas of each zones.

5.2 Migration to Rann

Once the finance is ensured, around early September Agariya begins the preparation for going to the Rann.[32] A variety of articles need to be packed up and carried - material for erecting a makeshift shelter; for making the layout of the salt pan; various tools and equipments; water storage containers etc. as indicated in Table 7. Amongst the tools dantaala, pavdi, pavdo, faantiya

[32] Entirely depends upon when the monsoon season stops and the Rann dries up. If the monsoon season prolongs, the whole salt making season gets delayed which means a reduced production since season ending is by and large fixed.

and kodali are his prime possessions in the Rann. First 10 items in the list have to be purchased new every year. All these things are carried on camel carts, tractors or *chhakdas* depending upon convenience and affordability of the Agariya. Shifting to Rann in the southern and western parts may be delayed by 3-4 weeks as these are at lower levels and take longer to dry.

Initially the men go alone without the family as the Rann lands are very wet. On reaching Rann, Agariya erects his makeshift shelter. Shelter most often consists of a plastic sheet, fitted over 4 bamboo sticks offering little protection from sun, at times walls made of suspended gunny bags. Few have a tent too, pitched meticulously. On one side is a plastic barrel for storing water. Three bricks placed in a triangular arrangement on one side signify his kitchen. A cot, a bicycle, crude oil, fuel wood, a torch and his equipments complete his material possessions in the Rann.

Table – 7 : List of the articles carried by an Agariya to the Rann

No	Article	Cost
1	Vari (vaans, bamboo) 10@ Rs30. (used in making hut)	300
2	Vanji (tearing apart bamboo stick in 4 sticks) 2 headloads (2 bhaara) @ Rs. 80	160
3	Water containers *(Paani na kerba)* (2 @ Rs 75)	150
4	A water bucket	50
5	Rope	50
7	2 pavda (for gaara kaam)	60
8	Jute cloth used for making hut	35
9	Plastic sheet for hut	200
10	Water barrel for water storage	525
11	2 *Dantaala*	1000
12	Quilts for the winter (called Godada or garam dhussa)	
13	1 or 2 small coats. Most often they sleep on the floor	
14	Fuel wood and oil for lighting the *chullah*	
15	Battery (torch) and some also keep mobile.	
16	Other things like Pavdi, Faantiya, Kodali, Tagaara	
Source: An Agariya Dashrathbhai's personal diary		

Distance of salt pans from villages varies across the different zones. The salt pans are as far as 5 to 10 km. in Dhrangadhra and 15 to 45 km. in Kharaghoda. Due to close proximity to the village Agariyas of Dhrangadhra do daily up down where as in all other zones they stay close to the pan in the Rann. (Table 6)

First work is to repair the diesel engine left in the Rann.[33] Most Agariyas can repair it themselves. It may take around 3 days and the expense varies from Rs 1000 to Rs 5,000 on new

[33] There is an old practice amongst Agariyas to leave their machines in the Rann after the season. They just dig a pit near their pan, wrap their machinery, rakes and spades in plastic sheets, place them in the pit and cover them properly so that they do not have to carry them all the way to home and back to Rann next year. As an exception, this practice is not followed in Santalpur for two reasons. One, the pans are not far

nozzles, plunger, crank shafts etc, depending upon usage and life. Most Agariyas are able to repair it by themselves.

5.3 Laying the Salt Pan

As the entire Rann gets flooded during monsoon, all the salt pan structures – crystallizer, condenser, channel connecting brine well to condenser etc. have to be made a new every year. In the inland salt, sub-soil brine is the main raw material. Either a new well is made or the old well is re-opened.[34] Till a well yields good brine, it is continued to be used every year. Many Agariyas have to make more than one bore for a single salt pan unit due to declining brine yield except in Halvad. Situation in Kharaghoda is the worst and some of them have to make even 10-12 wells. (Table 6)

It takes about 3 days to prepare the well and the same time goes in sinking the bore in it. Thereafter, the earthen channel is made, around 1 foot wide and 3-4 inches deep, to convey brine from well to the condenser. The length of the channel depends upon distance between well and condenser. It may be as close as 20 to 40 feet as in Halvad region and 2 to 3 km as in many cases of Kharaghoda. If it is beyond 3 km. a booster pump may be required in between. More distance means more losses due to percolation, transit and higher the fuel costs.

The earthen channel leads to condenser, locally called *gamda,* part of the production unit where brine is allowed to concentrate up to 24.5^{o} Beaume by evaporation. Higher the degree of the brine, lesser is the space required for condenser and more space available for the crystallizer. Table 6 depicts variations in brine salinity across zones. Based on the degree and yield of the brine, an experienced Agariya can judge the optimal size of the condenser. He can also judge the degree of brine with fair precision by touching and tasting it.

There are always multiple condensers and brine is released from one to another and after reaching the last condenser, it achieves the desired degree before being transferred to crystallizer. Each condenser has an embankment of about 2.5 to 3 feet**.** It takes around a week to make the condenser. Condenser making begins almost simultaneously with the wells. A fresh condenser costs around Rs 10,000 to 15,000. Most often, Agariyas help each other for condenser making and thus the cash outflow comes down to Rs. 1000 to 1500 only. This mutual help on the salt pan is called *'dhaal'*.

The most important part of the production unit is the crystallizer. This is the part where salt is crystallized. Generally, the size of one *pata,* crystallizer, is 250 by 175 feet. One agar normally has 6 patas of this size; equivalent to around 6 acres of land. Three most important features of the crystallizer are - it should be leveled well; should have a slight slope for the brine to flow; and its bottom should be hard and impervious. These are achieved by very fine manual operations performed by Agariya. (Box - 1) It takes around 2 weeks for preparing the crystallizer. *Zypta,*

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from the villages. Two, this part of Rann is at a higher elevation compared to other zones and hence dries up faster so that machinery can be carried easily. Other places remain wet and marshy for long which makes it too difficult and expensive to carry the machinery. It may cost up to Rs. 3,000, a large amount for an Agariya, just to transport it. The wear and tear of the machines left in the Rann may be little more but the benefits far outweigh the cost.

[34] Except in Malia (extreme south-west of LRK), where marine brine is main source and hence wells are not required.

local vegetation is attached to the embankments of the crystallizer to protect them from wave action of the brine filled in it.

Box 1: Indeed a Backward Technology?

Agariyas are often blamed for their 'backward' technology and 'primitive' existence. Many studies point to their backwardness and recommend 'mechanization.' Certainly salt making in LRK means intense manual labour. However, it is important to recognize that without any help of scientific gadgets, Agariyas can achieve perfection and accuracy of judgments based on their experiences and keen observation. A reason enough for an applause.

Fine Slope of the Crystallizer: It is necessary to provide little slope to the crystallizer bed so that the brine admitted from condenser flows smoothly from one end to the other. It should neither be less which will not allow smooth flow nor be more which will push all the brine at the other end severely affecting the quantity and quality of the produce. Agariya achieves it while hardening the salt pan bottom by his sheer judgment. No Theodolite, no Dumpy Levels, no laboratory situation, no Staffs for marking elevations – and yet perfection every time – year after year.

Hardening Salt pan bottom: The bottom of the crystallizer has to be both smooth and hard. If it is uneven or soft, while moving Dantala, the soil will be scraped out and will get mixed up with the salt crystal damaging its quality and hence price. There are two other purposes of hardening the salt pan bottom. One, to make its bottom impervious to prevent any loss of brine through percolation. And two, to prevent the soil from sticking to his feet while moving in the pan.

Smoothness is achieved by an iterative process of filling brine, noticing unevenness, removing it and refilling brine – keep repeating this process till a smooth surface is achieved.

Hardening of the salt pan bottom is almost an art. This fine process is called *'pagli paadvun'* and many of folk songs of Agariyas refer to this process. This process involves rhythmic and soft tamping of every inch of the crystallizer's bottom by feet. These are fine measured movements and the men and women do it number of times till the required hardness is achieved. Precision engineering, some would say. My foot, literally, the Agariya may humbly inform.

Culti for Crop Protection: In the long arduous process of salt production, when the season is about to end and salt crop is to be harvested, early summer months of April and May are nightmarish for Agariya as high velocity swirling winds blow over large parts of LRK bringing in a load of silt particles. If these deposit on the standing crop of crystal salt, means severe losses for Agariyas.

These winds are known as *Udaan* and its more intense version is *Vaavar.* Over the years they have learnt and developed ways to obstruct the winds and trap their silt load. In the earlier times, they raised a bund by meshing the twigs of local vegetation called *zypta*, followed by a bund made of soil lumps from the Rann itself which was followed by manually constructing a bund with the fine Rann soil. Later they began making trenches manually with spades and wetting the soil to bind the bund structure. Finally with the coming of tractors, a series of small trench-cum-bund structures, locally called *culti* are raised with the help of cultivators fitted to the tractor. The *culti* has evolved through 5 stages over generations. Patience, desire to combat *udaan* and availability of tractors, all have contributed to present *culti*.

In the times of mechanization and digitization, this may appear backward but what it indicates is that Agariyas are always in the process of learning and improving wherever possible, within their limited resources and context. They also have fine sense of 'precision' for good harvest!

After the condenser and crystallizers are prepared, the brine is released in the crystallizer and left for about 15 days. During this period, a layer of salt, one half to three forth of an inch thick, is formed and the crystallizer bottom becomes very hard. Till this point the process is common for Poda and Karkach salt. This point onwards we describe the process of Poda salt.

5.4 Seeding the Salt Crystals

Seed making is a very critical process in crystal salt making. It takes around 10 days to complete the process of seed crystal formation and its multiplication. After formation of hard salt layer at the bottom, Agariya undertakes a very ingenious task, of forming and multiplying the crystal seeds.

Twigs of *Zypta,* thin local vegetation, are spread all over the crystallizer filled with brine. After 8 to 10 days of evaporation, finer salt crystals completely cover the twigs. It is also known as *Khipdo or Sangetro* in some zones. These are shaken into the crystallizer. In the second stage, a hand pulled tool, Pavdi, is run all over the crystallizer and initial seed crystals are broken into finer crystals. In the third stage, a metallic shear strip, attached to the lower side of Pavdi is used to scrape the earlier salt layer to get more seed crystals. Final scraping is done with rake to bring in more seed crystals into production process. This entire process is extremely critical because productivity of a pan depends upon the quantum of seed crystals.

5.5 Hard Work in the Salt Pans

Once the seeds are formed and are uniformly distributed in the crystallizer; *dantala,* raking and *pavdi,* spade work is carried out in the crystallizer on every alternate day till the end of the season. Raking simultaneously achieves four purposes - it prevents formation of *popdi*, salt layer; two, the brine solution remains homogenous so that uniform crystals get formed; three, evaporation rate and hence rate of crystal enlargement increases; four, the crystals remain separated from each other and there is room for independent growth. In the absence of raking they tend to coalesce.

This also spreads the salt crystals evenly across the crystallizer. This goes on for about 4 months. The period of raking and spading is extremely labourious specifically as the season draws to the end because heavier loads of enlarged crystals need to be pulled, all manually and that too in the scorching sun. Both men and women do this work. Entire operation of raking and spading is performed by the Agariya family, lasts for 90-105 days.

Table – 8: Daily Diet of Agariya Family in Rann

Time	Activity
4 a.m.	Wake up Black tea with night's left over *bajri rotlo,* millet bread from previous evening.
10 a.m.	Rotlo with onion potato vegetable and chilly paste
2 p.m.	Rotlo with pulse *(mug, chana)*
8 p.m.	Khichdi or Masala bhaat with chilly paste.
9 p.m.	Goes to sleep

Source: Personal discussions with Agariyas at Santalpur

As the size of the crystals enlarge, it is difficult to run a 14 teeth rake and a smaller 7-8 teeth rake, *faantiya,* is used in the last month. As the season draws near end, the brine supply is stopped. Towards the end of the season, layer of salt crystals achieve thickness of 7 to 9 inches.

During the period of raking and spading, Agariya faces many uncertainties, worst being the declining brine yield and failure of the bores, requiring urgent action.

Box – 2 : *Paani Pahela Paal*: Unique Initiative by Agariyas

It is mid February. Few kilometers inside the Rann from village Tikar, we see a long, unending line. We go near it and find it extending as far as eyes can see. It is an earthen bund of 2 to 3 feet height and as wide at the base.

Well, this 25 kilometer long bund is a result of the collective effort by Agariyas of 6 villages - Juna Ghantila, Nava Ghantila, Tikar, Mangadh, Ajeetgadh and Khod. And believe it, this is almost 30 year old practice. Every year they make this bund to protect their salt crop from the tidal waters.

Come April and the tidal water in south-west region of LRK rise, particularly around the full moon and no moon days. This is also the time when they just begin the harvest. Inundation around the salt pans means loss. The soil becomes marshy and slippery which prevents any movement of trucks and hence the salt can't be taken out of the Rann.

Till 1979, Agariyas' season in this part used to end by beginning of April resulting in smaller crystal size, reducing the productivity and price both. Agariyas were helpless. In 1979, when tractors and earth moving equipments came, they thought of erecting a bund to prevent the tidal water from entering salt pan areas. Results were encouraging. Season expanded, productivity increased and revenue increased.

Till your eyes reach. Visuals of the bund in making. February, 2008.

The bund is made from the Rann soil by scraping it, heaping it as crumbs along the alignment and finally covered with finer soil from the Rann. When the Rann gets flooded in monsoon, the bund gets washed away but leaves its marks and the same alignment is used year after year.

Till around 2004, the alignment was made in curvilinear shape, almost parallel to the village boundaries. But that used to cause breakage and leakage at those points where the water pressure came head-on, often resulting in to losses for some Agariyas. Another idea was thought. What if the bund was a straight line? And that's what they did. They almost made a tangent rising from Juna Ghantila in the direction of Vacchraj Bet to avoid those pressure points. And wait, they also make it a point to make speed breaker like structures at two points so that the Forest Department can drive across the bund to reach bets.

Every Agariya participates in the supervision of the bund making. The work is outsourced. Cost per Agariya is worked on the basis of his pan numbers. In its history of 30 years, there have been no conflicts among the Agariyas or the villages over the bund.

This is truly like the famous Gujarati proverb *Paani Pahela Paal*, literally meaning making the bund before water comes in; used for indicating importance of preventive measures.

Day to day life in the Rann is not easy. Normally, the Agariya couple wakes up at 4 a.m. in the Rann to work in the cooler hours and the day lasts till 9 p.m. Their diet is quite devoid of nutrition. (Table 8) Economic condition of Agariya of Kharaghoda is the worst and their diet is

often poorer than what is shared in the table here. Agariyas whose pans are deeper in the Rann, rarely get to eat any vegetable or pulse, often having only millet bread, *rotlo* with chilly paste and onion. They also can not have access to milk and always take black tea.

Drinking water is always scarce in the Rann. During the field work, we saw a 50 year old Agariya walking through the marshy Rann for more than 4 km. to get a jar of water. Many times a single water bottle is shared among 4 – 5 or even more people.

5.6 Harvesting the Salt

At the end of hard labour of 7 to 8 months comes the time to harvest the salt crop. It is collected and piled in to long ridges within the crystallizer. This operation is normally performed by the Agariya family. Ridges are allowed to drain for 2-3 days and then the crop is lifted out. The salt is lifted from the pan, heaped outside it and then loaded on to the trucks by the labourers who often come from tribal areas of Gujarat and Madhya Pradesh. It takes about 2 days to harvest the crop, called *Pala valva*, folding or gathering the ridges. In Santalpur, Halvad and Dhrangdhra it is loaded directly from the crystallizer to the trucks. Whereas, in Adesar, Kharaghoda and Maliya it is first stacked outside the crystallizer from where it is loaded.

Table – 9: Post Production Functions till Loading on the Trucks

	Dhrangadhra	**Kharaghoda**	**Santalpur**	**Adesar**	**Halvad - Maliya**
1. Method of loading on truck	Directly from pata to the truck (Local labour plus tribals)	First from pata to outside by Agariyas and then on truck	Directly from pata to the truck (local labour)	From pata to outside first (Agariya and his labourers)	Maliya: From pata to outside first (Agariya and his labourers) Halvad: Directly from pata to truck
2. Who loads the truck and takes it outside LRK *(maal khenchwanu)*	Local labour plus tribals	Local labourers	local labourers	Local labourers plus tribals	Local labourers
3. Who loads on to the wagons	Local labour plus tribal from Gujarat and Madhya Pradesh	Local labour and tribal from Panchmahal & Madhya Pradesh	Local labour and labourers from Uttar Pradesh and Bihar	Local labour	At Maliya local labour At Halvad: Local labour and tribals from Gujarat & Madhya Pradesh
Compiled by authors based on discussions with Agariyas and AHRM karyakartas of each region					

The uncertainties do not leave Agariya even after the salt production. As Agariya prepares to harvest the salt, dust laden winds, *udaan* and *vaavar*, in the open large expanse of the Rann, may just deposit the dust on the pans or the harvested salt. This is nightmarish for Agariya as the crop suffers in quality, significantly reducing the price. This problem is more prevalent in Santalpur, Kharaghoda and Adesar regions. An early arrival of *vaavar* may force Agariya to wind up the season earlier leading to a drop in production. Agariyas have devised a technique called culti to obstruct such winds and trap their dust load. But, it may not always protect. (Box 1)

Sudden unexpected showers can wash down part of their crop. During this year, 2007-08, when Agariyas had just harvested their crop, there were unexpected widespread showers in the first week of April. Many Agariyas have suffered a loss of Rs 5,000 to 15,000. Once the crop is

heaped outside the pans, the remaining brine called bittern is thrown out of the crystallizer through a channel.

The salt production activity in LRK is a source of employment for many labourers who seasonally migrate to this area. Post production work is well divided in each zone among Agariyas and local and outside labourers. (Table 9)

It is important to note that after the salt harvest, in some zones Agariyas do bring the salt out of pans but in no zones they undertake loading-unloading of salt which is always done by outside labourers. Tribals and other labourers from Panchmahal, Madhya Pradesh, Uttar Pradesh and Bihar migrate seasonally to work in loading-unloading functions.

This point onwards, all the operations are carried out by the trader - shifting the material by trucks to *Ganjaa* outside the Rann, weighing the harvest, stacking it near railway station, iodizing and loading on to the wagons. The rail lines take the crystal salt to places like Agra, Muzzafarnagar, Meerut, Shahjahanpur, Satna, Sitapur, Gonda, Indore, Gwalior, Uttranchal etc. Bihar and Bengal are main markets for Karkach salt. Some salt from both the categories goes to Nepal also.

Weighing operation is solely managed by the trader and 5 to 7 per cent under-reporting of weight is a norm here. The trader further adjusts the weight, by 5 to 7 per cent in advance towards the anticipated losses due to washing in the rains. This leaves Agariya with net weight loss of 10 to 15 per cent. Final accounts are settled based on this final weight as per the pre-decided salt price. Advances given to Agariya are deducted and *chhelo chukavo,* the last payment, is the balance that remains in his hands at the end of the season. Last balance is always cleared on the *Ashadhi Beej* around mid July. For many Agariyas this amount is often in negative to be carried forward as additional debt to next year.

5.7 Earnings at the End of the Season (Economics)

It is quite common that many Agariyas enter the Rann with debt and leave it at the end of the season with added debt. According to their own estimates, in Santalpur, 60-70 per cent Agariyas are debt ridden as compared to nearly 100 per cent in Kharaghoda. This can be better understood by the average economics of each of the salt zone in LRK (Table 10) This table also shows how Poda salt means more loss as compared to Karkach.

1. Karkach salt making is substantially more profitable as compared to Poda salt. Net income is lowest in Kharaghoda at Rs. 16,500 where as it is almost ten times more and highest in Maliya.
2. An Agariya of Kharaghoda can not even meet his food expenses during the salt making season from his salt income. One of the major reasons for very low returns in Kharaghoda is the lower brine yields in this region which lead to very high expenses on the crude oil comprising of almost 80 per cent of total production cost which is only 29 per cent in Maliya.
3. Agariyas of Santalpur are just able to meet their food expenses during the season.
4. Based on our discussions with the Agariyas and field team of AHRM, it is our assessment that in Kharaghoda only 20 per cent Agariyas make profit, 40 per cent break even and 40 per cent Agariyas make losses. In Santalpur, around 50 per cent make profits, 20 per cent break even and about 30 per cent make losses.

Table – 10 : Average Economics in each Zone of LRK (for a 10 acre unit)

Details	Dhrangadhra	Kharaghoda	Santalpur	Adesar	Maliya	Halvad
1. Salt Type	Poda	Poda	Poda	Karkach	Karkach	Karkach
2. Labour Related Expenses						
3. External Labour	22500	17000	49000	59250	45250	46350
4. Crude oil cost	56000	96000	80000	56000	21000	28000
5. Other Expenses*	5200	8500	7500	8700	6100	7100
6. Cost of Production	83700	121500	136500	123950	72350	81450
7. Average Production (tons per 10 acre unit)	1500	1200	1500	1600	1800	1700
8. Average Price per ton (in Rs.)	115	115	110	110	130	110
9. Total Income	172500	138000	165000	176000	234000	187000
10. Net Income	88800	16500	28500	52050	161650	105550
11. Less average family food expense incurred during the season @ Rs. 3500 for 8 months (Mid September to Mid May)	28000	28000	28000	28000	28000	28000
12. Net in hand at the end of the season excluding family labour	60800	-11500	500	24050	133650	77550
13. Crude oil cost - as percentage of total cost of production	66.9	79.0	58.6	45.2	29.0	34.4

Average Economics worked out based on the discussions with the field workers and Agariyas.

** Other Expenses include machinery, engine oil, drinking water expenses etc.*

For detailed calculations of each Zone please refer to Appendix 5

5. As can be seen from the data that Karkach salt is highly profitable. This is mainly for two reasons – good market for this variety and adequate source of brine. Though Dhrangadhra is Poda salt zone, there surplus is good because of good quantity of brine availability.

In order to understand the losses made in Poda salt, we undertook four case studies and the brief findings of the cases are shared herewith. (Table 11)

1. Out of 4 Agariyas, whose production cycles were studied for the year 2006 – 07, 3 made losses after meeting their food expenses during the salt season and one in Tikar made surplus. This means increased debt from the salt trader for those who made losses. This also means that most of them were left with no surplus for the 4 months of monsoon when their supplementary incomes are uncertain.
2. Operating margins are fairly low at Rs. 7 and 6 per ton in Kharaghoda and Nimaknagar respectively where as in Santalpur it was negative. Tikar case had a margin of Rs. 21 per ton. This reinforces the generally held perception that Poda salt making is highly vulnerable to any small variation in production factors.
3. Crude oil accounts for about 60 per cent of the total cost of production in all the four cases. Lowering sub-soil brine and rising cost of oil have contributed to this. In past decade or so,

crude oil prices have increased from Rs. 2000 to Rs. 7000 per barrel of 200 litres, around 250 per cent increase.

Table – 11 : Crystal Salt Making: Case Studies

	Bachubhai	Sultanbhai	Prabhubhai	Dashrathbhai
1. Salt type	Poda crystal	Poda crystal	Poda crystal	Poda crystal
2. Region	Kharaghoda	Santalpur	Tikar, Halvad	Nimaknagar, Dhrangdhra
3. Production (Tons)	1600	1650	3200	1500
4. Price (Rupees per ton)	110	100	101	90
5. Total Income	176000	165000	323200	135000
6. Cost of Production	164500	167750	254700	126000
7. Net Income	11500	-2750	68500	9000
8. Family members (Nos)				
9. Food expenses incurred during the season	35000	24000	48000	28500
10. Net Surplus / Deficit at the end of the season 2006 - 07	-23500	-26750	20500	-19500
11. Cost of production per ton	103	102	80	84
12. Agariyas' margin per ton (excluding his food expenses)	7	-2	21	6
13. Crude oil cost - As percentage of total cost of production.	63.2	61.3	60.3	60.0
Compiled on the basis of detailed case studies for year 2006 – 07. [Details Appendix - 6]				

5.8 Lives Enveloped in Risks and Threats

Like agriculture, salt farming is also full of risks. Salt production in the Rann and Agariyas' livelihoods are faced with several risks and threats which can be broadly divided in three categories.

1. Risks from Nature
2. Risks from Market
3. Threats to livelihood from Conservation Project

1. Risks from Nature

1. Rains: Untimely rains at the beginning of the season can damage the initial pan construction and Agariyas may have to redo or repair it incurring additional costs and labour. Rains during and at the end of the season mean damage to the crop. While this paper was being prepared, there were widespread rains in the first week of April causing losses to the extent of Rs 5,000 to 15,000 to many Agariyas. If the monsoon prolongs, it shortens the following salt season affecting the productivity.

2. Declining Brine yield: The salt must remain submerged in brine during the production process or else the crystals get coagulated affecting quality and price. Over the years, there has been sharp reduction in the sub-soil brine in many parts of the Rann. For example, in Santalpur, the brine levels have gone down from 45 feet to 200 feet in last10 years as evident in Table 6. Many

bores in Santalpur are more than 200 feet deep. Kharaghoda is the worst affected region. This decline means either lower yields in their bores affecting the productivity or they need to do multiple bores in the same year, incurring large additional expenses.

Deeper wells and bores also mean ever increasing fuel expense. Due to better brine situation in Halvad, a unit requires on the average 5 barrels of fuel where as the worst brine situation of Kharaghoda results in 8 to 12 barrels a season accounting for almost 80 per cent of total cost of production. (Table 6 and Table 8)

In 2006 – 07, Manguben of village Navagam in Dhrangdhra region had to make 14 wells! Bachubhai of village Degam had to sink 10 wells in 2005-06 and 6 wells during 2006-07. Some others may have to change the location or stop the work. For example, Naranpura cooperative has 233 members but only 39 of them are functional today. Low yield also forces Agariya to release the brine in the crystallizer before it reaches the desired salinity which brings in Gypsum impurity in the salt. [35]

Box - 3 Neither Farmer nor worker !

We are in a meeting with Agariyas of Nimaknagar, literally meaning salt town, once happy and prosperous with salt income. Blank faces and eyes staring at nothingness; clothes - old, soiled and patched up; wrinkled faces looking much older than they actually are; many even hesitating to sit on the rug spread for meeting. The whole appearance loudly announcing, that things are not fine. Raghabhai is sitting sadly in a corner with a photograph in his hand.

Soon we learnt that he had lost his son, Bhagwanbhai a couple of days ago while digging up the borewell for his salt pan. The build up of the poisonous gases in the bore hit him. He was taken to a private hospital in Dhrangdhara which lacked oxygen facility. Soon he was moved to the government hospital but was declared dead on arrival. The Rann has no transport facility and in emergencies like this it costs lives. It took them two and a half hours to cover a small distance to the hospital as they walked through the marshy Rann first and then on the road. He was only 40 years and is survived by his wife, 4 sons and 3 daughters.

There is a government scheme with a provision of financial compensation for such incidences for farmers and for land less workers. His family can't get under any of the categories. In case of compensation under farmer's category his land should be at least 1 acre. But his share in his ancestral land was mere 0.108 acres 433.33 square meters. For the government this does not mean farmer. In case of applying under landless category, he should have 'no' land. Not even an inch in his name. But he has good 433 square meter farm. So no compensation under this category too.

Once the yield of the well declines, the recuperation rate[36] reduces and the engine has to be stopped frequently requiring Agariya's constant attendance at the site. In such situation, Agariya may decide to deepen the well or sink a fresh well to increase the yield leading to additional expenses. If he does not spend, his salt crop suffers. Hussainbhai of village Rajusara in Santalpur

[35] The salt crystals must remain submerged in 4-6 inches of brine. If they are exposed, they become brittle and may rupture or break down in to smaller crystals affecting the quality of the crystals as they tend to coagulate.

[36] Recuperation Rate is rate at which the brine or water accumulates in the well while the pump is extracting it. For continuous operation of well, the rate of recuperation must be at least as much as the withdrawal rate, otherwise pumping has to be stopped intermittently.

Rann has to stop his engine every 20 minutes for 15-20 minutes till the bore recharges and then restart.

An alternative to deepening the well or making a new one is to reduce the size of the crystallizer so that the brine requirements come down. Most Agariyas do not prefer this as this reduces the production and in any case he will have to sink a new well next year.

3. Fatal Gases in the Well: At the start of the season, when the well is being dug up to lower down the pump for extracting the brine, Agariya has to get down in the well. At times, there are lethal gases which may prove fatal. Young Agariya Bhagwanbhai, aged 32 years, living in Nimaknagar died in 2007-08, due to gas poisoning. However, these are rare occurrences. Agariyas have devised an ingenious method to identify the presence of these gases. They throw a piece of burning cloth in the well before getting down. If the fire quickly extinguishes, it indicates the presence of poisonous gases.

Udaan and *Vaavar*, the high velocity winds in early summer can also cause damage. Agariyas have evolved method of *'culti'* to prevent damage from it [Box 1]

2. Market Risks

The forces of nature and market leave the production system of Agariya highly vulnerable. Agariya's production and its economics move in narrow margins that small variations in any one of the many factors can change the entire production cycle from profit yielding to loss making. From the beginning of the season till the salt is harvested and given to the trader, he remains quite unsure of the net economic outcome of the season.

The demand for crystal salt is decreasing year after year. It is indicated by the reducing number of salt traders at different locations and ever piling salt inventories at the storage points. Numbers of traders in Santalpur, Kharaghoda and Dhrangadhra have reduced from 93, 40 and 35 to 24, 8 and 7 respectively. This means a total reduction of 77 per cent at these three locations.

Uncertainty of credit makes Agariyas future always uncertain. In regions like Dhrangadhra, traders have devised a new method of financing Agariyas. They resort to group finance instead of individual finance to an Agariya. Generally a group of 4 to 5 Agariyas get into this arrangement. In this method, profit making Agariyas have to pay for the shortfall of loss making Agariyas ensuring complete security for the trader unless all the members of the group make losses. This way trader ensures his security, adding insecurity to Agariya.

Issue of iodization is fairly contentious. There are two opposite view on this and it is beyond the scope of this paper to discuss various dimensions of this debate. Let us assume that iodization is necessary. One of the oft repeated arguments against crystal salt is impossibility of iodizing it uniformly. This is not true. Actually, in order to save money, many traders adopt malpractices leading to under iodization. [37]

[37] A rake of 40 boxes (compartments) needs 120 kg of iodine, costing Rs 1,000 per kg. The traders are getting already a subsidy equivalent to 40 kg per rake, effectively reducing them to spend only on the remaining 80 kg. Under iodization saves cost, eg. 50 per cent under iodization brings in a net profit of Rs. 40,000 per rake, a big amount.

6.0 The Wild Ass Sanctuary and Agariyas

6.1 The Wild Ass Sanctuary (WAS)

Decade of 1970s has an important place in the conservation history of post independence India when many of the forests and rich biodiversity areas were notified as Protected Areas under the Wild Life Protection Act.[38] Sanctuary is a protected area where regulated resource use is allowed.

With a view to protect the world wide endangered species of wild ass on 12 January 1973, the first notification was issued declaring a total area of 4840.90 sq. km. of the little Rann of Kutch and the government wastelands of surrounding villages as a Wild Ass Sanctuary (WAS). Later in 1978, another 112.81 sq. km. were added to the WAS. (Table 12) Notified sanctuary area has rich and complex floral and faunal diversity. A detailed ecological study of this notified sanctuary was carried out by GEER Foundation in 1999.

Table – 12: Geographical Spread of Wild Ass Sanctuary

Notification	Location / District	Villages	Area (sq. km.)	Area (%)
12 January, 1973	1. Little Rann of Kutch (including bets)		3569.36	72.06
	2. Kutch	29	509.84	10.29
	3. Mahesana	4	81.42	1.64
	4. Rajkot	14	130.85	2.64
	5. Banaskantha	8	219.36	4.43
	6. Surendranagar	29	330.04	6.66
	Total area notified in 1st notification	84	4840.87	97.72
13 January,	1. Patan	9	33.42	0.67
1978	2. Banaskantha	13	79.34	1.60
	Total area notified in 2nd notification	22	112.76	2.28
	Total Area Notified for the WAS	**106**	**4953.63**	**100.00**
Source: From Respective Notifications				

The GEER Foundation survey enlisted 253 species of plants of which 157 were herbs, 18 trees, 23 shrubs, 18 climbers and 37 varieties of grasses. As for the faunal diversity, 24 insects, 27 spiders 21 fishes, 178 types of birds and 33 types of mammals are found in the WAS area.[39] Wild ass is one of the many species among the vast biodiversity of Rann. It is due to ever shrinking

[38] A protected area is an area which has been declared legally protected by the government under the Wild Life (Protection) Act of 1972 (WLPA). An area is declared as "protected" because of its high ecological or biodiversity value, or because of its diversity or rarity of wild plants, animals and ecosystems.

These areas perform important ecological functions such as maintaining the micro-climate and protecting water catchments. A PA is therefore given special protection so that the natural environment is able to thrive without destructive human interference or exploitation. As of early 2000, there are 554 PAs in India with a total area of 1,54,037.38 sq. km (including marine PAs), making up 4.69% of the total land area. (From Kalpvriksh Manual, 2000)

[39] See CESC Study on Biodiversity Conservation and Rural Livelihood Improvement Project (p.14-16) and GEER Foundation study 1999.

habitat and its uniqueness as species, the Wild Ass has become the most important species in the Rann and surrounding area as compared to all the other floral and faunal species

This graceful shy animal known as the Indian Wild Ass *(Equus heminous khur)* today is an endangered species. In the 19th century, the Indian wild ass habitat was spread in the dry regions of north western India including Jaisalmer, Bikaner, Sindh, Baluchistan, Nagar Parkar and Thar Parkar but today it is found only in and around the Little Rann of Kutch. In 1960, their population in India was about 2000 which dropped to only 362 by 1969. An outbreak of severe disease like African horse sickness and multiple droughts during this period are considered to be the major cause of their dwindling number.[40] This herbivorous animal survives mainly on the grasses and crops available on the bets and in the fringe villages. For general information on Wild Ass, see Appendix 7.

Most of the fringe villages have strong seasonal livelihood dependence on the Rann. Be it grazing the animals on the bets for pastoralists, fishing or salt making by the Agariyas. Many of these livelihoods have a long history of association with the ecological resources of the Rann.

6.2 Wild Ass, its Habitat and Salt Making

Ecological study carried out by GEER Foundation in 1999 lists several anthropogenic factors (Appendix – 8) that affect the wild life in the WAS area which include -

1. *Prosopis Juliflora*, (*Gando Baaval)* Invasion
2. Salt works
3. Army firing
4. Narmada canal,
5. Grazing of livestock
6. Tourism and
7. Illegal charcoal making.

As for the salt works, there has been generally held alarmist view that salt works have an adverse effect on the wild ass and other wild life habitat. What are various dimensions of this debate and is there a possibility of a pro-people, pro-wild life inclusive solution?

In order to understand the impacts of salt works on the wild asses, we have looked at some of the facts and analysed the data which present quite a different picture than commonly viewed. We try to share our findings in the following section.

6.2.1 Increasing Wild Ass Population and Overlap with Salt Zones

1. In a span of 30 years from the first census by the Forest Department in 1976 to 2004 the wild ass population has increased from 720 to 3863, 436 per cent increase.
2. If we take earlier period, from 1969 to 2004 the wild ass population has grown from 362 to 3863, a 956 per cent increase. (Figure 3) Present population is the highest in past 60 years. As put by a scholar, “Wild Ass is a remarkable story of population recovery mainly due to its adaptability and most importantly the absence of any natural

[40] GEER, 1999.

predator."[41] Some experts including senior forest officials believe that by now, their population may be beyond 4000. Similar is the case with all the other major wild lives of the WAS. (Table 13)

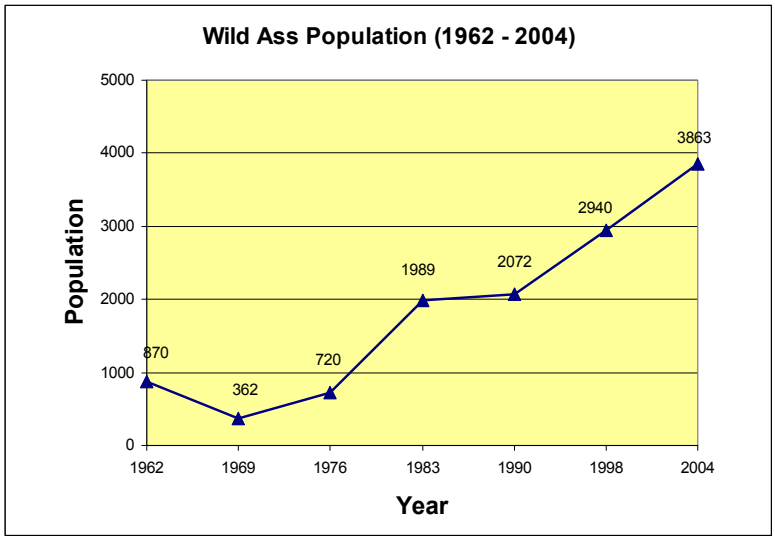

Figure – 3 : Increasing Wild Ass Population

Table – 13: Some of the Major Wild Life in WAS Area (1989 – 2004)

Wild Life	1989	1999	2004	% Change (1989-2004)
Wild Ass (Ghudhkhar)	1989	2839	3863	94.2
Chinkara	906	865	951	5.0
Kaliyar	3	119	131	4266.7
Bluebull (Neelgai)	687	2128	2751	300.4
From: Sanctuary Superintendent, Wild Ass Sanctuary, Dhrangadhra [in a personal visit on 16 October, 2007]				

3. Interestingly, there is wide overlap in the concentrated salt zones and concentrated wild ass population zones. It is important to note that the concentration of wild ass in the WAS has been highest in the southern and eastern zones, the same area where there is highest concentration of salt works. For example during November 1998 census by the Forest Department 76.2 per cent of the total wild ass population was found in the south eastern fringe of the Rann.

4. Despite this overlap, if wild ass population is growing, it raises questions about the popularly held view of threat to the wild ass due to the salt pans.

6.2.2 *Prosopis* Invasion, Loss of Natural Food and Water Areas

1. Over the last three decades there has been a rapid invasion of *Prosopis Juliflora* and as per the GEER Ecology study; by 1995, 8 per cent of total WAS area and more than 33

[41] Dixit, 2005:16

per cent of Bet areas were invaded by it. By 2007, this invasion is likely to have affected 41 per cent of Bet areas, a projection based on the past trends. (Table 14)

Table – 14 : *Prosopis Juliflora* (Gando Baval) Invasion in the WAS Area

Land Types	Total Area	1982-84		1995		Annual growth rate (ha/year)	2007*	
		Area	% of total Area	Area	% of total Area		Area	% of total Area
Rann Area	346459	4005	1.16	5349	1.54	122.18	6815	1.97
Bets	18521	4636	25.03	6040	32.61	127.64	7572	40.88
WAS Area other than LRK & Bets	130391	24728	18.96	29432	22.57	427.64	34564	26.51
Total	**495371**	**33369**	**6.74**	**40821**	**8.24**	**677.45**	**48951**	**9.88**
Area under salt pans		6948	2.01	13357	3.86		11398^	2.3

**2007 figures are simple projections based on the data from the GEER Ecology Study.*

^Area under salt is worked out for year 2005 from the Annual report of the Salt Department 2005-06 by adding the land under recognized and unrecognized sector.

Note: If we take compound growth rate, the area invaded will be much higher in 2007.

2. Bets have been the prime habitats of the wild asses. In 1982-84, *Prosopis* invasion was observed on 28 bets which extended to 40 bets by 1995. Very high invasions were observed on Harniya bet (87 per cent), Jagmal Bet (90 per cent) and on the famous Nada Bet (81 per cent).

3. It is important to mention that *Prosopis* invasion directly competes with natural food and water areas of the wildlife. As mentioned in the GEER study,

> "Grasses and herbs constituted main vegetation on the Bets, which provided ideal habitat for wild ass, chinkara and grassland birds. Prosopis was not seen on these islands before the independence… More area of the Bets is being colonized by the Prosopis after suppressing natural vegetation." (GEER Study, 1999:23)

4. As the natural food availability in WAS area is shrinking, they are increasingly raiding the agricultural fields. Many farmers have stopped growing winter and summer crops fearing the losses due to wild ass, one of the major human – wild life conflict area in the WAS region.

5. As against this, the projected area under salt making is 11398 ha., only 2.3 per cent of WAS area, less than 25 per cent of the area under *Prosopis*! That too in parts which are neither wild ass habitat not their food or water areas. As mentioned in the GEER Ecology study,

> "The salt preparation is done in the extremely saline area of the Rann where plants normally do not grow. Thus, it does not affect the food and water requirements of major wildlife. However, the disturbances due to salt activity cause negative impact. It is observed and opined that the unregulated transportation is one of the major factors responsible for considerable negative impact." (GEER, 1999:180)

Box – 4: Enemies or Friends of the Wild Life?

It is mid-October of 2007 and we are in village Tikar, historically an important trading place, used as a main pass for going to Kutch, Santalpur and even Sindh via Rann. The glory of its prosperous past is evident from its old, grand dilapidated buildings. This, once buzzing village, now is a quiet, unattended village. This is also a village which suffered major losses during 2001 earthquake. It has sizeable population of Agariyas and Naranbhai is one of them.

After the scheduled meeting with Agariyas he wants us to go to his home where he wants to show us something. He has some agricultural land and lives in the field about 5-6 km. away from the village. It is easy to reach his salt pan from there. His humble house is surrounded by three huge Neem trees. Next to his place, there is a *wada*, livestock enclosure, of a local Bharwad pastoralist.

The Bharwad has gone for grazing his livestock. Young livestock is left in wada. Naranbhai is keen to show us something in Bharwad's wada. As he removes the thorny gate of the wada and makes space for us to enter, we are happily surprised to see a little animal there. It is a wild ass foal. A beautiful, little thing with sparkling eyes.

This five days old foal somehow strayed after the birth and had separated from its mother. While returning from grazing in the evening, this pastoralist found this newly born baby with its umbilical chord still intact lying alone in the open. He sent back his brother with his herd and went looking for the mother carrying the baby foal in his hands. It was getting darker and he was not able to see the parent herd anywhere. He finally brought the foal home and of course, it was an exciting moment for his and neighboring families.

Every one was happy and trying to find ways to save the foal. Bharwad has been feeding it from lactating goats. During the day, when he is away for grazing, the Agariya family takes care of the foal and in the nights, the Bharwad family.

One of them suddenly looks at us and questions, "Animals and birds are the only living things in this harsh, endless Rann; besides us. Sounds of birds and movements of the wild animals break monotony of our lives. Birds and animals often come to have water near our salt pans. They eat and at times completely destroy crops in our fields. Despite huge crops losses by them have you ever heard about any farmer or Agariya ever hurting them? We have lived and grown together since generations. Often, the wounded animals and wild asses are cared for days by the Agariyas. Tell us why your *junglekhatu,* the Forest Department, sees us as enemies of the wild ass?" We just looked at the little foal as we really had no answer.

6.2.3 Wild Ass – Agariya Relationship

1. Shy wild ass generally runs away from any movement or any effort to get closer to them. But it shares a close relation with Agariyas. Wild asses are often seen very close to the salt pans, even sharing Agariyas' drinking water. Agariyas often express their cordiality with wild asses by saying that the ass and their children often play together.

2. There have been no incidences of Agariyas harming the wildlife. Our field discussions with many Agariyas and their representatives indicate that most Agariyas are willing to get involved in any effort towards conservation and peaceful co-existence.

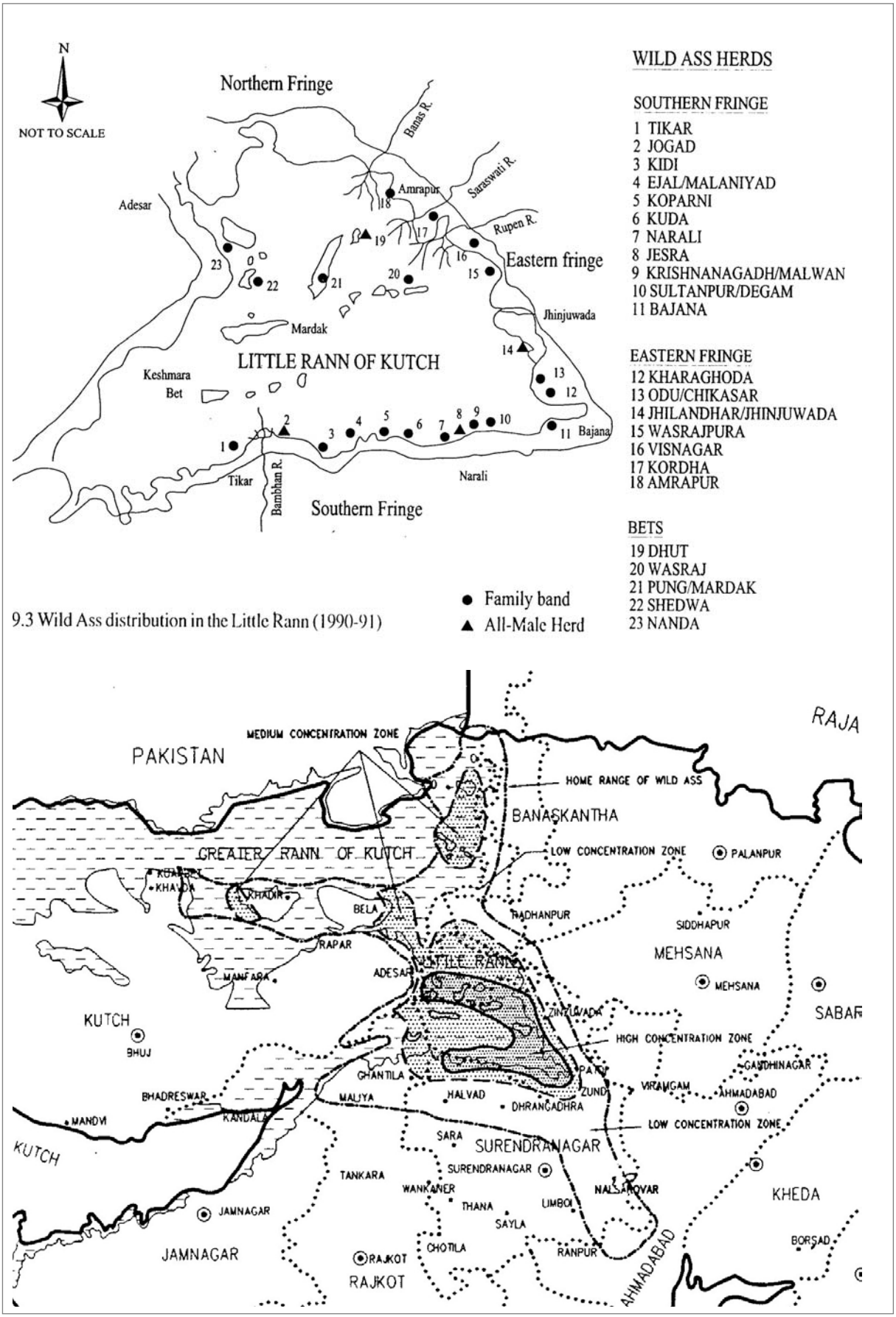

Figure – 4: Changing Wild Ass Habitat *(Map Source: GEER Ecology Study)*

6.2.4 Wild Ass Habitat: Before and Now

As against conventionally held view that it is due to salt works that wild asses are forced to move out of the Rann, historical writings clearly indicate that the inland area on the periphery were an equally important part of the Wild Ass habitat, particularly during the winter and summer time. While in the monsoon they all used to go to the bets for breeding. grounds which are now lost to *Prosopis* invasion.

> "The Wild Ass, *khar gadh*, Equus Onger, . . . is tolerably plentiful in the Lesser Ran and a herd of ten or twelve is not uncommon. In the hot and cold weather it lives during the day in the Ran, feeding on the coarse grasses and plants which are found sparingly here and there. At night it comes inland to feed and returns early in the morning. During the rains the asses retire to the islands in the Ran where they breed and where they feed on the grasses which spring at that season. In the cold and hot weather they return to their haunts on the shores of the Ran. Wild asses may always be seen at Tikar, Khod, and the neighbourhood." (Watson, 1886: 105)

Table – 15 : Wild Ass Population Distribution in WAS and Beyond (1998 – 2004)

Location	1998	2004	Change in % of population
	Population	Population	
1. Bets (Little and Great Rann)	541 (18.40)	554 (14.34)	-4.06
2. Rann	688 (23.40)	1433 (37.09)	13.69
3. Fringe Area (Within 10 km. of WAS boundary)	1271 (43.23)	1210 (31.32)	-11.91
4. Dispersed Population (Beyond 10 km. from the boundary of the Wild Ass Sanctuary)	440 (14.96)	666 (17.24)	2.28
Total	2940 (100)	3863 (100)	
Source: Dixit A.M. undated. Biodiverstiy Conservation and Rural Livelihood Improvement Project in Little Rann of Kutch. A Report by the Centre for Environment and Social Concerns, Ahmedabad			

1. Earlier, the wild ass population was restricted mainly in the WAS area and during 1976 survey no animal was recorded beyond 5 km. of Sanctuary. Since then, two major changes have taken place influencing the wild ass locations - whereas, area under agriculture has increased in the peripheral villages along the Rann; effective food availability on the bets of the LRK has reduced. Also, during these years, there has been 5 fold increase in the wild ass population. Now, grasslands outside the Rann, cultivated fields and fringe areas of the bets are used for grazing by the wild ass.[42]
2. All these trends conclusively suggest that the Wild Ass habitat is undergoing a change and increasing number of wild asses are occupying newer habitats beyond the LRK. (Figure 4)

As such the humans and the wild life in the Rann area have co-existed for generations. Where as, the wild life does not seem to face any direct threats from the people living in and around Rann, the reverse is worrisome. As the 'good' natural food is reducing in and around LRK, the wild asses and *nilgai,* blue bull, have been raiding the agricultural fields, resulting in severe crop

[42] GEER, 1999:120

damages. More than 60 per cent of total damage is caused by nilgai, wild boar, feral pigs, cranes and porcupine.[43]

All the above facts together point the following:

1. As against the alarmist view, wild ass population in LRK is growing and that too in the areas close to the salt pans, thus it raises question against the allegation that salt production is harmful to the wildlife. We reiterate the statement from the GEER Ecology study "the salt areas are not into conflict with respect to wildlife's food and water needs as salt pans are made in the areas where nothing grows."
2. Uncontrolled growth of *Prosopis* on the bets has severely damaged the prime habitats of wild ass.
3. The geography and nature of the Wild Ass habitat are undergoing change due to multiple reasons. Many of the wild asses are adapting to new environs outside and beyond LRK and WAS.

6.3 Agariyas' Right to Livelihood

Since the colonial rule till very recent times, the wild life protection efforts in India has been largely following an 'exclusionary' model where indigenous people and their livelihood activities are perceived as major threat to the wild life conservation and hence have been often displaced from the Protected Areas. Protected Areas are always perceived differently by different sections of the society.

> "By urban conservationists as places to be ideally set aside for wild plants and animals, or for tourism; by local communities as their ancestral lands and as repositories of the resources on which their lives depend; by industrialists and development planners as the sources of raw materials for a rapidly growing economy. The mismatch between these varying visions of the country's…. ecosystems, is the origin of the conflicts which threaten to undermine the ambitious attempts at conservation, made in the past few decades." (Saberwal et. al. 2001:71)

These different views and interests make wild life conservation a complex subject and there are series of conflictual issues around it: human rights versus wild life protection, exclusion versus coexistence; conservation versus development; state control versus participatory management.[44] (ibid)

The Wild Ass Sanctuary also faces similar challenges and is yet to find ecologically sustainable and socially responsible solutions. Agariyas face threat of displacement in the LRK. No new leases have been granted for salt making after 1997. The uncertainty of future of salt making and Agariyas has obstructed many potential pro-Agariya official initiatives, credit facilities and other welfare opportunities; depriving Agariyas of socio-economic improvement. There are various legal dimensions to the whole issue of WAS and Agariyas as discussed below.

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[43] Shah and Goyal, 1991. As quoted in GEER, 1999:128.

[44] Saberwal et. al. 2001:71

Box – 5 : November 2006 - Rude Shock for Many Agariyas

It is a chilly winter morning of November, 2006. It is the mid season time. The crystal salt is half done. Like every day, Raghubhai (name changed) is busy on his salt *'karkhana'* when two people arrive and ask him his name. As soon as he gives his name, they write it on a piece on paper and hand over the paper to him. These persons are the officials from the Forest Department and the paper is a 'notice' to vacate 'illegally' occupied Rann. The officials are rude and warn him to immediately stop the salt production or be prepared for the action.

Raghubhai has never been to school like most Agariyas and can not read. He takes the letter to another literate Agariya who reads it to him. Parts of the letter read like this -

> ". . .as per the above mentioned resolutions of the Gujarat Government Little Rann of Kutch and the adjoining Government wasteland areas have been declared Wild Ass Sanctuary. …. In the above case, your application and demands made herein are rejected. Thus you have no legal rights in the WAS. . . . By entering WAS without permission, Wild Life Protection Act 1972 and its section 29/35 (5) OR 35 (6) is violated for which you are liable to 3 years' imprisonment and/or fine of Rs. 25,000 or both. Moreover, salt making in the WAS cause damage to the wild life habitat…. This is for your information….As the proceedings of above case….are completed and (your) claims are rejected, to avoid abovementioned actions (punishments and fine) against you, you are hereby given notice and understanding to not to enter the WAS area."
>
> - S/d, Regional Range Forest Officer, Sanctuary Range.

This came as a rude shock to Raghubhai. He had only heard about the Sanctuary and some paperwork going on in Surendranagar but had never filed any application nor does he understand any of the legal provisions. But the fear of imprisonment and heavy fine, more than his net annual income, made him nervous and scared. And probably that was the purpose. The state always uses 'fear' instead of 'knowledge' to inform the people about their displacement.

Raghubhai, his father, his grandfather, great grandfather, all of them have always lived in and loved this Rann despite its harsh conditions. It is this Rann that has provided for their living for generations. He and his father were born in the Rann. The thought of leaving the Rann means no future, only darkness ahead.

He is one of the hundreds of Agariyas who received such notices rejecting their claims without ever applying for any. Displacement and loss of livelihood in the LRK is real threat for Agariyas today.

6.4 WAS and Legal Issues

1. **Survey Number Zero:** Rann lands belong to the Government of Gujarat and till recent times have been administered simultaneously by five adjoining district collectors – Surendranagar, Mehsana, Banaskantha, Kutch and Rajkot. Though administratively managed by five different collectors, this vast land mass has never been surveyed. Under the land revenue department, entire LRK has only one survey number - 'zero'! Nationally this may be a unique unsurveyed land mass. But this uniqueness has posed serious administrative problems.

   There is no clarity as to where the boundary of one district ends and the other begins. Thus the land lease given for the salt making in the Rann has never had any specific location or proper survey number as in other revenue areas.

2. **Unrecognized Agariyas:** In order to support the small salt producers and to attain self sufficiency in salt, in 1948 the Government of India had made special provision for the small Agariyas where they did not require any permit or any license to produce salt. They were allowed to produce salt anywhere, provided the area used was up to 10 acres only. Registration with the Salt Department was optional for such Agariyas. Some of them chose to register but many did not do so. Such unregistered salt producers came to be known as 'unrecognized' salt makers and there are no records of such Agariyas. Most of the Agariyas fall under this category in the LRK, and hence have no documentary evidence of their salt farms.

Table – 16 : Significant Events and Processes in Wild Ass Sanctuary

Date	What happened?	Remarks
12 January, 1973	First Notification under the Gujarat Wild Animal and Wild Bird Protection Act, 1963.	This Act was repealed in 2004.
13 January, 1978	Second Notification under the Wild Life Protection Act, 1972 for including some more areas in the Sanctuary	
28 April, 1997	Appointment of Settlement Collector to inquire into the existence, nature and extent of the rights.	Settlement process initiated after 24 years after the first notification. From 1973 to 1997 lease renewals in the LRK went on unchecked.
25 September, 1997	Notification granting 60 days period for claiming the rights in the proposed Sanctuary area.	Field level verification by AHRM brings out many inconsistencies in mandatory oral announcements and shortcomings.
1997 to till date (March, 2008)	The process of settlement of rights is going on and the settlement report is still not ready.	Settlement process not completed in 35 years. Despite this, in November, 2006, Agariyas in the Rann begin getting notices for illegal occupation and eviction.
5 March, 2007	Fishing Rights held as customary community right under WLPA section 24C Grazing rights to be granted as customary community rights to mobile and sedentary pastoralists.	Why similarly small Agariyas can not be granted salt making rights?
Source: Various official documents, notifications and filed level verifications with the Agariyas.		

This makes it difficult for them to produce any 'documentary' evidence for their salt farming activity in the Rann. However, there is sufficient collective knowledge - in the community; at the village level among the other villagers; and within the local Panchayats; about such Agariyas, locations of their salt farms, since how many generations they have been producing salt etc.[45]

[45] In fact this information can be used by the Department to shed light on the 'real' and other Agariyas.

3. **Process of Settlement of Rights:** As per the provision of section 19 of Wild Life Protection Act, 1972;[46] the process of settlement of rights in the 'notified' sanctuary area has to be completed and a settlement report has to be prepared before the final declaration. (See Appendices 9 and 10 for details on how a sanctuary is established and for various sections of Wild Life Protection Act.) Ironically, the process of settlement of rights was initiated 24 years after the notification and is still going on today in April, 2008; at the end of 35 years. (Table 16)

   Settlement process must be done through wide publicity and claims have to be made y the affected people within 60 days of the announcements. When most of the affected people in the WAS area are illiterate, written notification is not adequate and there is provision of village wise oral announcements called *dandi pitvi*. Officially, these public announcements for claims were made on 25 September 1997. However, analysis of information gathered under the RTI Act; village wise inspection of records; talks with the local people and Agariyas by the AHRM has brought out many irregularities. Table 17 gives the status of the settlement process, for individual Agariyas and cooperatives, in 2006.

   In an application filed under the Right to Information case, the public information officer, Additional Collector, WAS has replied that,[47] "There have been no *rajuaat*, representation, from any of the traditional Agariyas. However, there have been some claims put by the individuals and cooperatives of those individuals holding less than 10 acres and those claims have been approved or rejected as under.

Table – 17: Status of Settlement: Agariyas and Salt Co-operatives

Type	Claims made	Approved	Rejected
Individual Agariyas	1776	268	1508
Agariya Co-operatives	77	14	63
Source: Additional Collector's Office, Surendranagar			

   AHRM analysis indicates that the due procedures were not followed; in many places the signatures are forged; many sarpanchs who supposedly signed, actually do not exist etc. This means in many places where Agariyas claim ignorance about receiving any notice for filing claims' applications is not baseless and their demand for re-granting the period of 60 days seems quite valid.

4. **Notified v/s Declared Sanctuary:** It is important to understand that legally the first notification for a wild life sanctuary is like an announcement of intent to create the sanctuary. Legally, the sanctuary comes in to effect only after the due completion of settlement process

[46] Section 19 of WLPA, 1972 - Collector to determine rights: When a notification has been issued under section 18, the collector shall inquire into, and determine, the existence, nature and extent of the rights of any person in or over the land comprised within the limits of the sanctuary.

[47] RTI application by Bharat R Sutarsandhia on 09-11-2006 ID No. 8/06 Replied on date 12-12-2006

of claims and rights followed by a final notification by the Ministry of the Environment or by the state assembly.

As the process of settlement is still going on, legally WAS is a 'notified' and not a 'declared' sanctuary; unlike commonly believed.

Despite the ongoing process of settlement of rights in the notified sanctuary; in November 2006, when the salt making was half way through the season, many Agariyas were given notices for evicting Rann. [Box 5] (For details of major events that happened with respect to the Sanctuary issue, see Appendix - 11)

6.5 Case for Customary Rights

By nature it is difficult to establish customary rights. It is a right that gets established by prolonged use of a particular resource in a particular way by a community or a group of people. Customary rights are of two types.

One, individual customary rights, over the property of others, like right to way, light, ventilation etc and community customary rights like water from ponds, fisheries in the ponds, grazing grounds, usage of a particular resource, grounds for organizing the fairs etc. Customary rights are also called easement rights or prescriptive rights. To be able to exercise these rights, one has to prove that one has been enjoying the right since time immemorial or for generations.[48] There are enough documentary evidences that prove that salt making in the Rann has a long history as shown in the earlier pages in section 3.0.

1. From historical documents, oral traditions and Agariyas' folk songs it is clear that salt making is an age old traditional and specialized livelihood activity in the Rann. Uniqueness and superiority of the crystal salt of LRK has been historically famous. All these make a strong case for granting customary rights for salt making to the Agariyas.
2. As per 1924 report by K. H. Vakil, well known chemical engineer and a salt expert, salt was made along the Rann in Kharaghoda, Bajana, Patdi, Savlas, Degam, Jhinjhuwada and Kuda. In 1881 new salt works were also opened at Odu, north of Kharaghoda. Interestingly, all these locations continue to make salt even today which is a clear indication for continuation of age old salt making activities in this area which makes further case for the granting the community customary rights to the Agariyas.
3. 85 years old Arvind Acharya of Wadhwan, noted teacher, social activist, ex-MLA and highly knowledgeable; living not too far from the Rann has seen the life during the pre-independence princely rule. He has collected more than 55 traditional songs about Agariya. These songs depict their lives, their dreams and their miseries in LRK. He feels that there may be many more songs. Sheer number, their language and the descriptions also indicate the importance, spread and preference for *vadagaru* salt during the pre-British and British times.

[48] Based on personal discussions with the Gujarat High Court's senior Advocate, Girish Patel, Ahmedabad.

4. In fact, the word 'Agariya' itself is an old word indicating the historicity of this profession. Bhagvaddromandal, well known dictionary cum encyclopedia of Gujarati language published in early 20th century defines Agariya as one keeping Agar.

5. Salt making is a seasonal activity and no Agariya ever constructs any permanent structure in the Rann as it is flooded during the monsoon. What the Agariyas are demanding is not even a permanent tenure to any land in the Rann but admission of their right to seasonally use a very small proportion of total WAS land to make salt for their livelihood.

6. GEER Ecology study has clearly recommended regulated production of salt works in five zones. (Appendix 12) It states that,

> "…the salt manufacturing activity is very old in the LRK. The activity has expanded on large scale since last few years. This has also been reflected through satellite data. Therefore it may not be possible to ban the manufacturing activity totally as the poor Agariyas are earning their livelihood through this activity only. Hence the salt manufacturing may be permitted in the salt work zones for this purpose only. . . The LRK is major salt production area in the country and also an important habitat for saline desert biota, including threatened species like wild ass, chinkara, …… In the background of the fact, the management strategy is required to be designed in the interest of biodiversity and salt production so as to resolve the conflict." (GEER Study, 1999:159)

7. In March, 2007; the Additional Collector, WAS granted fishing rights in 21 centres to the nearby villagers during the monsoon recognizing their customary right.[49] It is difficult to understand that if the fishing rights can be granted, why not the right to make salt by the small traditional salt producer?

7.0 What needs to be Done?

Vagaries of nature, reducing sub-soil brine, lack of tenure, shrinking market, exploitation by the salt traders, threat of displacement due to WAS - given these multi-dimensional complexity of salt making in LRK and uncertainties faced by the poor and marginalized Agariyas, there is an urgent need for the State to look at these issues and take immediate measures.

There is an urgent need for all the concerned Departments – Forest, Industries, Salt, Revenue, Labour and Social Welfare to come together to resolve the Agariyas' issues in a socially responsible manner.

7.1 Wild Ass Sanctuary

1. Large proportion of Agariyas are denotified nomadic tribe (DNT) whom the British rule had branded criminal tribes. Post independence, they were named DNT with a view to facilitate their integration in the mainstream development, but there were no planned efforts by the Government. Many of them have built their lives by finding, adapting to newer livelihood system like salt making in the Rann. How far it is fair and justified to displace them from their only source livelihood?
2. There is a strong case for Agariya and wild asses' co-existence and is well argued and established in this study.

[49] As per a letter, dated 5 March 2007, by the Additional Collector (WAS) to PCCF, Gandhinagar.

3. Real producers of salt, Agariyas, must be recognized as the legitimate users of LRK and their customary rights must be recognized and granted.
4. While granting the rights for salt making in the WAS, there is a need to differentiate between the big lease holders and the small producers. We feel that irrespective of the 'official' status, the rights of all those small salt producers must be recognized and granted on priority – for whom this is a traditional occupation and whose primary livelihood is the salt making in the Rann.
5. GEER Ecology study has made detailed recommendation about the future of salt works in the LRK. It has proposed five salt zones which need to be upheld and worked out in consultation with the Agariyas and their representative organizations. Agariyas must be consulted before making any alterations and finalizing plans for new salt zones as there are technical limitations that permit salt making only in certain parts of the Rann.

7.2 Production Process

1. **Other by-products:** At present, Agariyas make only edible salt (Sodium Chloride) from the brine, whether marine or sub-surface, from 24.5 degree B to 29 degree B. But it is possible to profitably extract other salts like Gypsum before 24.5 degree in the pre-crystaliser stage and Potassium Chloride and Magnesia from the post – crystaliser bittern. These products have very good industrial market too. Centre for Salt and Marine Chemical Research Institute of Bhavnagar has developed the necessary technology which can be confidently passed on to the Agariyas also. Given the cost and gestation period of the technology, Government's intervention will be very useful.
2. **Infrastructural Support:** Brine lifting costs are very high. The Government must consider either crude oil subsidy or provision of power for salt production activity. A small reduction in the production cost will be directly beneficial to Agariyas.

7.3 Institutional Measures

1. **Tenurial Security:** We have seen that the lease holding and actual production are cut off from each other. Those holding leases are not directly involved in the production and the real producers i.e. Agariyas do not have leases in their names. They remain thoroughly dependent and insecured. It also affects their bargaining power with the other actors in the production – marketing system. It is very important and socially much needed to secure the tenure for the real producer.
2. **Institutional Finance and Security:** Agariyas are economically weak and they can not finance their production themselves which pushes them in a spiraling debt cycle. There is a need to work out how the financial or banking institutions can play a role in providing seasonal support to the Agariyas, the way it is done for other viable enterprises.
3. **Insurance against Calamities:** Many a times, Agariyas suffer production and quality losses due to untimely rains, dust storms, cyclones etc. Agariyas have no security against these. Agariyas should be protected against such losses by evolving an effective insurance system.

Whatever plans are made, actions are taken for Agariyas; there is a need to redefine our relationship with Agariyas. For large part of Agariyas' history, society has treated them either with antagonism or indifference. The words of a senior salt trader still ring in our ears who said

with contempt, “Agariya for me is *kolso*, coal making; *lootfaat*, stealing and *daaru,* country liquor.” After 60 years of earnings through Agariyas, this is the prevalent attitude towards them. Despite all their contribution, they have continued to live a life of destitution.

Today, Agariya is in a kind of identity crisis between being a producer and worker. If he is considered ‘producer’, he should get all those facilities like tenurial security and institutional credit, extended to a viable enterprise. If Agariya is considered ‘worker’ then benefits of all the worker related provisions including minimum wages must reach him. Either way it will be a first step towards providing them with dignified means of livelihood which they can’t even dream at present.

Rann, Salt Making and the Wild Ass

Sun rise in the Little Rann of Kutch [12 October, 07]

A nice resort for Rann Safaris.

While for Agariyas and many others, Little Rann is a source of livelihood, place for real hard work; for many urbanites, it is a destination for vacation and relaxation. Place to enjoy its unique beauty.

Famous Wild Asses,
Little Rann of Kutch

Rann has an interesting ecology and unusual religious places.

SALT MAKING IN THE RANN

Well cleaning, pump fitting, setting and the removal of silt from the well or its deepening are some of the initial tasks after reaching the Rann.

Whether it is making bund, deepening the well or bore making, *saydas,* in the well; salt making is very labourious and working conditions are always harsh.

Be it the beginning of the season when it is all wet and muddy in which Agariyas have to walk for kilometers or the end of the season, when the temperature in the Rann goes beyond 46^0 C, it is all hard physical work.

Finding adequate brine, having good crop, saving it from natural calamities and at the end of the season getting some surplus are the dreams of most Agariyas. But they often remain unrealized.

Yet Agariyas continue to dream every year and leave the rest to their GOD.

Khipdo, Zypto or Sangetara used for making seed crystals in the beginning of the season. Crystals are formed all around the thin twigs of branches of this grass like vegetation.

Seed crystal is very critical for crystal salt making. It takes around 10 days. Twigs of Zypta are spread all over the crystallizer filled with brine. Once the crystals deposit, the twigs are shaken off to get first seeds. These are multiplied through ingenious methods. Productivity of a pan is directly proportionate to the quantity of seeds.

Getting drinking water is very difficult in the Rann. This camel water tanker which met us at the periphery of Rann in the morning was seen in the noon at the delivery point near a far off salt pan.

Raking, *dantala fervava*, is one of the most critical step and goes on for six months. This facilitates water evaporation from pan bringing uniformity to the crystal. As crystal size gets bigger, it tougher to move the rake. Many women Agariyas manage to do it.

When the salt is ready, it is folded like bunds in the pans and later heaped outside the pans. From where the trucks take it to the Salt Ganja, open storage godowns outside Rann.

Salt stored in Ganja

Trucks – for internal salt transport.
From Rann to Ganja and within Gujarat.

Trains – For transport across the states.

Home – Sweet Home
For 8 months spent in the Rann, these are the homes, houses, shelters for most Agariyas.

No roads, no water supply, no electricity, no clinics, no ration shops nor milk supply.
A tough life under the Sun in the day and under the stars in the night. Often in the companionship of the wild ass.

Bicycle,
The most common means of transport
and an important companion for
all Agariyas and their families.

SALT PEOPLE – THE AGARIYAS. . .

. . .AND THE WILD ASS

From 1976 to now, the wild ass population has increased from 720 to 4000.

It is estimated that 48.5 per cent wild asses are outside the Rann and the bets. Of them, 500 have permanently moved out of the sanctuary area and many of them cause severe damage to the agricultural fields in the periphery area.

Fearing wild ass raids many farmers have stopped growing winter crops.

Despite the ongoing process of settlement of rights in the notified sanctuary; clear recommendation in the GEER Ecology Study to allow the salt works and settle their claims; in November, 2006 when the salt season was half way through, Agariyas were given notices for evicting

Agariyas, determined to struggle for their right to livelihood in the Little Rann, get together in the mid season 2008 to decide the course of action against the eviction notices. Initiated by their forum, Agariya Hit Rakshak Manch, they gather in the Rann for demanding their traditional rights over salt making in the Rann.

Appendix 1

Firman by the Emperor Aurangzeb (1669-1670)

"Translation of a Firman or Royal Mandate in Persian".

IN THE NAME OF THE MOST HIGH AND HOLY GOD

The exalted Firman of the Emperor ABDUL MUZUFFAR MOHAMMAD MOHEDDIN ALAMGIR the Conqueror.

(SEAL.)

Whereas there has come before the holy and glorious sight (of his Majesty) a petition from the possessor of generosity and excellence the servant (Khanazad) who is worthy of rewards and favours, the "Nazim" (or Governor) of the Subah of Ahmedabad dependent on Goojerat, (representing that the Mahal or district) of Mohammad Nagar, otherwise named Halud, containing one hundred and twelve villages, together with the salt pits, the revenue (of which is) Dams twenty five lacs and eight thousand Dams, was entirely assigned in accordance with the sanads of the former Rulers in Jagir to the ancestors of the Zamindar Rajput Jhala (namely), Jaswantsing (and his descendants) generation after generation without (fear of) obstruction (on the part) of (any) person and (without) the imposition of any condition and (or) conditions, and without (any) partnership with any other (person) and (as) up to this period the above-named Zamindar is the possessor and occupier (of the same) and (as) at this time (it is represented) that the abovementioned Mahal, together with the villages and the salt pits, was assigned in Jagir to Nazar Ali Khan by the Court of His Majesty and the Ruler of the World and (as) he (Nazar Ali Khan) receives every year the sum of twenty five thousand Rupees by virtue of holding the Jagir, and (as) the abovenamed (Jaswantsing) expects that by the grace and favour of the Emperor (the claim for) the abovementioned sum, may be rendered void the order of His Majesty, which must be acted upon, has attained the honour of manifestation as follows:—

In accordance with the representation of the Nazim of the Subah the "Mahal", together with the villages and the abovementioned salt pits, are to be recognized as having been given and delivered over the Jagir to the abovementioned Zamindar (and his descendants) generation after generation according to the ancient custom, without the partnership of any other person, and without (fear of) obstruction (in the part) of any condition and (or) conditions. (and the claim for) the abovementioned amount is to be considered as rendered void (Jaswantsing being free from responsibility for the same) in order that (he) the former expending the revenues thereof for his own (use), may perform as much as possible, the duties of well-wisher and (of taking) care (of the villages, &c) and the duties of loyalty and watchfulness. And he shall take care and keep the roads safe from (perpetration of) highway robbery. And he shall make an arrangement with regard to the rules and regulations of that place (in order) that all the subjects and the whole population may remain in safety and peace. It is necessary that the present and future Governors and Officers and Accountants and Jagirdars considering the abovementioned Mahal together with the abovementioned villages and the abovementioned salt pits as given to and confirmed in the possession and control of the former Jagirdar with his children and dependents, generation after generation, shall not demand Nazar Ali Khan's sum. And all suits with regard to dealings (i.e. civil suits) and assaulting and beating (i.e. criminal matters) and other (matters) being referred to him (Jaswantsing, and officers, &c.) shall refrain from collecting the revenue from him). And they shall consider the Zamindar Rajput as the independent Jagirdar of that place without (his being in) partnership with any other person. And they shall neither change nor alter the same by any manner or means. And understanding that all demands of the Emperor and civil impositions are remitted and cancelled, they shall neither obstruct nor annoy him with regard to (demand payment of) the revenue received from the land (Malwajhat) and expenses (Akhrajat) and in respect of all the old and new customary payments and allowances, and shall not interfere (with him) in any way. And they are to consider the abovementioned Jagirdar as possessing full authority (Mookhtar-e-kul). In this matter they are not every year to ask for a new Sanad or Parvanah. And should (any persons) at any other place have (any other writings etc.) they (the said officers, &c.) shall not rely (on the same). Written on the fifteenth day of Shawal, in the twenty-fourth year of His Majesty's reign."

Appendix 2

Additional Information about Salt Making in Kathiawar

(From the Kathiawar Gazetteer, 1886)

Kathiawar salt is broadly classed as Vadagara and Ghasia. Vadagara is fine crystal salt such as is made at the Government works at Kharaghoda. Ghasia is a general term for poorer salt, which is made from brine or made by the sun on the Ran and in the numerous creeks which indent Kathiawar coast. The manufacture/ing of crystal salt has been been described in the Statistical Account of Ahmedabad.[50] The only place in Kathiawar where this fine salt is made is at Kuda on the Ran of Cutch, about fourteen miles north of Dhrangdhra and within the limits of that state.[51] This salt is inferior in quality to that produced at Kharaghoda. The yearly yield of Kuda works is about 40,000 Indian *mans*, and it can be increased to any extend. Pits might be dug anywhere in the triangle whose base runs from Ukat at the mouth of Bambhan to Hatar at the mouth of Banas. West to Bambhan the brine lose the qualities necessary to produce large crystals, and in other places where salt is made from brine the result is inferior Ghasia salt. The crystal or Vadagara salt is exceedingly hard, while the Ghasia salt, as its name implies, is friable and does not bear carrier. Along the coast west of Kuda, the chief salt pans are at Vavania, in Morvi, at Jodiya Beri and Pindara in Navanagar, at Kuchri within Porbandar limits, at Myari, Dhamlej, and Bherai in Junagadh, at Vadera under Jafrabad, and at Mahuva, Talaja and Bhavnagar in the Bhavanagar state. These works could yield an ample supply for the whole peninsula. (page 92, para 2)

Then all the smaller estate-holders, or talukdars, within whose limits salt was formed or could be made, began to assert their rights and put a fictitious value on what they had hitherto considered unworthy of notice. In 1879 it was proposed that all minor works should be closed, and that the six leading salt-making sates should either give up the entire management of their works to the British Government, or that they should equalize their selling price with that obtaining in British territory and agree to the appointment of Government officials to superintend the manufacture and sale of the commodity. The states would not agree to these terms. In the beginning of 1880 they into draft engagements for concentrating their works, restricting the outturn of salt, forbidding the export by sea, keeping strong protective establishments, and adopting all measures required to prevent the smuggling of salt into British territory. These arrangements were very distasteful to the inland states. They complained that a monopoly had been placed in the hands of a few coastal chiefs, and that they had lost all choice as to where to buy their salt. Many further complained that their subjects had hitherto been allowed to collect inferior salt free, and that they would feel and ….. any interference with such rights. They further complained that they would be put to great cost to prevent smuggling, while profits would be absorbed by a limited number of their more …. mate neighbours. These arguments have been fully considered by the Government of India, and it has at last been decided that matters should remain pretty much as they were before the question was raised; that the chiefs should be bound to prevent smuggling; and that the frontier customs line established to prevent the carriage of untaxed Kathiawar salt into British territory should be maintained. (page 93, para 1)

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[50] Bombay Gazetteer, IV. 116-124.

[51] In the salt manufacture at Kuda the pans vary in size from 2500 to 10,000 square feet. These pans, unlike those at Patdi, are arranged in no order. The salt is made from the surface water, as the brine springs which afford so rich a crop at Patdi is not obtainable, the whole ground being underlain with muram. The water is deficient both in quality and quantity, and two wells are required for each large pan. The manufacture is generally stopped in March or April on account of the cloud, dust and sand, and from water to water. The well –sinking and pan making are works of Agarias or salt makers, who are helped by their wives and children and produce is generally sold in units of donkey loads.

Appendix 3

Post 1947 Legislations and Developments in Salt Industry

Year	Details
1947	Duty on the salt abolished and a directive principle was incorporated in the constitution of India that salt should remain duty free and it ceased to be monopoly article. Patel Committee was set up to find measures to meet the immediate shortage of salt. This committee suggested nationalisation of salt industry targeting complete self sufficiency by increasing production.
1948 - 50	Appointment of Salt Experts Committee which recommended measures to increase production, improve quality and reduce costs. In pursuance of recommendations by Patel Committee, Government appointed a Salt Advisory Committee
1950	Salt Advisory Committee set up which suggested that permits be given to manufacture salt without license on small scale up to 10 acres. This brought in large numbers of unlicensed Agariyas.
1949 - 1956	Due to no license policy for small producers, unlicensed manufacturing rose by 20 times.
1955	Cess was fixed under the salt Cess Act at Rs. 3.50 per tonne. Full cess = Salt works of more than 100 acres. Half cess = 10 to 100 acres No cess = Less than 10 acres
1957	Manubhai Shah Committee was set up to consider problems faced by the salt industry, pattern of future developments, anticipated demand for salt, promotion of co-operative effort and measures for general welfare of labour. This committee felt the need to have co-ordination between small and large salt producers. It was felt that the haphazard production of salt by the unlicensed salt manufacturers adversely affected organised factories. As a result of these recommendations, all the manufacturers of salt were to obtain licenses regardless of their area except those who produced for domestic and local use. Salt works with area less than 10 acres were to register [not license] with the salt department. This helped the salt department to control all salt producing units within a particular area. Salt works > 10 acres required licences < 10 acres a certificate of registration from the Salt Department
1958	Ban imposed on fresh licensing due to haphazard growth of salt works and serious slump in production.
1961	Development of heavy chemical industries raised the demand for salt, particularly in Gujarat. Ban on fresh licenses withdrawn and 22,900 acres of land was licensed from 1961 to 1963.
1963	Central Advisory Board stressed the desirability of producing high quality salt and the need to boost the exports.
1980	High level salt enquiry committee was constituted. Earlier committees were more focused on increasing the salt produciton for achieving self sufficiency. First time an attempt was made to look into detail, the cost of production being incurred by the primary salt producers and their labour welfare measures.
1993	Central Advisory Board meeting to discuss the increase proposed in 1980 on the salt cess from Rs. 3.50 to Rs. 10 per tonne. Industrial and salt manufacturers lobby and the Government of Gujarat strongly opposed the increase and no consensus was reached.
1996	Salt Industry is de-licensed.
Compiled from information given in the report by Iyengar Sudarshan and Rani Uma, 2001. Functioning of the Salt Industry in Guajrat. Gujarat Institute of Development Research, Ahmedabad	

Appendix – 4 List of Villages Around the Little Rann of Kutch from where People are Involved in Salt Making

	Kharaghoda		Dhrangadhra		Halvad		Santalpur		Adesar		Maliya
1	Navagam	1	Kuda (Old & New)	1	Tikar	1	Santalpur	1	Sukhpar		1 Juna Ghantila
2	Junagam	2	Koparani	2	Mangadh	2	Rajusara	2	Taga		2 Kumbhariya
3	Station	3	Nimaknagar	3	Ajitgadh	3	Khimasar	3	Varnu		3 Venasar
4	Himmatpura	4	Naradi	4	Jogad	4	Antarnes	4	Vijapur		4 Vejalpur
5	Naranpura	5	Kankavati	5	Miyani	5	Sor	5	Aayra wandh	Adesar Gram Panchayat	5 Khakhrechi
6	Odu	6	Sultanpura	6	Malaniyad	6	Vaghpura	6	Jilani Wandh		6 Sultanpur
7	Mitha Ghoda	7	Jesada	7	Kidi	7	Parsund	7	Meghasari Wandh		7 Nagawadi
8	Mulada	8	Virendragadh	8	Enjar	8	Ranmalpura	8	Kaya wandh		8 Hanjiyasar
9	Chikasar	9	Thala	9	Ranmalpur	9	Garamadi	9	Lakha Gadh		9 Haripar
10	Nagwada	10	Sattapar	10	Hingorala	10	Piparala				10 Maliya
11	Jhinjhuwada	11	Jasmatpar	11	Malaniyad - 2	11	Chhansara				11 Zazasar
12	Vachhrajpur	12	Sajjanpar	12	Khod	12	Dai gamda				12 Bagsara
13	Surel	13	Dudapur	13	Mangalpur	1	Jazam				13 Vavania
14	Dhama	14	Bharada	14	Ghanad	2	Boru				14 Varshamedi
15	Bhalgam	15	Rajpar	15	Isanpur	3	Kilana				15 Bhavpar
16	Visnagar	16	Moti Malvan			4	Varnusari				16 Chikhali
17	Patadi	17	Isadra			5	Gamadi				17 Navlakhi
18	Sandla	18	Vavdi			6	Masali				18 Mandarki
19	Degam	19	Rajgadh			7	Daldi				
20	Bajana	20	Gopalgadh						Total villages		
21	Pipali	21	Ghanad						Kharaghoda	25	
22	Savlas	22	Ghanshyamgadh						Dhrangadhra	23	
23	Jenabad	23	Jeeva						Halvad	15	
24	Visavadi								Santalpur	12	
25	Fatehpur								Adesar	9	
									Maliya	18	
									LRK salt villages	**102**	

To the Greater Rann

Appendix 5
Zone wise Economics of Salt Production in LRK

ZONE 1 : DHRANGADHRA [PODA SALT]

Activity	Days	Expense	Family Labour
A. Labour Related Expenses			
1. Machine Repairing and going to Rann [family repairs]	3	500	1000
2. Well making (Kui)	3		2000
3. Bore making	6	2000	
4. Condenser making (Gaamdu)	7		1500
5. Crystaliser making (Pata)	7		3200
6. Tamping in Crystaliser (Paglikaam)			2000
7. *Zypta or Sangetro* spreading in crystaliser for getting crystal seeds	10	1000	
8. Shaking and spreading the crystal seeds in crystaliser	1		200
9. Raking *(Dantala)* [14 teeth rake used here.]	90 - 105		21000
10. Final raking *(Faantia)* [7 to 8 teeth rake used here. 1 month net and 2 months @alternate days]	30		3000
11. Salt crystal harvest		4000	
12. Removal of salt from crystaliser		15000	
13. Bittern Removal (Rech) [1 family day]	1		200
Total Family and external labour expenses		**22500**	**34100**
B. Fuel Expenses [8 barrels @ Rs. 7000 per barrel]			**56000**
C. Other Expenses			
1. Machinery during the season - nozzle, pump, thread, plunger, grease etc.			1000
2. Engine Oil			700
3. Drinking Water for 6 months [For 6 months @ Rs. 500 per month.]			3000
4. Water tank			500
5. Agariya's own transportation expenses			-
Total other expenses			**5200**
D. Total Cost of Production (exc family labour) [A+B+C]			**83700**
E. Calculating Agariyas' Returns			
1. Total Cost of Production (including family labour) [D + 34100]			117800
2. Total Income [Average production of 1500 tons @ Rs. 115/ton]			172500
3. Net Income (excluding family labour) [E2 – D]			88800
4. Net Income (including family labour)			54700
5. Less Average Family Expense [@ Rs. 3500 per month for 8 months]			28000
Net in hand at the end of the season excluding family labour [E3 – E5]			**60800**

ZONE 2 : KHARAGHODA [PODA SALT]

Activity	Days	Expense	Family Labour
A. Labour Expenses			
1. Machine Repairing and going to Rann [Family repair]	3	1500	
2. Well making (Kui)	3	1000	
3. Bore making [Mechanised operation @ Rs. 50 / feet. Average 250 feet	6	4500	
4. Condenser making (Gaamdu)	7		1500
5. Crystaliser making (Pata)	7		3200
6. Tamping in Crystaliser (Paglikaam)			3000
7. Zypta / Sangetro spreading in crystaliser for getting crystal seeds	10		1500
8. Shaking and spreading the crystal seeds in crystaliser	1		200
9. Raking *(Dantala)*	90 - 105		21000
10. Final raking *(Faantia)* [7 to 8 teeth rake used here. 1 month net and 2 months @ alternate days]	30		3000
11. Salt crystal harvest (Pala Valva) and removal of salt [Rs. 20 per ton for average production of 1200 tons]		10000	
12. Bittern Removal (Rech) [1 family day]	1		200
Total Family and external labour expenses		**17000**	**33600**
B. Fuel Expenses [12 barrels @ Rs. 8000 per barrel]			**96000**
C. Other Expenses			
1. Machinery during the season - nozzle, pump, thread, plunger, grease etc.			1500
2. Engine Oil [Engine oil cost is higher in Kharaghoda as it has to run for 24 hours due to lower brine yield.]			1500
3. Drinking Water for 6 months [For 6 months @ Rs. 500 per month.]			2000
4. Cost of a new water tank			500
5. Agariya's own transportation expense			3000
Total other expenses			**8500**
D. Total Cost of Production (exc family labour) [A+B+C]			**121500**
E. Calculating Agariyas' Returns			
1. Total Cost of Production (including family labour)			155100
2. Total Income [Average production of 1200 tons @ Rs. 115/ton]			138000
3. Net Income (excluding family labour) [E2-D]			16500
4. Net Income (including family labour)			-17100
5. Less Average Family Expense [@ Rs. 3500 per month for 8 months]			28000
Net in hand at the end of the season excluding family labour [E3-E5]			**-11500**

ZONE 3 : SANTALPUT [PODA CRYSTAL SALT]

Activity	Days	Expense	Family Labour
A. Labour Expenses			
1. Machine Repairing and going to Rann [Outside help for machine repair]	3	1500	
2. Well making (Kui) [Varies from Rs. 1000 to 4000]	3		2500
3. Bore making [Mechanised operation @ Rs. 50 per feet. Average 250 feet deep.]	6	10000	
4. Condenser making (Gaamdu)	7		1000
5. Crystaliser making (Pata)	7		4000
6. Tamping in Crystaliser (Paglikaam)			2500
7. Zypta or Sangetro spreading in crystaliser for getting crystal seeds	10	2000	1000
8. Shaking and spreading the crystal seeds in crystaliser	1		200
9. Raking *(Dantala)* [14 teeth rake used here. They also hire outside labour for 3 months @ Rs. 2500 per month.]	90 - 105	7500	21000
10. Final raking *(Faantia)* [7 to 8 teeth rake used here. 1 month net and 2 months @alternate days]	30		3000
11. Salt crystal harvest (Pala Valva) and removal of salt [Rs. 20 per ton for average production of 1400 tons]		28000	
12. Bittern Removal (Rech) [1 family day]	1		200
Total Family and External Labour Expenses		**49000**	**35400**
B. Fuel Expenses [10 barrels @ Rs. 8000 per barrel			**80000**
C. Other Expenses			
1. Machinery during the season - nozzle, pump, thread, plunger, grease etc.			1000
2. Engine Oil			600
3. Drinking Water for 6 months [For 6 months @ Rs. 700 per month.]			4200
4. Water tank			500
5. Agariya's own transportation expenses			1200
Total Other Expenses			**7500**
D. Total Cost of Production (exc family labour) (A+B+C)			**136500**
E. Calculating Agariyas' Returns			
1. Total Cost of Production (including family labour)			171900
2. Total Income [Average production of 1500 tons @ Rs. 110/ton]			165000
3. Net Income (excluding family labour) [E2-D]			28500
4. Net Income (including family labour)			-6900
5. Average Family Expense [@ Rs. 3500 per month for 8 months]			28000
Net in hand at the end of the season excluding family labour [E3-E5]			**500**

ZONE 4 : ADESAT [KARKACH SALT]

Activity	Expense	Family Labour
A. Labour Related Expenses		
1. Machine Repairing and going to Rann	1250	
2. Making of Well [10 to 20 feet deep]		1500
3. Making of Bore [150 to 180 feet @ Rs. 50 per feet with machine saayda]	8000	
4. Making Condenser (karkhaana) [made with tractor]	10000	
5. Making Crystaliser [for 6 patas, 3 persons for a day @ Rs. 100 per day]		1800
6. Roller		400
7. Raking *(Dantala)* [20 person days for one crop @ Rs. 2000 per crop for 10 crops]		20000
8. Salt Harvesting (10 crops) [6 person days of family and outside labour @ Rs. 100 per day for 10 crops]	6000	6000
9. Salt Removal (for 10 crops) [Rs. 20 per ton for avg. production of 1700 ton]	34000	
10. Bittern Removal [One pair for 1 day for 10 crops @ Rs. 100 per day]		2000
B. Total Labour Related Expenses	**59250**	**31700**
Fuel Expenses [8 barrels @ Rs. 7000 per barrel]		**56000**
C. Other Expenses		
1. Machinery		2000
2. Engine Oil		700
3. Drinking Water		3500
4. Cost of a new water tank/barrel		500
5. Transportation cost for self		2000
Total Other Expenses		**8700**
D. Total Cost of Production (exc family labour) (A+B+C)		**123950**
E. Calculating Agariyas' Returns		
1. Cost of productino (including family labour)		155650
2. Total Income [For average production of 1600 tons @ Rs. 110 per tons.]		176000
3. Net income (excluding family labour) [E2-D]		52050
4. Net Income (including family labour)		20350
5. Average Family Expense [@ Rs. 3500 per month for 8 months]		28000
Net Income at the end of the season after deducting food expenses [E3-E5]		**24050**

ZONE 5 : MALIYA [KARKACH]

Activity	Expenses	Family Labour
A. Labour Related Expenses		
Machine Repairing and going to Rann	1250	
Well making [As most of them make marine salt, they donot make well]	-	-
Bore Making	1000	
Condenser Making	3000	
Crystaliser Making		1500
Tamping in Crystaliser (Paglikaam) or Roller moving		400
Raking *(Dantala)* [20 person days for one crop @ Rs. 2000 per crop for 10 crops]		20000
Salt Harvesting (10 crops) [6 person days of family and outside labour @ Rs. 100 per day for 10 crops]	6000	6000
Salt Removal (for 10 crops) [Rs. 20 per ton for avg. production of 1700 ton]	34000	
Bittern Removal [One pair for 1 day for 10 crops @ Rs. 100 per day]		2000
	45250	**29900**
Total Labour Related Expenses		
B. Fuel Expenses [3 barrel @ Rs. 7000 per barrel]		**21000**
C. Other Expenses		
Machinery		2000
Engine Oil		600
Drinking Water		3000
Cost for new water tank		500
Transportation cost for self		0
Total other expenses		**6100**
D. Total Cost of Production (exc family labour) [A+B+C]		**72350**
E. Total Cost of Production		
Total Cost of Production (including family laboour)		102250
Average Income [For average production of 1800 tons @ Rs. 130 per tons.]		234000
Net income (excluding family labour) [E2-D]		161650
Net Income (including family labour)		131750
Average Family Expense [@ Rs. 3500 per month for 8 months]		28000
Net Income at the end of the season after deducting food expenses [E3-E5]		**133650**

ZONE 6 : HALVAD [KARKACH]

Activity	Expense	Family Labour
A. Labour Related		
1. Machine Repairing and going to Rann	1250	
2. Well making		3500
3. Bore Making [70 feet deep @ Rs. 30 per feet]	2100	
4. Condenser Making	3000	
5. Crystaliser Making		1500
6. Tamping in Crystaliser (Paglikaam) or Roller moving		400
7. Raking *(Dantala)* [20 person days for one crop @ Rs. 2000 per crop for 10 crops]		20000
8. Salt Harvesting (10 crops) [6 person days of family and outside labour @ Rs. 100 per day for 10 crops]	6000	6000
9. Salt Removal (for 10 crops) [Rs. 20 per ton for avg. production of 1700 ton]	34000	
10. Bittern Removal [One pair for 1 day for 10 crops @ Rs. 100 per day]		2000
Total Labour Related Expenses	**46350**	**33400**
B. Fuel Expenses [4 barrels @ Rs. 7000 per barrel]		**28000**
C. Other Expenses		
Machinery		2000
Engine Oil		600
Drinking Water		3000
Cost of a new water barrel		500
Transportation cost for self		1000
Total Other Expenses		**35100**
D. Total Cost of Production (exc family labour) [A+B+C]		**81450**
E. Calculating Agariyas' Returns		
Cost of produciton including family labour		114850
Total Income [For average production of 1700 tons @ Rs. 110 per tons.]		187000
Net income (excluding family labour) [E2-D]		105550
Net Income (including family labour)		72150
Average Family Expense [@ Rs. 3500 per month for 8 months]		28000
Net in hand at the end of the season excluding family labour [E3-E5]		**77550**

Appendix 6

Case Studies - Detailed Economics for 2006-07

Case – 1 Bachubhai, Kharaghoda

PODA CRYSTAL

Details	Amount (Rs)
Engine repair	4000
To transport the material to saltpan (4-5 kms)	400
Well digging (35 feet well + 35 feet bore) + bore making (does not include the expenses on pipes)	1500
Gamda (condenser) + Pavtha (crystallizer) + Pagli padwani (tamping)	10000
Diesel (16 barrels @ Rs 6,500 per barrel)	104000
Oil	4000
Spare parts (plunger, piston, dantala, pavdi)	11000
Pump breakdown [Happens almost every year due to brine problems]	4000
Drinking water (8 months @ Rs 700 per month)	5600
External labour For bund making in crystallizer (Rs 4000) Salt harvesting and taking it out (@ Rs 10 / tonne) 16000 (total production was 1600 tonnes)	20,000
Total Cost of Production	164500
Total Income for 1600 tonnes @ price 110 / ton	176000
Net Income	11500
Food Expenses for 7 months @ Rs 5000 p.m.	35000
Net Surplus / Deficit in 2006-07	**-23500**

Case – 2 Sultanbhai, Santalpur

PODA CRYSTAL

Details	Amount (Rs)
Engine repairs	4000
Pump repairs	1000
Line, section, oil, lubricant	1500
Cost of transporting material to rann (fare)	700
Digging well (Self and 2 more Agariyas and a daily wager)*	3000
Making condensers (gamda) - Lump sum basis	5000
Making crystallizer (pato) - 6 patas @ Rs 1200 per pata	7200
Diesel and Crude (7 barrels diesel @ 8400 per barrel. 7 barrels crude @ Rs 6000 per barrel plus barrel transportation @ Rs 150/ barrel)	102900
External labour apart from family labour For raking - 1 Agariya for 5 months @ Rs 2500 / month and Agariya's wife for 5 months for 15 days / month @ Rs 50 per day	16250
Sangetra expenses (zypto) - 3 rounds of tractor @ Rs 1000 per month	3000
Crop (salt) harvesting (pala vadva) - For 6 patas @ Rs 1100 /pata	6600
Equipments [2 dantala i.e. rakes for Rs 500, 6 pavdi for Rs 900 and 1 iron khampali for Rs 700]	2100
Drinking water (8 months @ Rs 700 / month)	5600
Transportation cost for returning home	500
Digging channel with tractor for dispensing bittern (3 hours @ Rs 300 per hour)	900
Culti expense (tractor- 10 hours @ Rs 250/ hr	2500
Expenses on the new bore (Total Rs 10,000. As a bore lasts for 2 years, Rs 5000 for year)	5000
Total Cost of Production	167750
Total Income for 1650 tons @ Rs 100 / ton	165000
Net Income	- 2750
Food expenses for 8 months @ Rs 3000 p.m.	24000
Net Surplus / Deficit in 2006-07	**-26750**

** He had to hire 2 more agariyas and a daily wager for 10 days @ Rs 100 per day. Normally it takes 5 days to dig one well but last year he had to do 2 wells and hence it took 10 days instead of 5.*

Case – 3 Parbhubhai, Tikar

PODA CRYSTAL

Details	Amount (Rs)
Machine repair	3000
Shifting things to rann	3000
Shifting household items to rann	500
Complete construction of condenser, crystallizer etc	17000
Digging wells	4500
Making a layer of salt and breaking it for seed crystals (podu banavi ne bhangvanu kam)	600
Raking for 4 months (2 labourers hired for 4 months @ Rs 2500 / month)	20000
Shifting crop from crystallizer to the plateform (Rs 15 per tonne for 3200 tonne)	48000
Diesel expenses (24 barrels @ Rs 6400 per barrel)	153600
Oil	2000
Wear and tear	2000
Drinking water (no expenses as government's line is there)	0
Road repair etc	500
Total Cost of Production	254700
Total Income for 3200 tons @ Rs 101 / ton	323200
Net Income	68500
Household Expenses for 8 months @ Rs 6000 p.m.	48000
Net Surplus / Deficit in 2006 – 07	**20500**

Case – 4 Dashrathbhai, Nimaknagar

PODA CRYSTAL

Details	Amount (Rs)
Machine repair etc	5000
Transporting household and other things	2500
Gara kaam (condenser, crystallizer, well etc)*	3900
Expenses on getting Zypta and related tasks	6000
Salt harvesting labour expense	3000
Loading the harvested salt on the truck (50 %)	16800
Diesel [12 barrels @ Rs. 6300 per barrel]	75600
Oil	4500
Drinking water	6000
Wear and tear	2700
Total Cost of Production	126000
Total Income for 1500 tons @ Rs 90/ton	135000
Net Income	9000
Food expenses for @ Rs 3500 p.m. for 8 months	28500
Net Surplus / Deficit in 2006 – 07	-19500

** As his wife was unwell, he had to hire a labourer for 12-13 days for these works.*

Appendix 7

Wild Ass: Fact Sheet

Order: *Perissodactyla*

Family: Equidae

Species: Equus hemionus

Size: Shoulder height - 1.1 - 1.2 m

Weight: 160-260 kg.

Habitat: Grassy steppe land and semi desert

Life Span: About 28 years

Gestation: 11-12 months (one foal only)

History: During the seventeenth century the range of the Asiatic wild ass stretched from the Yellow River of northern China in the east to the Black Sea in the west. Their numbers have been in a decline for centuries although their rate of decline has increased dramatically over the last fifty years or so. The animal has been prized as a source of excellent meat and it has been used for centuries as a beast of burden. It was also, because of its speed and endurance, a prime target for hunters anxious to prove their skill with a bow, spear or, in more recent times, a gun. Parts of the animal are used for a wide variety of purposes - both medicinal and magical - and its hide has also been in great demand. It is hardly surprising considering its value that the four surviving races need our protection now.

The Indian wild ass: (also known as the chor-khar or khur) is now quite seriously endangered, and the last survivors of this race occupy an area of salt-plain in the Little Rann of Kutcch, on the India/Pakistan frontier with possibly a few more additional survivors still living in south-eastern Iran.

Appearance: There are slight variations of colouring among the races of wild ass but generally they have a grayish or brownish coat with a pale muzzle, belly and flanks. They have a coarse, erect, darker mane and a fairly short tufted tail with a black tip. Their legs are often lightly striped like a zebra and they have long ears.

Wild ass habits: They are very wary animals and do not like to be approached so they avoid human communities. They live in small groups of 6-12 animals consisting of an adult male (a stallion), several females and their young (up to 2 years old). In the autumn and winter these small groups come together to form a herd of several hundred animals.

Food: This herding is possible because it is in the winter that the desert plants flourish providing the asses with lots of food and moisture. It is during the summer that they have to disperse again in order to seek water and the more scant vegetation. During the summer months they never move more than about seven or eight miles from water. Their diet therefore varies throughout the year from grasses and sedges in the spring to herbs such as the tansy and bushes.

Habitat: Asses live in desert or semi-desert areas, steppeland (grassy plains) and mountainous regions. They prefer hilly areas but will come down into the valleys to avoid dust and snow storms.

Breeding: A female ass (mare) is ready to breed at two to three years old. She is then likely to have one foal every two years. The rut or courtship takes place in spring or summer depending on the region. The stallions become very excited, racing around and fighting before mating with the females. The foals are born eleven or twelve months later.

Source: http://www.ypte.org.uk/docs/factsheets/animal_facts/asiatic_wild_ass.html. Young Peoples Trust for the Environment

Appendix 8

Anthropogenic Factors affecting Wild Life in WAS.

Factor	Argument forwarded by the Forest Department	Remarks
Prosopis Invasion	Before the independence no *Prosopis* on bets and grasses and herbs were the main vegetation providing ideal habitat for wild ass, chinkara and grassland birds. (p. 23) From 1984 to 1995, 34 per cent increase in Prosopis cover in 11 years. Rate of Invasion 677 ha./year Out of 74 bets, 41 bets invaded and more area is being colonized after suppressing natural vegetation.	Vegetation loss is critical for the wild life as compared to the loss in salt pan lands which are normally non-vegetative. About 10 per cent of total WAS area affected by this invasion.
Salt works	As per the remote sensing data, from 1982 to 1995 the salt works have increased from 6,948 ha. to 13,357 ha. As per the Salt Department's data from 1995 to 2005, the salt works have reduced from 11,880 ha. to 7,840 ha. Field work data also supports reduction in the area under salt production.	Only 2.3 per cent of total WAS area under salt making. Haphazard development of salt works lead to disturbance to wild life habitat.
Army Firing	21,713 ha. of area leased to Army and is used for field firing and war like realistic training by all units of Gujarat. Operations during dry period from December to June every year.	Disturbances caused by the movements of their vehicles. Actual firing scares the animals. Noise pollution Habitat in such areas is degraded. Burnt patches of ground vegetation due to practices observed.
Narmada Canal	Kutch branch and some sub-branches will pass through or from peripheral villages.	It may change the ecology of the area and may modify habitats of the unique area. Canal structure will act as barrier and will obstruct the free movement of wildlife. (p.177)
Grazing	Generates pressure on already scarce resources.	Grazing by livestock of nearby villages and migrating pastoralists affect grass availability for wild animals.
Charcoal making	People from surrounding villages are involved in charcoal making.	Activities like cutting of trees, making charcoal and its transportation cause disturbance in LRK area.
Wildlife Tourism	In absence of any proper regulation and restriction tourists enter the WAS area unchecked.	At times chase the wild ass herds for fun which many times result in hurting or harming the young foals.
Source: GEER Ecology Study, 1999		

Appendix 9

Establishing a Sanctuary

1. First Notification: The State Government declares its intent by notification under section 18 of Wild Life Protection Act, 1972 for constituting an area having adequate ecological, faunal, floral, geo-morphological, natural or zoological significance for the purpose of protecting, propagating or developing wild life or its environment as sanctuary. This makes the area a 'notified' and not 'declared' sanctuary. (The whole process of Sanctuary declaration is governed by Chapter 4, section 18 to section 34a. See Appendix – 10)

1. Appointment of Collector to settle rights: Within 30 days of notification, the state government should appoint the collector to inquire into and determine the existence, nature and extent of rights of any person in or over the land comprised within the limits of notified sanctuary.

2. Process of Settlement and its report: The collector invites claims by making announcement in all the affected areas. The claims have to be filed within 60 days of the announcement. Besides the process of assessing the rights based on the applications made by the people, collector can also take suo-moto note of the same. Based on the assessment and recognition of rights and verification of the boundaries, he can grant or reject the rights and if required propose changes in the notified sanctuary.

3. Submission to the Forest Department and Finalisation: After the settlement report is finalized by the settlement collector, it is to be submitted to the Forest Department for acceptance. Forest Department can suggest some changes which if the collector finds agreeable, shall be incorporated and the final report is ready.[52]

4. Submission to State Government for Approval: The final report is then submitted to the State Government for clearance. After the clearance of the report by the State Government all claims, if any, made in relation to any land in area intended to be declared as a sanctuary, have to be disposed of by the State Government. The lands have to be acquired and the rights have to be [only of those recognized in the settlement report] settled as per the state or national rehabilitation and relocation policy. If there is any displacement caused, they have to be relocated, if there is a rejection or allowance for continuation of customary rights, those have to be acted upon accordingly.

5. Submission to CEC and / or MoEF: In case the settlement report has proposed any changes in the boundary, the proposal for change has to be submitted to the National Board of Wild Life for their approval before the final clearance from the Sate Government.[53] If there is any objection filed either from the affected or other persons, then it has to go to CEC for clearance.

6. Final Notification: After all the necessary clearance and settlements of rights, the state assembly passes a resolution after which the final notification declaring the Sanctuary is issued. The sanctuary comes into effect only after the final notification. Till then, legally it is 'notified' and not a'declared' sanctuary.

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[52] Actually the collector is supposed to be an independent authority. That is the reason why no one from Forest Department is appointed for the post. He is supposed to make his own judgment about rights, boundaries, claims etc. But in practice, most such reports are prepared in consultation and suggestions by the Forest Department. Unethical and illegal practice by the powerful groups in making underhand payments for granting rights and getting favours in the settlement reports are not uncommon.

[53] In case the sanctuary is a 'forest' area, the final report has to go through the process of clearance from the Central Empowered Committee (CEC). In case of Wild Ass Sanctuary, it may not have to go the CEC since it is not forest in ecological sense. If there is any objection filed either from the affected or other persons, then it may have to go to the CEC for clearance.

Appendix 10

Chapter IV of the Wild Life Protection Act, 1972 [54]

1[Protected Areas]

Sanctuaries

18. Declaration of sanctuary - 2[(1) The State Government may, by notification, declare its intention to constitute any area other than an area comprised within any reserve forest or the territorial waters as a sanctuary if it considers that such area is of adequate ecological, faunal, floral, geomorphological, natural or zoological significance, for the purpose of protecting, propagating or developing wild life or its environment.]

(2) The notification referred to in sub-section (1) shall specify, as nearly as possible, the situation and limits of such area.

Explanation:- For the purposes of this section it shall be sufficient to describe the area by roads, rivers, ridges or other well-known or readily intelligible boundaries. –

3[**18A Protection of Sanctuaries:** (1) when the State Government declares its intention under sub-section (1) of section 18 to constitute any area, not comprosed within any reserve forest of territorial waters under that sub-section as a sanctuary, the provisions of Section 27 to 33A (both inclusive), the State Government shall make alternative arrangements required for making available fuel; fodder and other forest produce to the persons affected, in terms of their rights as per Government records.

18B. Appointment of collectors: The State Government shall appoint, an officer to act as collector under the Act, within ninety days of coming into force of the Wild Life (Preservation) Amendment Act 2002, or within thirty days of the issue of notification under Section 18, inquire into the determine the existence nature and extent of rights of any person in or over the land comprised within the limits of sanctuary which may be notified under sub-section (1) of Section 18]

1. Subs. by the Wild Life (Protection) Amendment Act, 2002 S.10

2. Subs. by Ntfn. No. LAW 44 LCA 91 Dt. 19-12-1991 KGD 5-3-1992

3. Inserted by Wild Life (Protection) Amendment Act, 2002 S.11

19. Collector to determine rights - When a notification has been issued under section 18, the collector shall inquire into, and determine, the existence, nature and extent of the rights of any person in or over the land comprised within the limits of the sanctuary.

20. Bar of accrual of rights - After the issue of a notification under section 18, no right shall be acquired in, on or over the land comprised within the limits of the area specified in such notification, except by succession, testamentary or intestate.

21. Proclamation by Collector - When a notification has been issued under section 18, the Collector shall publish in the regional language in every town and village in or in the neighbourhood of the area comprised therein, a proclamation.

(a) specifying, as nearly as possible, the situation and the limits of the sanctuary; and

(b) requiring any person, claiming any right mentioned in section 19, to prepare before the Collector, within two months from the date of such proclamation, a written claim in the prescribed form,

[54] This part of the Chapter 4 of Wild Life Protection Act, 1972 along with all its amendments was downloaded from the Karnataka Forest Departments official website in March, 2008.

Source: www.karnatakaforest.gov.in/English/Acts_Rules/acts/Wildlife_Protection_Act_1972.pdf -

specifying the nature and extent of such right with necessary details and the amount and particulars of compensation, if any, claimed in respect thereof.

22. Inquiry by Collector - The Collector shall, after service of the prescribed notice upon the claimant, expeditiously inquire into:

(a) the claim preferred before him under clause (b) of section 21, and

(b) the existence of any right mentioned in section 19 and not claimed under clause (b) of section 21, so far as the same may be ascertainable from the records of the State Government and the evidence of any person acquainted with the same.

23. Powers of Collector - For the purpose of such inquiry, the Collector may exercise the following powers, namely:-

(a) the power to enter in or upon any land and to survey, demarcate and make a map of the same or to authorise any other officer to do so;

(b) b) the same powers as are vested in a civil court for the trial of suits.

24. Acquisition of rights - (1) In the case of a claim to a right in or over any land referred to in section 19, the Collector shall pass an order admitting or rejecting the same in whole or in part.

(2) If such claim is admitted in whole or in part, the Collector may either-

(a) exclude such land from the limits of the proposed sanctuary, or

(b) proceed to acquire such land or rights, except where by an agreement between the owner of such land or holder of rights and the Government, the owner or holder of such rights has agreed to surrender his rights to the Government, in or over such land, and on payment of such compensation, as is provided in the Land Acquisition Act, 1894.

1[(c) allow, in consultation with the Chief Wild Life Warden the continuance of any right of any person in or over any land within the limits of the sanctuary.]

1. Inserted by Ntfn. No. LAW 44 (SA 91 Dt. 19-12-1991) KGD 5-3-1992

25. Acquisition proceedings - (1) For the purpose of acquiring such land, or rights in or over such land,-

(a) the Collector shall be deemed to be a Collector, proceeding under the Land Acquisition Act, 1894;

(b) the claimant shall be deemed to be a person interested and appearing before him in pursuance of a notice given under section 9 of that Act;

(c) the provisions of the sections, preceding section 9 of that Act, shall be deemed to have been complied with;

(d) where the claimant does not accept the award made in his favour in the matter of compensation, he shall be deemed, within the meaning of section 18 of the Act, to be a person interested who has not accepted the award, and shall be entitled to proceed to claim relief against the award under the provisions of Part III of that Act;

(e) the Collector, with the consent of the claimant, or the court, with the consent of both the parties, may award compensation in land or money or partly in land and partly in money; and

(f) in the case of the stoppage of a public way or a common pasture, the Collector may, with the previous sanction of the State Government, provide for an alternative public way or common pasture, as far as may be practicable or convenient.

(2) The acquisition under this Act of any land or interest therein shall be deemed to be acquisition for a public purpose.

1[**25A. Time limit for completion of acquisition proceedings :** (1) The collector shall as far as possible, complete the proceedings under Sections 19 to 25 (both inclusive) within a period of two years from the date of notification of declaration of Sanctuary under Section 18]

1. Inserted by Wild Life (Protection) Amendment Act 2002 S.13

26. Delegation of Collector's powers - The State Government may, by general or special order, direct that the powers exercisable or the functions to be performed by the Collector under sections 19 to 25 (both inclusive) may be exercised and performed by such other officer as may be specified in the order.

1[**26A. Declaration of area as sanctuary -** (1) When,

(a) a notification has been issued under section 18 and the period for preferring claims has elapsed, and all claims, if any, made in relation to any land in an area intended to be declared as a sanctuary, have been disposed of by the State Government; or

(b) any area comprised within any reserve forest or any part of the territorial waters, which is considered by the State Government to be of adequate ecological, faunal, floral, geomorphological, natural or zoological significance for the purpose of protecting, propagating or developing wild life or its environment, is to be included in a sanctuary, the State Government shall issue a notification specifying the limits of the area which shall be comprised within the sanctuary and declare that the said area shall be sanctuary on and from such date as may be specified in the notification; Provided that where any part of the territorial waters is to be so included, prior concurrence of the Central Government shall be obtained by the State Government:

Provided further that the limits of the area of the territorial waters to be included in the sanctuary shall be determined in consultation with the Chief Naval Hydrographer of the Central Government and after taking adequate measures to protect the occupational interests of the local fishermen.

(2) Notwithstanding anything contained in sub-section(1), the right of innocent passage of any vessel or boat through the territorial waters shall not be affected by the notification issued under sub-section(1).

1. Inserted by Ntfn. No. LAW 44 (SA 91 Dt. 19-12-1991) KGD 5-3-1992

1[(3) No alteration of the boundaries of a sanctuary shall be made except on a recommendation of a national board by the State Government]

1. Subs. by Wild Life (Protection) Amendment Act 2002 S.14

27. Restriction on entry in sanctuary, - (1) No person other than,-

(a) a public servant on duty,

(b) a person who has been permitted by the Chief Wild Life Warden or the authorised officer to reside within the limits of the sanctuary,

(c) a person who has any right over immovable property within the limits of the sanctuary,

(d) a person passing through the sanctuary along a public highway, and

(e) the dependants of the person referred to in clause (a), clause (b) or clause (c).

shall enter or reside in the sanctuary, except under and in accordance with the conditions of a permit granted under section 28.

(2) Every person shall, so long as he resides in the sanctuary, be bound -

(a) to prevent the commission, in the sanctuary, of an offence against this Act;

(b) where there is reason to believe that any such offence against this Act has been committed in such sanctuary, to help in discovering and arresting the offender;

(c) to report the death of any wild animal and to safeguard its remains until the Chief Wild Life Warden or the authorised officer takes charge thereof;

(d) to extinguish any fire in such sanctuary of which he has knowledge or information and to prevent from spreading, by any lawful means in his power, any fire within the vicinity of such sanctuary of which he has knowledge or information; and

(e) to assist any Forest Officer, Chief Wild Life Warden, Wild Life Warden or Police Officer demanding his aid for preventing the commission of any offence against this Act or in the investigation of any such offence.

1[(3) No person shall, with intent to cause damage to any boundary-mark of a sanctuary or to cause wrongful gain as defined in the Indian Penal Code, 1860 (45 of 1860), alter, destroy, move or deface such boundary-mark.

(4) No person shall tease or molest any wild animal or litter the grounds of sanctuary.]

28. Grant of Permit - (1) The Chief Wild Life Warden may, on application, grant to any person a permit to enter or reside in a sanctuary for all or any of the following purposes, namely:-

(a) investigation or study of wild life and purposes ancillary or incidental thereto;

(b) photography;

(c) scientific research;

(d) tourism;

(e) transaction of lawful business with any person residing in the sanctuary.

(2) A permit to enter or reside in a sanctuary shall be issued subject to such conditions and on payment of such fee as may be prescribed.

1[**29. Destruction, etc., in a sanctuary prohibited without a permit -** No person shall destroy, exploit or remove any wild life including forest produce from a sanctuary or destroy or damage or divert the habitat of any wild animal by any act whatsoever or divert, stop or enhance the flow of water into or outside the sanctuary, except under and in accordance with a permit granted by the Chief Wild Life Warden, and no such permit shall be granted unless the State Government being satisfied in consultation with the board that such removal of wild life from the sanctuary or the change in the flow of water into or outside the sanctuary is necessary for the improvement and better management of wild life therein, authorises the issue of such permit;

Provided that where the forest produce is removed from a sanctuary the same may be fused for meeting the personal bonafide needs of the people living in and around the sanctuary and shall not be used for any commercial purpose.

Explanation - For the purposes of this section, grazing or movement of live-stock permitted under clause (d) of section 33 shall not be deemed to be an act prohibited under this section.

1. Inserted by Ntfn. No. LAW 44 LCA 91 Dt. 19-12-1991 KGD 5-3-1992

30. Causing fire prohibited, - No person shall set fire to a sanctuary, or kindle any fire, or leave any fire burning, in a sanctuary, in such manner as to endanger such sanctuary.

31. Prohibition of entry into sanctuary with weapon - No person shall enter a sanctuary with any weapon except with the previous permission in writing of the Chief Wild Life Warden or the authorised officer.

32. Ban on use of injurious substances - No person shall use, in a sanctuary, chemicals, explosives or any other substances which may cause injury to or endanger, any wild life in such sanctuary.

33. Control of sanctuaries - The Chief Wild Life Warden shall be the authority who shall control, manage and maintain all sanctuaries and for that purpose, within the limits of any sanctuary,

(a) may construct such roads, bridges, buildings, fences or barrier gates, and carry-out such other works as he may consider necessary for the purposes of such sanctuary;

1[Provided that no construction of commercial tourist lodges, hotels, zoos and safari parks shall be undertaken inside a sanctuary except with the prior approval of the National Board]

(b) shall take such steps as will ensure the security of wild animals in the sanctuary and the preservation of the sanctuary and wild life, as he may consider necessary for the improvement of any habitat;

(c) may take such measures, in the interests of wild life, as he may consider necessary for the improvement of any habitat;

(d) may regulate, control or prohibit, in keeping with the interests of wild life, the grazing or movement of 1[live-stock;]

1. Inserted by Wild Life (Protection) Amendment Act 2002 S.16

1[(e) XXX]

2[**33A. Immunisation of live-stock -** (1) The Chief Wild Life Warden shall take such measures in such manner, as may be prescribed, for immunisation against communicable diseases of the live-stock kept in or within five kilometres of a sanctuary.

(2) No person shall take, or cause, to be taken or grazed, any livestock in a sanctuary without getting it immunised.

3[**33B. Advisory Committee:** (1) The State Government shall constitute an advisory committee consisting of the Chief Wild Life Warden or his nominee not below the rank of Conservator of Forests as its head and shall include a member of the State Legislature within whose constituency the sanctuary is situated, the representative of Panchayat Raj Institutions, two representatives of non governmental organizations and three individuals active in the field or Wild Life conservation, one representative each from departments dealing with Home and Veterinary matters, Honorary Wild Life Warden, if any, and the officer-in-charge of the Sanctuary as Member Secretary.

(2) The committee shall render advise on measures to taken for better conservation and management of the sanctuary including participation of the people living within and around the sanctuary.

(3) The committee shall regulate its own procedure including quorum]

1. Omitted by Ntfn. No. LAW 44 LCA 91 Dt 19-12-1991 KGD 5-3-1992

2. Inserted by Ntfn. No. LAW 44 LCA 91 Dt. 19-12-1991 KGD 5-3-1992

3. Inserted by Wild Life (Protection) Amendment Act 2002 S.17

34. Registration of certain persons in possession of arms - (1) Within three months from the declaration of any area as a sanctuary, every person residing in or within ten kilometres of any such sanctuary and holding a licence granted under the Arms Act, 1959 (54 of 1959), for the possession of arms or exempted from the provisions of that Act and possessing arms, shall apply in such form, on payment of such fee and within such time as may be prescribed, to the Chief Wild Life Warden or the authorised officer, for the registration of his name.

(2) On receipt of an application under sub-section (1), the Chief Wild Life Warden or the authorised officer shall register the name of the applicant in such manner as may be prescribed.

1[(3) No new licences under the Arms Act, 1959 (54 of 1959) shall be granted within a radius of ten kilometres of a sanctuary without the prior concurrence of the Chief Wild Life Warden.]

2**[34A. Power to remove encroachment:** (1) Notwithstanding anything contained in any other law for the time being inforce, an officer not below the rank of an Assistant Conservator of Forests may,-

(a) evict any person from a sanctuary or national park, who unauthorisedly occupies government land in contravention of the provisions of this Act;

(b) remove any unauthorised structures, buildings or constructions erected on any Government land within any sanctuary or national park and all the things, tools and effects belonging to such person shall be confiscated, by an order of an officer not below the rank of the Deputy Conservator of Forests:

Provided that no such order shall be passed unless the affected person is given an opportunity of being heard.

(2) The provisions of this section shall apply notwithstanding any other penalty which may be inflicted for violation of any other provision of this Act]

1. Subs. by Ntfn. No. LAW 44 LCA 91 Dt. 19-12-1991 KGD 5-3-1992.

2. Inserted by Wild Life (Protection) Amendment Act 2002 S.18

Appendix 11

Wild Ass Sanctuary and Rights of Agariyas:
Time Line of Important Events

Year	Details
1972	The then prime minister of India Indira Gandhi came to Gir and supported the idea of declaring 21 sanctuaries and 4 national parks in Gujarat[55]
12 January 1973	First notification of intent to constitute a Wild Ass Sanctuary in an area of the little Rann of Kutch (3569.36 sq. km.) and Government wastelands of surrounding villages (1271.54 sq. km.). The notified area also included the land under salt production which has been an age old activity in the Rann. Total of 84 villages and an area of 4840.90 sq. km. Notification No. GH/KH/13/WLP/1972/79736.P under section 20 and 21 of the Gujarat Wild Animal and Wild Birds Protection Act 1963 This notification also appoints the collectors of Kutch, Banaskantha, Mehsana, Surendranagar and Rajkot districts as enquiry officers for the purpose.
13 January 1978	Second notification of intent to incorporate additional 112.81 sq. km area as part of Wild Ass Sanctuary for the purpose of protecting and developing Wild life and its environment. Now, 107 total villages get covered under the notification. Notification No. GKH/78/WLP/1976/11118989191 under the section 15 of the Wild Life (Protection) Act of 1972 making total sanctuary area 4953.71 sq. km.
5 June 1996	*Suo moto* PIL – 4047/96 Devjibhai Dhamecha v/s. State Government. The main plea was not to grant / renew any leases in the sanctuary area and it brought out the damage done by prosopis juliflora to the ecology. Dhrangadhra Prakruti Mandal filed petition in High court, SP C.A. No. 8487 of 1996
17 June 1996	Another PIL – 4056/96 filed by Ajit Padival after reading the reports in the Indian Express. Main plea was to restrain the collectors to issue fresh leases for making salt in the sanctuary area. Filing was based on press reports.
15 July 1996	*Suo moto* PIL – 5012/96 Gondal Forest Youth Club v/s. State of Gujarat. The club, in written, protested against the likelihood of partial denotification of the sanctuary.
4 November 1996	PIL-8487/96 Dhrangadhra Prakruti Mandal and others v/s. State of Gujarat. Main prayers were against the reported partial denotification of the sanctuary, discharging of effluents by certain industries on the periphery of the Rann, in the sanctuary area, planting of prosopis by the Department of Forest and Environment granting / renewing of land lease in the sanctuary area.

[55] Based on our discussion with Devjibhai Dhamecha, Dhrangadhra Prakruti Mandal, Gujarat dated 15 October, 2007.

Year	Details
1997	First Amendment in the Wild Life Protection Act granting the power of final declaration of the Sanctuary to the State Assembly.
11 April 1997	Additional Advocate General S N Shelat placed the letter dated 19 July 1996 by the Revenue Department to the collector, Surendranagar and Banaskantha, directing them not to grant any lease within the notified Wild Ass Sanctuary.
28 April 1997	State Government appointed settlement officers for verification of the rights and demarcation vide letter No. WLP/3096/1642/G Also constituted a committee of 3 Additional Chief Secretaries to examine the issues of the Wild Ass Sanctuary. Notification for establishing office of survey and settlement commissioner and recruitment of staff.
5 May & 15 July 1997	Meetings of the committee to discuss the matter and it came up with a suggestion for an ecological study for further strategy
25 September 1997	Notification declaring 60 days period for claiming of the rights in proposed sanctuary area
2 February 1998	Letter from Additional Collector, Wild Ass Sanctuary to Patan collector requesting to repeal the 25th September notification for verification of rights in the proposed sanctuary area.
4 July 1998	Letter from the Dy. Secretary, Forest and Environment, recommending the withdrawal of rights of Patan collector to verify the rights in the proposed sanctuary area.
24 October 1999	Department of Forest and Environment appoints GEER Foundation for the ecological study vide letter No. WLP/2079-80
March 1999	GEER Foundation Study completed and submitted to the Government
November – December 2006	Forest Department begins to give notices to the Agariyas to not to enter the LRK stating that their rights have been rejected by the settlement commissioner. Notice also mentions a fine of Rs. 25,000 and/or 3 years imprisonment if they try to enter the LRK.
November 2006	Many Agariyas get eviction notices from the Forest Department or else face actions including heavy fine of Rs. 25,000 and 3 years' rigorous imprisonment. *Gangdo Lage Vhalo,* a radio programme initiated by AHRM informed Agariyas about their customary rights and the need to get organized for claiming these rights in the Wild Ass Sanctuary.
7 December 2006 to March 2007	Agariyas begin to send their claim application to the Additional Collector, Wild Ass Sanctuary to grant them their customary rights for salt production in the Rann.
December – January 2007	Agariyas are denied their rights by the Additional Collector, Wild Ass Sanctuary on the grounds that their claims were not filed within the stipulated period of 60 days.
12 Dec 2006	In an RTI application by AHRM, Additional Collector, Wild Ass Sanctuary gave following information about claims received From individual Agariyas - 1776

Year	Details
	From cooperative societies - 77
January 2007	Agariyas replied to the Additional Collector that they were not aware of the notification till they learnt it from *Gangdo Lage Vhalo* radio programme
5 March 2007	Additional Collector made detailed recommendations to the Principle Chief Conservator of Forest for granting fishing rights in the LRK area.
6 March 2007	AHRM wrote to the Secretary, Forest and Environment, about traditional rights of Agariyas in the notified sanctuary area. Copy was also sent to Additional Collector, Surendranagar. They also appealed that Agariyas have remained unaware of the whole process of formation of sanctuary and settlement of rights. AHRM also impressed that since notification of the sanctuary was done under Gujarat Wild Animal and Wild Bird Protection Act, 1963, which was repealed in 2004 and hence the whole process of sanctuary formation and rights settlement was invalid.
23 March 2007	Principal Chief Conservator of Forests, responded that the Wild Life (Protection) Act 1972, despite repealing, provides for the continuation of the formation of sanctuary and survey and settlement process.
23 April 2007	AHRM wrote to Chief Minister of the state requesting him to intervene in the issue so that the Agariyas are not displaced from the Rann. The same was also sent to Labour Minister.
2 June 2007	Application filed by Harinesh Pandya to Industries Commissioner's office Gandhinagar, under RTI Act, asking about number of Agariyas in LRK
21 June 2007	PIO, Industry Commissioner's office replied that there are 48399 Agariyas LRK
27 June 2007	A delegation of Agariyas met Additional Collector, Wild Ass Sanctuary and represented that they have traditional rights of salt production in LRK that need to be considered in process of settlements of rights.
20 July 2007	PIO, District Inspector Land Records – Kutch informed that LRK was never surveyed hence survey number is NIL (0), and comes under Jurisdiction of Jamnagar, Kutch, Banaskantha, Surendranagar, Patan and Rajkot collectors
4 October 2007	AHRM wrote to Additional Collector (WAS) that they are willing to extend cooperation to his office for survey of traditional Agariyas in the Rann. They also appealed to him that Agariyas traditional rights should also be taken cognizance under Scheduled Tribes And Other Forest Dwellers (Recognition of Forest Rights) Act 2006.

Appendix 12

GEER Ecology Study's Proposal for Salt Works

Relevant observations in the study

1. Importance of Salt Production

Contribution of salt production in the LRK to the national economy and employment opportunities available to local people through salt manufacturing activities can not be ignored while deciding the strategies for wild life conservation. (179 para 2)

2. Cut-off Date

Though the date of notification of the Sanctuary should be cut-off date for considering salt leases…the most important issue of management of the Sanctuary is to resolve the conflicts and disputes to the satisfaction of majority of the stake holders in the interest of wildlife conservation. (179 last para)

3. Salt activity and Wild Life

The salt preparation is done in the extremely saline area of the Rann where plants normally do not grow. Thus, it does not affect the food and water requirements of major wildlife. However, the disturbances due to salt activity cause negative impact. It is observed and opined that the unregulated transportation is one of the major factors responsible for considerable negative impact. (180 para 2)

4. No Alternative Sites

It is worthwhile to mention here that there are no other alternative sites in the State where sub-soil brine is available in the surrounding area and the salt workers can not be shifted in the coastal zone as there is a saturation of this activity in these areas. (180 para 3)

Recommendations with regard to salt production in LRK

1. Regulated salt works: The total area of the suggested zones would be 587 sq. km. (58700 ha.) The regulated salt work activity may be permitted in these zones. The salt works, which have been in existence outside the suggested zones, should be shifted to the nearest proposed zones. (182)

Most of the salt zones recommended fall in the area which are less important for wildlife. A zone in Surendranagar near southern and eastern fringes is rich in wildlife. It also has high concentration of salt works. This is the most important zone for salt preparation at present as majority of leases here were allotted before 1973. (180 para 3) Considering various aspects of existing situation, this activity is required to be regulated and it may be allowed in the proposed zones. (182)

[If the sub-soil brine becomes unavailable in some areas of the proposed zones] Under these circumstances, the areas which will not be suitable for salt works may be transferred for the management of the Sanctuary with final notification and equivalent area of Rann, which is less important for wildlife but rich in sub-soil brine, may be considered for the salt work zone after examination by the expert committee.

2. No new lease: New leases should not be sanctioned for salt manufacturing in future in the little Rann.

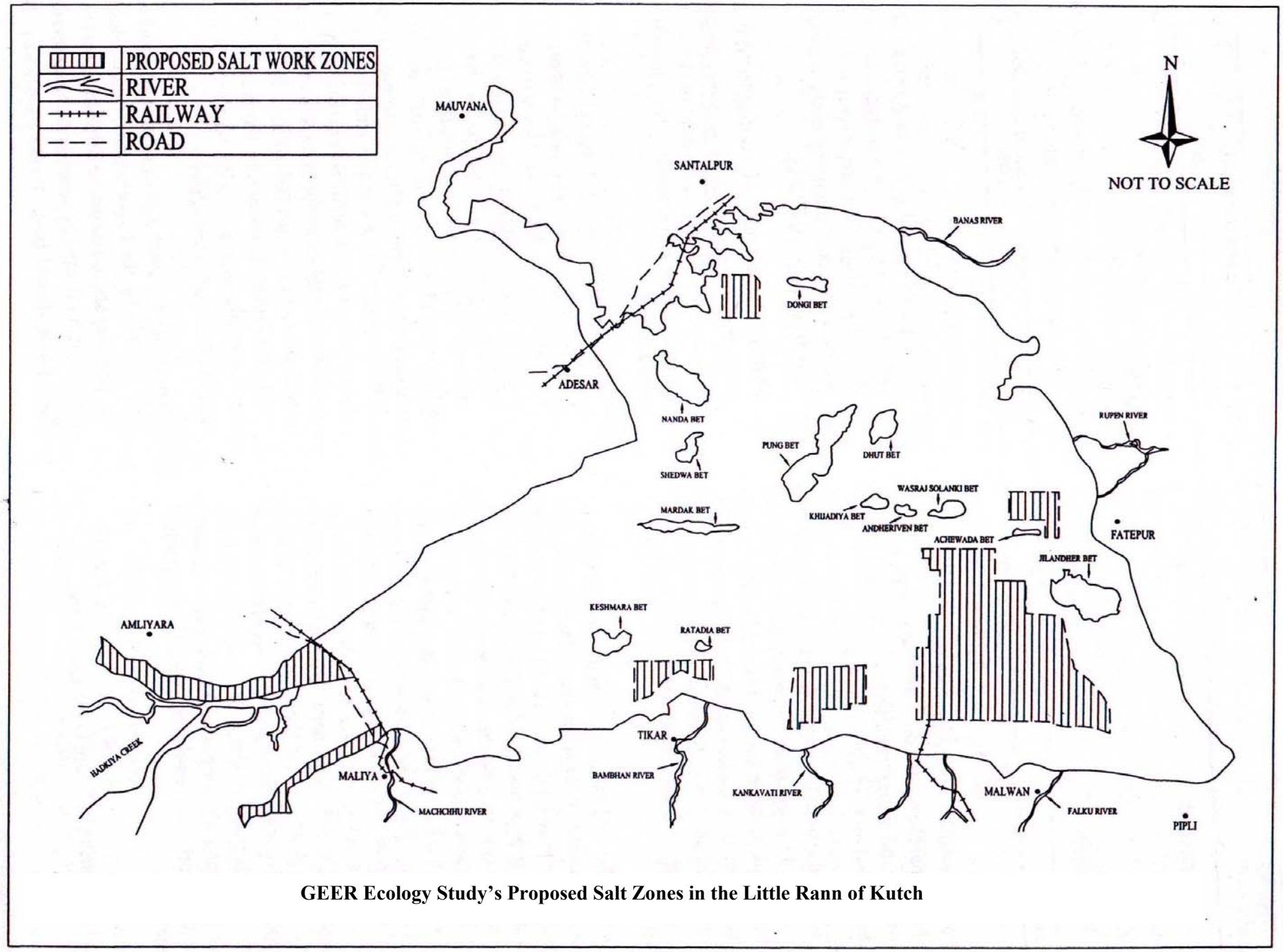
3. Shifting the salt pans: As per the maps prepared, salt pans from 4,039 ha. Area are required to be shifted to the nearest zones.

4. Transportation Routes: In order to eliminate the adverse impacts and to regulate salt work activity and movement of vehicles, only one route per zone is proposed. However two alternative routes can be considered in the extreme cases. 206 ha of WAS area will be affected due to proposed transport routes.

5. Demarcation: Once zonation plan is approved and notified by the Government, boundaries of all zones should be demarcated by permanent pillars… and all activities of salt works should be restricted within the boundaries of the zones.

6. Demarcation of Transport Routes: After making proper alignments, all routes should be demarcated by hard sand stone or cement pillars.

7. Prohibition for purpose other than salt production: Demarcated salt zones should be exclusively used for salt preparation. If an area is not used for salt preparation, its original status as Sanctuary should be restored.



GEER Ecology Study's Proposed Salt Zones in the Little Rann of Kutch

List of People Met during the Study

Discussions were held with the following people during the Study [October 2007 to April 2008]

Government Officials, Scholars and Scientists

1	Pradeep Khanna	Principal Chief Conservator of Forests, Gujarat
2	M.A.Chavda	DFO, Dhrangdhara
3	H S Singh	CF, TRI Circle, Forest Department, Gandhinagar.
4	A B Parmar	Additional Collector, WAS, Surendranagar
5	Dilip M Nayak	Retd PCCF, Vadodara
6	M A Ansari	Deputy Salt Commissioner, Jaipur
7	Ajay Bhatt	Central Salt and Marine Chemical Research Institute, Bhavnagar
8	Girish Patel	Senior Advocate and Human Rights Activist, Gujarat High Court
9	Arun Mani Dixit	Researcher, Centre for Environment and Social Concerns, Ahmedabad
10	Ashish Kothari	Kalpavriksh, Pune
11	Neema Pathak	Kalpavriksh, Pune
12	Kanchi Kohli	Kalpavriksh, New Delhi
13	Aarti	ATREE, Banglore
14	Arvind Acharya	Teacher, Ex- MLA and local scholar, Wadhwan City
15	Devjibhai Dhamecha	Environmentalist, Dhrangdhara Prakruti Mandal, Dhrangdhara

Salt Traders

16	Ashokbhai	Salt Trader, Santalpur
17	Manish Shah	Salt Trader, Dhrangadhra
18	Babubhai	Salt Trader, Halvad

People working with Agariyas

19	Ambubhai Patel	Kharaghoda
20	Harinesh Pandya	Director, Janpath
21	Pankti Jog	Janpath
22	Rekhaben	Agariya Hit Rakshak Manch, Ahmedabad
23	Ghanshyam Jhula	Agariya Hit Rakshak Manch, Santalpur
24	Bharat Patel	Agariya Hit Rakshak Manch, Dharangdhra
25	Bharat Somera	Agariya Hit Rakshak Manch, Kharaghoda
26	Kanti Parmar	Agariya Hit Rakshak Manch, Kutch
27	Marutsingh Baraiya	Agariya Hit Rakshak Manch, Malia / Halvad
28	Soumitro Bhattacharya	Film maker, Mumbai

Agariyas

29	Rameshbhai	Salt Manufacturer. Village Varsamedi, Kutch
30	Naarubhai	Agariya, Santalpur
31	Naranbhai	Agariya, Village Tikar
32	Sultanbhai, Jusabhai	Agariya, Village Rajusara
33	Jusabhai	Agariya, Village Rajusara, Santalpur
34	Bachubhai.	Village Degam, Near Kharaghoda
35	Gordhanbhai	Nimaknagar
36	Dashrathbhai	Nimaknagar
37	Alibhai and Ayubbhai	Village Rajusara (for his songs), Santalpur
38	Hussainbhai, Jumabhai	LRK parts near Santalpur
39	Babubhai	Village Haripur, Maliya
40	Merubhai	Village Haripur, Maliya
41	Shyamjibhai	Village Chikhli, Maliya
42	Prabhubhai	Village Ranmalpur, Halvad
43	Shantabhai,	Kharaghoda

And many other Agariyas whom we met during the community meetings in each of the zone.

Glossary of Terms

Agariya	The primary salt producer, the person who actually makes the salt with his labour. Owes its origin to Agar, means salt pan in Gujarati language.
Chhelo Chukavo	The full and final payment made by the trader to the *Agariya* after deducting all of his yearly credit to *Agariya* from the value of *Agariya*'s production of the year.
Culti	A trench cum bund structure made near the pan to obstruct the *udaan* and trap the dust carried in by the *udaan*.
Dantalo / Khampadi	Rake
Dhaal Chadavvi	Often *Agariyas* help each other by performing some task on each other's pan. The term is used when an *Agariya* returns the labour by performing some task on the salt pan of another *Agariya* who has earlier done the same.
Dhiraan	Credit given by the trader to the *Agariya.*
Faantia	Kind of rake having lesser no of spokes spaced widely compared to *dantalo*, used when the crystals become large sized.
Gamda	Condenser part of a salt making unit
Ganjaa	Place where the salt is heaped after transporting it out of the rann.
Ghasiun / Ghesiun salt	The earliest type of salt made by simply sun drying the brine from the creeks and other natural springs. Low quality salt, having many impurities.
Haath Saaydo	A well / bore sunk with manually operated ram.
Juni and Navi Mandli	Literally means 'old' and 'new' cooperative respectively. When the bores of some members fail in the original location (old mandli), they shift to a new place (new mandli) having better brine condition. The number of members that shift out is an indicator of the brine situation of the original *mandli's* wells.
Karkach	Fine grained, easily crushable to powder state salt.
Kharvan	Seeds of the Salt
Khichdi	A food item made by cooking a mixture of rice and pulse.
Maati Kaam and Gara Kaam	Labour or work done for making condenser and crystaliser respectively
Machine Saaydo	A bore sunk with machine operated ram.
Mavthu	An unseasonal shower
Paala wadwa	Harvesting of salt crop
Padthaaro	Refers to the part of the salt from the heap that remains lying on the ground and can't be lifted and goes waste.
Pagli Paadwani	Tamping the crystaliser with the feet to make it impervious and hard.
Pakhato Khado	Mature, old well. Every year after the rain, edges of the well are eroded and the soil falls in the well. With every repair the top diameter of the

	well keeps expanding. Such a well is called *pakhato khado*.
Pato / Paavtha	Crystaliser part of a salt making unit
Pavdi	Spade, a wooden flat board provided with a long handle and a metal cutting edge. Used for *samaar kaam* and scraping the salt layer for multiplying the seed crystals and harvesting the crop.
Pavdo	Spade for earth work.
Poda salt	Crystal salt in which crystals are developed over a layer of salt, which is formed before the crystallization process is begun.
Popadi	Top layer or crust of the salt lying in the open
Rotlo	A flat bread made out of *bajri,* millet
Samaar kaam	Multiplying the seed crystals by breaking the initial large crystals lying on the crystaliser bed by running the *pavdi* over it.
Suiya	A chemical extracted from the bittern thrown out after salt (Sodium Chloride) is extracted from the brine. Mainly Magnesium Chloride.
Tadi	Bed of the crystaliser of a salt making unit.
Tagaaro	A metal container, to be lifted often on head, for material shifting.
Thaaro	An Agariya who does not have his own pato and works on a trader's pato gets a lower price for the salt produce from him. This difference in the price (normally around Rs 2 per quintal) is called thaaro.
Udaan	Dust laden winds specifically in the summer months around the time when salt crop is ready. If the dust is deposited on the salt crop, it seriously affects the quality and hence price of the salt.
Vaavar	An intense form of *udaan*
Vadagara salt	Crystal salt. The crystals are developed over the hardened crystaliser bottom. Crystal has a cubical shape with thickness from half and inch to three-forth of an inch. It is built up of a number of smaller crystals.
Vadhara no Pato	Literally, an additional pan. At times, by saving some money from the traders' instalments and adding a little from his own source, *Agariya* makes yet another small unit for making salt, besides the main unit.
Zypto, Khipdo or Sangetara	A local vegetation, having thin reed like branches, spread in the crystaliser for 10 days or so for formation of the initial seed crystals on its branches. Used in *poda* salt process.

References

Aggarwal, S. C. 1956. The Salt Industry in India Volume I and II. Government of India Press.

Anonymos. undated. Working and Living Conditions of Salt Workers in India

Apte, Tejaswini and Kothari, Ashish. 2000. Joint Protected Area Management: A Simple Guide. Kalpavriksh, Pune.

Dixit Arun. undated. Biodiversity Conservation and Rural Livelihood Improvement Project: Little Rann of Kachchh – Indicative Plan. (Unpublished report by Centre for Environment and Social Concerns, Ahmedabad).

Giri Rao, Y. 2004. Livelihood Issues in Satkosiya Gorge Sanctuary, Orissa. Vasundhara, Bhubaneswar.

Government of India. 1988. National Forest Policy. Ministry of Environment and Forests, New Delhi.

Government of India. 2006. Annual Report of the Salt Department.

Government of India. 2006. The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 in the Gazette of India.

Iyengar Sudarshan and Rani Uma. 2001. "Functioning of the Salt Industry in Gujarat." Gujarat Institute of Development Research.

Kalpavriksh, 2007. Critical Amendments, Clear Rules and Assessment Period Needed for The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

Kothari, Ashish et. al. (ed.). 1998. Communities and Conservation: Natural Resource Management in South and Central Asia. Sage Publications, New Delhi.

Moxham, Roy. 2001. The Great Hedge of India. Constable Publishers, London.

Nisheet Kumar. 1996. Salt Makers upset the balance in Wild Ass Sanctuary. The Indian Express, Ahmedabad edition, 19 June 1996.

Orissa Protected Area Network. 2007. Draft Report on Eviction from Sunabeda Sanctuary. Vasundhara, Bhubaneshwar

Project Coordinating Consultancy Services. 2002. Report on the Wild Ass Crossing on Viramgam - Halvad Corridor. Volume II - D [Final Report for World Bank Project]

Shah, Rajesh. undated. A Pinch of Salt: Study of Salt Workers of Rajkot, Surendranagar, Kutch and Patan districts of Gujarat. Saline Area Vitalisation Enterprise Limited, Ahmedabad.

Singh, H. S. et. al.. 1999. "Ecological Study of Wild Ass Sanctuary: Little Rann of Kutch - A comprehensive study on biodiversity and management issues." GEER Foundation, Gandhinagar.

Vakil, K. H. 1924. Salt: Technology and Manufacture of By-products. Times Press. Mumbai

Yadava Y S. 2006. Socio-Economic Status of Workers in the Salt Industry in India: A Report. Bay of Bengal Programme, Inter-Governmental Organisation. Chennai

Yagnik, Achyut and Sheth, Suchitra. 2005. The Shaping of Modern Gujarat: Plurality, Hindutva and Beyond, Penguin Books, India.

Saberwal, Vasant, Rangrajan, Mahesh and Kothari, Ashish. 2001. People, Parks and Wild Life: Towards Coexistence. Tracts of Time Series. Orient Longman, New Delhi.

Gujarati

Agariya Hit Rakshak Manch. 2005. Agariyao Maateni Kalyankari Yojanaoni Margdarshika, AHRM, Ahmedabad.

GEER Foundation. 1999. Ghudkhar Abhyaran: Kutchnu Nanu Rann. Department of Forest and Environment, Gujarat.

Government of Gujarat. 2002. Gujarat no Mitha Udyog - Varsh 2002. Industry Commissioner's Office, Gandhinagar.

Gram Technology Sanstha. 2000. Mitha Udyog ane Agairya. - A booklet in Gujarati by Rural Technology Institute, Gandhinagar.

Jadeja, Yogesh. 2007. Adesar Vistaar Mitha Udyog Sashaktikaran and Development Strategies. (Unpublished Final Report). Arid Communities and Technologies, Bhuj, Gujarat.

Jatkar, Anita. undated. Mahila Agariyaona Prajanan Swasthya par Ek Adhyayan: Gujaratna Kutchna Nana Rann Vistar Sandarbhe).

Trivedi, Prafull. 1996. Gujaratma Mithu Pakvata Agariyaoni Vyathana Vitak. Janpath, Ahmedabad.

Pandya, Harinesh. 2007. Agar Na Aashre: Kutch na nana rannma Agariyaona Paramparagat Adhikaro ane Ghudkhar Abhyaran Ange Nondh. Agariya Hit Rakshak Manch. Ahmedabad

Websites and Internet Material

Government of Gujarat website: http://ic.gujarat.gov.in/promo.sch/salt/htm (on 15.10.2007)

http://www.saltmarch.org [Celebrating 75 years of Salt March 1930 - 2005] on 23.10.2007

International Council for Control of Iodine Deficiency Disorder website http://www.iccidd.org