THE SALT MINERS' CO-OPERATIVES IN THE LITTLE RANN OF KACHCHHA IN GUJARAT : A CASE STUDY

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Abstract, Inland salt production has a very high potential as a source of income to the farmers in and around the Little Rann of Kachchha (LRK) in Gujarat. Salt in LRK is produced from brine by four categories of producers, viz., licensed public, private, and co-operative firms and unlicensed individual proprietors, Salt Miners' Co-operatives (co-ops) locally known as *mandalis* were established to improve the socio-economic condition of the salt miners by unshackling them from the clutches of the private traders-cum-money lenders, The co-operatives account for nearly 2 0% of the total salt produced in the LRK. This paper presents the results of a case study of salt miners' co-ops. The study aimed at examining the operations, management, effectiveness and the impact of the salt miners' co-ops. It revealed that a lion's share of the profits from salt production is grabbed by the private traders-cum-money lenders and that the poor salt miner receives only about four per cent of the consumer's price. The authors highlight the need for restructuring the existing system of salt production and marketing in the area on the lines of Anand pattern co-operatives and improving the existing marketing system and the basic infrastructural facilities in the area. The Sabarmati Salt Farmers' Society has been spearheading the task of reorganising the existing co-operatives on the Anand pattern and helping the salt minders in obtaining credit from institutional sources. It is hoped that the exploitation of poor salt miners by the traders and money-lenders will gradually decline and their lot will improve. The authors conclude that it is only after the existing mandalis are reorganised into genuine producer-owned-and controlled co-ops that the goals of equity, efficiency and sustainability in the use and management of brine which is a common pool resource can be achieved.

Keywords : Anand Pattern, brine, common pool resource, equity, Gujarat, Little Rann of Kachchha, salt miners, Sabarmati Salt Farmers' Society.

Introduction

The table salt (sodium chloride) is an essential ingredient of human diet, and is therefore considered as a basic necessity of life. With its annual production of around 10 million metric tons (mt) India is the sixth largest producer of salt in the world (NDDB ud). Nearly 77% of the total salt produced in India comes from the sea and the remaining from inland subsoil brine (water full of salt) which is a common pool natural resource, i.e., a resource that is used in common by a group of people. The state of Gujarat lying in the western region of the Indian subcontinent is the single largest, producer of salt in the country accounting for nearly 64% of the total annual salt production. Gujarat is also the largest exporter of salt. In 1990, Gujarat contributed about 60% of total marine salt production and about 68% of the total inland salt production in the country.

Of the total salt production in India, some 52% is consumed as table salt, 34% is used for industrial purposes, 5% is exported and the remaining 9% is either used for miscellaneous purposes or wasted. India is an important exporter of salt and earns valuable foreign exchange from salt export. In 1990, India exported 5.62 lakh of salt - of which 73% was contributed by Gujarat.

There are four categories of salt producers operating in the LRK. They are licensed public limited companies; licensed private limited companies and partnerships; licensed co-ops of salt miners/farmers locally known as *agarias}* and licensed and unlicensed individual proprietors. Of the four categories of producers, the private companies and partnerships account for about 65% of the total salt produced in the LRK. The co-ops come next contributing about 20%. It is estimated that there are some 2,000 to 2,500 households engaged in salt production in the LRK (Das and Mondal 1991 : 1). The plight of the *agaria* is worse than that of the bonded labourer as he cannot even claim the minimum wages stipulated by law. Whatever the system of salt production, it is the *agarias* who have to bear the brunt of actual mining of salt and yet, ironically, it is they who are deprived of the fruits of their labour. It is estimated that the average annual income of a typical *agaria* family of five members in 1989-90 was Rs. 5,835 of which Rs. 4,851 (83%) was contributed by salt production and the remaining Rs. 984 (17%) by other activities (Das and Mondal 1991 : 30). There is an acute shortage of drinking water in the area, and education, public health, transport, and communication facilities are deplorably inadequate and poor in quality. Just how the *agarias* make both ends meet is anybody's guess. In the absence of any other alternative employment opportunities, they are compelled to take to salt mining and production which is a hazardous, back-breaking and low-income occupation.

The salt miners co-ops were organised at the behest of the Government of Gujarat (GOG) to improve their lot. There are 116 primary salt miners's co-ops registered in Surendranagar district alone. But most of the co-ops are defunct due to their failure to pay back their loans to the banks from whom they borrowed the money. Another reason for their sorry plight is that their leaders and employees play second fiddle to the private traders-cum-money lenders operating in the area.

This study was undertaken to explore how the salt miners' co-ops operate, how they are managed, what impact they had on their members, what afflicts them, and what needs and should be done to redeem them.

Research Methodology

The study was conducted in Surendranagar district of Gujarat which was purposively selected because it had the highest number of the salt co-ops and the Sabarmati Salt Farmers' Society (SSFS) located in it. The SSFS was established by the National Dairy Development Board (NDDB) on the request of the GOG to save the *agarias* from the clutches of the traders. For a detailed study, a sample of 13 functional profit-making and six defunct loss-making salt producers co-ops was selected randomly out of a total of 116 co-ops in the district. Then, a sample of 65 agarias comprising five from each of the 13 functional co-ops was selected randomly.

Both primary and secondary data were collected from the sample co-ops and *agarias.* The data collection work was conducted in two rounds—once during the production season (October 1991) and the second time during the procurement and marketing season (May 1992). The primary data were collected through the Rapid Rural Appraisal (RRA) methods and individual and group interviews using structured questionnaires.

In the first round, a few selected production sites were visited and an RRA conducted to have a feel of the general production system,, various operations involved and the problems encountered by the *agarias* in salt production and marketing. Informal discussions with a few selected *agarias.* Secretaries and Chairmen of five of the sample co-ops, officials of the SSFS and of the Salt Commissariat, Gandhinagar were also held in the first round. In the second round, data were collected from the sample *agarias* through the individual interview method using a pre-structured questionnaire. Besides the sample *agarias,* eight individual proprietor producers each holding a 10-acre brine area, five private traders, two transport contractors and two labourers were also interviewed to get a broader perspective on salt production and trade in the area.

The Oakerson model (Oakerson 1986) was used to analyse the salt production and marketing system, to diagnose various strengths and weaknesses In the system, and to identify appropriate measures to Improve the system as well as the socio-economic condition of the *agarias*.

A **characteristics** of **the** Study Area and, **the** Resource

The study Area

The LRK has an expanse of about 2,000 sq km. Once upon a time, the LRK was part of the sea. Following an earthquake years ago, the seabed turned into a desert with reservoirs of brine underlying it. A 15 km wide belt around the periphery of the LRK has been demarcated by the Government of India (GOI) beyond which brine extraction is not to be carried out. The total salt producing area of the LRK and the salt producing districts of Surendranagar, Rajkot, Kachchha, and Banaskantha measure nearly 500 sq km. and produce about 30 % of the total salt produced in the state. The LRK provides unique natural conditions for production of inland salt. It is a vast low lying desert of salt encrusted sand barely above the mean sea level. It remains submerged with sea water throughout the monsoon season and thereafter, it is drained by Luni, Banas and Saraswati rivers. There are some 42 villages situated around the periphery of the LRK from which the *agarias* come to the Rann to extract salt. Though the LRK is a distinct geographical area, it is neither clearly demarcated by physical boundaries nor does it provide any obstruction to human movement across it except when It is inundated by flood waters, and for several months after the inundation while the mud is still wet. The climate prevailing in the area is extreme like that of all desert regions. In fact, the LRK is part of the great tropical desert belt stretching from Sahara through Egypt, Arabia and along the Meharan coast to the Thar desert. As far as the soil conditions are concerned, superficially the flat Rann appears to consist of a uniform fine salt encrusted sand. However, the soils of LRK have various layers or horizons. At about three to four metres below the surface, there is bluish clay over which porous soil lies. The water overlying this impervious clay layer is highly concentrated brine which has percolated through layers of sand.

As far as the flora and fauna are concerned, hardly any vegetative cover is found in the LRK. Even the most hardy xerophytic species cannot grow In the Rann. Besides the common animals, one would find the wild asses *(Equals Lemionis),* for which LRK is famous. This species Is existent only in the LRK and is now on the decline.

The Resource and the Salt Production State System

As mentioned earlier, inland salt in the LRK is produced from the brine extracted from the underground layers of the earth. The brine is normally struck at the depth of 25 to 4 0 feet. The brine from the wells is extracted from seven in the morning till six in the evening by pumps that operate on crude oil. The density of brine varies from 15 - 20 degree brine concentration (BC) as compared to three to four degree BC of sea water.

The availability of brine in the area is highly random and uncertain. There are no scientific rules for predicting its availability [1]. The *agarias* select the sites for digging wells for extraction of brine based on their experience. The depth of occurrence of brine has been reported to vary within a wide range of 7 m to 120 m from the ground level.

Irrespective of who owns the brine wells, the primary and the most difficult job of extraction of brine is done by the *agarias.* Typically, the salt production process consists of the activities of site selection; digging of wells, installation of pumps, pumping out brine, passing it out through outlets to condensers for evaporation and to pans for crystallisation, and finally collection and storage in heaps. For ail practical purposes the primary operations and their management are all done by the *agarias.* However, the decision making process varies across the ownership categories including the co-ops. For the co-ops, some of the functions like the supply of the crude oil, hiring of the pumps, supply of drinking water, transportations, etc. are performed on a common basis *by* the Chairmen of the co-ops for which they charge administrative fees varying from Rs. 300 to Rs.1,000/annum.

The brine Is conveyed through make-shift channels Into condensers each measuring about 20' x 20' in size and numbering from 8 to 10 per typical unit. When the brine concentration in the condensers reaches 24 BC, it is fed into a pan measuring about 100' x l00' for evaporation. To get the crystals of large and uniform size, the crust formed in the pan is broken manually at regular intervals with the help of primitive tools. This back-breaking age-old practice of crystallisation of salt still continues; *no* new scientific methods of automated and faster crystallization are yet available to the *agarias.* There is a need for developing appropriate tools and equipment that could perform those functions more efficiently and reduce the drudgery and health hazards of the existing methods. Finally when they are ready, the salt crystals are removed from the pan and the earth Is padded/pressed by the feet to make the surface hard. At the end of the season, a single pan on an average yields about 400 mt of salt.

The preparation of the pan is a very crucial activity. The type of the salt that is finally produced mainly depends upon the process of crystallisation which in turn is regulated by the condition of the pan, the frequency of padding, the depth, of raking, and the extent of exposure to sunlight by changing faces through turning the salt particles upside down. From a single pan one to six crops can be harvested in one season. This, however, varies according to the conditions prevailing in the pan and is highly region specific. The reason for this variation can be mainly attributed to the difference in quality of the brine. For example, a pan in Halvad region yields three to four crops of sparkling white colour whereas only one crop of pale white colour can be obtained from the Kuda region. Also the crystal is smaller and more brittle in Halvad than in Kuda. However, to ensure high quality, it is advisable not to harvest more than four crops/pan/season.

As per the GOI stipulation, edible salts are required to be iodised. This is done by the traders in their iodisation plants located in the heaping centres. The total expenditure incurred to set up an iodisation plant is estimated around Rs. 1 lakh to Rs. 1.2 lakh. The *agarias* have no role in this process. According to the. stipulated norms, iodine should be added in the proportion of 35 to 50 pm. This requires one kg of iodine to treat 21 kg of salt. The average market price of iodine varies from Rs. 330 to Rs. 350 per kg. As usual in the Indian context, this norm has been found to be frequently violated; the traders have been reported to use only one kg of iodine to spray as much as 40-45 mt of salt. This practice is followed in spite of the existing government subsidy on iodisation.

It needs special mentioning that a high degree of risk is involved at various stages in the process of salt production. Though the creditors do bear some of the risk partially, in most cases, it is the poor *agaria* who has to bear the lion's share. The probable risks associated with salt production are as follows :

a) Failure in striking brine.

b) Very low discharge rate of brine.

c) Sudden stop of brine flow within a week of striking.

d) Lack of required intensity of sunlight for evaporation

e) Health hazards and other casualties.

After the salt is finally collected from the pans and stored in heaps, the trader/agency who has entered into the contract of buying the produce bears the risks. However, if the produce gets washed off due to sudden rain before the actual collection and lifting by the trader/agency, then the *agaria* has to bear a substantial portion of the loss.

The extent of the loss to be borne by each party is decided by a bargain between the *agaria* and the buyer.

Characteristics of Resource Users

As many as 2,000 to 2,500 *agaria* households are estimated to be engaged in the traditional occupation of salt production in the LRK. For several decades, salt production has been the back bone of the economy of the villagers living in and. around the LRK. The major sources of income of 80% of the *agarias* in this area are salt production, agriculture, and agricultural labour (Das and Mondal 1991). However, none of the sample *agarias* had irrigated land. The distribution of land holding in the area was highly skewed. About 77% of the *agarias were* landless and the remaining had land holdings varying from one to five or more acres. According to Das and Mondal (1991: 4), 80% of the *agarias* were illiterate and out of the 19 per cent of the total population who were in the age group of six to nine years, only 23 per cent were going to schools. Nine per cent of the villages had no schools at all. Though 70 per cent of the villages had primary schools, only 15 per cent villages had schooling facilities up to 8th standard.

The housing condition was also very poor. Most of houses had walls made of mud and had thatched roofs. As soon as they move into the LRK, they make make-shift huts of mud and gunny bags/straw for their stay for eight months or so while they work there for producing salt. In terms of live-stock assets, only five percent of the total respondents owned bullocks, 14% of them had milching animals and 10% goats (Das and Mondal 1991). Lack of potable water and fodder in the Rann acts as a constraint on taking up animal husbandry activities. The water scarcity is so acute that the *agarias* are reported to take bath only once a week and cannot use water for washing clothes or cleaning utensils as per normal requirements. According to Das and Mondal (1991), 35% of the medical needs of the *agarias* are met through the public hospitals and 43% by private doctors in the surrounding villages. Some 16% of the respondents mentioned that the SSFS and other societies helped them get needed medical care (Das and Mondal 1991). The transportation facilities available in the Rann include motor bus, trucks, tractors, camels and cycles. When the soil is still wet, walking is the only alternative available. The villagers have access to nearby markets for buying their daily necessities.

The Decision-Making Environment

For decades the local people have had an open access to brine and had used it for making salt. In the pre-Independence era, the British Government imposed

restrictions on the use of this resource and levied a tax on salt production. In protest against that policy, Mahatma Gandhi organised a political agitation on 6 April 1930. People protested vehemently against that move of the British Government to extend the state control over an open access resource, Gandhiji used the weapon of *satyagraha* and broke the law of salt that prohibited salt production by people. Immediately after Independence, an attempt was made to nationalise this resource. But unlike the case of nationalisation of the coal mines, no formalised organisational structure was created for implementing the policy. Since that policy did not work, GOI decided to go in for privatisation of the salt lands in the LRK by leasing them out to registered agarias. For facilitating the privatisation,. GOI created two central bodies : one Commissariat of Salt at Jaipur **(Rajasthan)** and one Office of Assistant Commissioner of Salt at **Gandhinagar** (Gujarat).

As far as the legal ownership is concerned, the LRK was declared a Wild Ass Sanctuary under the Wildlife Act 1972 on 12 January 1973, But de *facto* some land falling within the revenue boundaries of the peripheral villages which was notified as part of the wildlife sanctuary has not yet been transferred to the Forest Department and the concerned Deputy Collector still continues to lease out the notified salt lands to salt producers. A good deal of encroachment on the salt lands by cultivators has also been reported which has come in the way of completing the proposed ground surveys to delineate the notified areas within the salt sanctuary.

Under the existing arrangements, salt lands are leased out to different types of producers, viz., public, private, co-operative and individual manufacturers. The private sector dominates the scene contributing about 65% of the total salt produced in the LRK. The co-op sector comes next accounting for about 20% of the total salt production, The shares of the individual manufactures and the public sector companies are estimated to be 10% and 5% respectively. The Hindustan Works, a public sector **undertaking,** which has a reserved area of 7 km around its salt works (in the periphery of the LRK) has been utilising only 800 acres of land out of 23,000 acres expected to be utilised over the years. Thus, the use of the nearby salt lands has been restricted. As a result, *agarias* and co-ops have to go further deep inside the LRK for salt farming. This leads to increase in transportation cost of the salt produced by the *agarias* and the co-ops who have to move 25-30 km away from Kharagoda, bear to and fro haulage, which could be avoided if the salt lands reserved for the Hindustan Works but not being utilised are leased out to the co-ops of poor *agarias*. The other categories of salt producers are the licensed private salt works having more than 100 acres, those having between 10-100 acres, licensed co-ops and unlicensed private salt works.

The contribution of the co-ops is substantially lower than their actual potential. The *agarias* even when they are organised into co-ops are exploited by private salt producers-cum-traders who generally hold salt production sites of both 10 acres and more than 100 acres. Since there is a cess levied @ Rs. 3.50/mt on the produce of 100-acre holders and the 10-acre holders are exempted from the cess, they show book losses in the cases of 100~acre sites and channelise the profits through the 10-acre sites to evade the cess. The process of leasing the salt lands to the co-ops of *agarias* started way back in 1950. After the establishment of co-ops, the lot of the *agarias* has improved, albeit marginally, as compared to when the production was wholly under the control of the East India Company and private firms. The total salt area under the control of private works and 10-acre holders is estimated to be 5,000 and 2,500 acres respectively. Recently, some political pressure was exerted to stop the renewal of the 10-acre contract leases to private traders but it failed to achieve its objective thanks to strong vested interests.

Allocating more of the salt lands in the LRX to the co-ops would enable the *agarias* to work on bigger production sites and produce more salt using their family labour more fully. This would improve their economic condition and also achieve the objective of equity as the benefits from brine would be more uniformly distributed among a large number of *agarias.* In our opinion, the duration of lease should also be increased so that the lessees take interest in using the natural resource judiciously and sustainably-

The Role of SSFS as an Intervening Agency

Duly recognising the need for improvement in production and marketing of salt and in the level of living of the *agarias,* GOG requested the NDDB to intervene. As a consequence, the SSFS came into being in 1987. Its objective is to save the *agarias* from the clutches of the traders and help improve their level of living. It is also working as a catalyst for some developmental programmes like medical and health care, education, etc. During the first year of its operation, the SSFS procured 16,000 mt of salt from 27 *agarias* at Rs. 26 per mt. The price offered by the SSFS was about 25 % higher than what the *agarias* used to receive in the earlier years, During 1988-89, the society procured 40, 000 mt from 81 *agarias* at an average rate of Rs. 27 per mt and an additional Rs.2 per mt was distributed as price difference, a result of the efficient marketing done by the SSFS (NDDB ud) . The branded salt introduced by the SSFS under the brand name of *HANSA* could not do well in the market, mainly due to inefficient distribution and its insignificant share in the salt market.

The SSFS persuaded the State Bank of Saurashtra to arrange a loan of Rs.10,000 to each *agaria* for meeting the expenditure on salt production. The SSFS served as a guarantor for the

loans. Since the recovery was 100% during the first two years, the bank is now prepared to advance money to any number of *agarias* in the coming years.

The SSFS in collaboration with the Tribhuvandas Foundation (TF), Anand has trained many health workers selected from amongst the *agarias* for curative and preventive health care measures. These health workers in turn treat their fellow *agarias.* With the help of the Central Salt Marine Chemical Research Institute, Bhavnagar, the SSFS is in the process of developing modern harvesting technology and new methods to replace the age-old practices and thereby increasing the production per pan. The SSFS in collaboration with the Rajasthan Electric and Instruments Limited, Jaipur has installed two solar-operated brine pumps and two portable black and white TV sets for the first time in the history of the LRK. The SSFS also proposes to distribute bicycles and other accessories like gumboots to the *agarias* and launch adult education programmes.

However, the utmost need at this juncture is to launch an effective marketing intervention programme by which the *agarias* could be assured remunerative prices for their produce. Due to unavailability of committed personnel ready to work in the LRK, limited level of operational capacity, inadequate basic infrastructure, the SSFS' efforts can hardly be called adequate considering the unfathomable ocean of exploitation, poverty, and misery prevailing in the LRK.

Role of the Government

The need for intervention by the government is also highly felt. The funds collected towards the cess by the GOI were supposed to be utilised for promoting the welfare of the *agarias* and for the development of salt industry. During 1987-88, in Gujarat alone, an amount of Rs. 122.40 lakh (highest among all the other states) was collected as cess. Out of that, only a sum of Rs. 22.65 lakh was released for development and social welfare activities in the state (Joshi 1989). Generally, the execution of welfare activities gets delayed and the funds lapse every year.

Efforts should also be made to reduce the high uncertainties and various risks associated with the activities of salt production, procurement and marketing.

This might lead to the optimal use of the natural resource, brine, that is available in plenty in the LRK.

Outcomes and Consequences

In this section, we study and evaluate the outcomes and consequences of the existing system of resource use and salt production and marketing systems.

The Economics of Salt Production

The cost of salt production includes both tangible and intangible costs whereas the benefits are mainly tangible arising from the sale of salt. As we stated earlier, the production process essentially starts with the entry of the *agarias* into the LRK for extraction of brine and lasts till the salt from their pans is collected in the heaps. Thereafter all the operations are done by the trader/buying agent. Table 1 presents the average cost figures of sample members of 13 successful co-ops. The cost of production varied within a narrow range. On the other hand, the sales realisation varied to a great extent depending upon the following major factors :

a) Quality of the produce.

b) The time of extraction.

c) The bargaining power of the *agaria/co-op.*

d) Credibility of the *agaria/co-op* among the traders.

e) Prevailing price in the region.

The *agarias* move into the Rann immediately after the water recedes and after the desert sand dries up. Along with his family an *agaria* also carries his tools, equipment and other essential materials. The transportation cost presented here is mainly for the tractors hired for this purpose.

The *agarias* have to hire labourers also. The number of labourers hired varies with the ability of the *agaria* to contribute his own family's labour. The labour is mainly hired for carrying out the operations of digging of -wells and preparation of pans. The cost of digging the wells varies within a broad range. The *agarias* cannot afford circular iron rings for fixing in the wells and hence a cheaper substitute - a structure made of bamboo - is used. The cost also varies depending on the number of attempts made before the brine is struck. The cost figures presented in Table 1 include some allowance for the risk involved in striking the brine as well as other risks such as the risk of collapse of the well, drying up of the well after a few days of **pumping,** and so on. The amount of the allowance is estimated on the basis of the experience of the sample *agarias* with digging wells.

The average cost figure that we have used is as high as Rs. 840 whereas the actual average cost of digging is only Rs. 600 if the brine is struck in one go. Thus, an allowance of Rs. 240 is made to cover all the risks involved. The average expenditure incurred on crude oil required to pump out the brine from the well was found to be as high as Rs.l.610 which was about 16% of the total cost. The *agarias* have to

purchase water from private suppliers at the rate of Rs. 20 per barrel as the quantity supplied by the Panchayat tankers is both inadequate and irregular [2].

Most of the *agarias* have to hire the pumps on contract basis either from their respective societies or from private suppliers. The average cost of hiring accounts for about 8% of the total expenditure. The land preparation cost includes expenditure on preparing channels, . condensers, levelling and padding the pans, etc. The *agarias* have to pay an administrative fee which covers the Secretary's salary, expenses incurred for road building, rent for the land, and other miscellaneous expenses. . The fee was found to vary from Rs. 350 to Rs. 1,000 per year across the sample co-ops. This reflects the variation in the performance and efficiency of the co-ops, Besides, the *agarias* also have to spend a substantial amount on repairs of pumps at the onset of every season. The imputed cost of the family labour works to Rs. l,625 which is the highest of all the items of expenditure. We have not included in our estimates of costs any allowances for such harmful externalities as lesions and sores of the lower portion of legs and feet that are caused by prolonged exposure to brine and salt and other casualties due to the awfully hot desert climate [3].

The average production per pan was found to be 408 mt per season and the average price realised by the *agarias* from the sale of salt was estimated at Rs. 40.65 per mt.

A comparison of these cost figures with the average cost and revenue figures of eight selected individual *agarias* operating five to ten acres of salt lands showed better economic performance in the case of the latter (Table 2). The affluent 10-acre holder *agarias* were found to be in an advantageous position in terms of the following:

a) Their dependency on external sources of credit was very low; 60-70% of the investment was self-financed.

b) This category of salt producers have pumps of their own. Thus their cost of production is lower. They do not have to pay exorbitant hire charges; their costs mainly consists of repair and depreciation charges

c) Due to better management, the produce obtained is quite timely and of high quality.

d) They are in a better position to bargain with the traders.

The average cost per pan for this category of producers was estimated at Rs. 8,385, the average production per pan at 565 mt., and the average price realised at Rs. 44.25 per mt. All these figures show that the individual 10-acre holders were more efficient, on the average, than the typical member of the salt co-ops.

Since both these categories are exempted from tax payment, it was found that the actual profit per pan for the 10-acre holders was Rs. 16,616 which was 159% higher than the average profit of Rs. 6,405 earned by the *agarias* operating through the co-ops (Table 2). This affluent category of *agarias* also possess brine resources five time the average holding (about two acres) of their counterparts In the co-ops. Besides, the 10-acre~holders also harvest three to four times the total number of crops harvested by the members of the co-ops.

Marketing

To meet their consumption and salt production expenditures, most of the *agarias* in the LRK borrow heavily from the private traders-cum-money lenders. However, credit is also available from institutional sources like banks, and co-op societies. In as many as 90 % of the cases, it is the private traders who do the required funding in instalments locally called *hapta.* The instalments are normally released at an interval of 15 to 25 days. The loans from the private traders and the money lenders usually bear an interest of 18% to 24% per annum. Besides, the credit is fully tied to the marketing of the final produce. Under this system, the *agaria* is totally bound to sell his produce to his creditor as per the pre-specified terms and conditions of the contract.

There is a cartel formed by six to eight big traders in the area, It plays a vital role in price fixation. Over a period of time, through the use of various market manipulation techniques, the cartel has assured for itself a safe and secured position in the trade. The small traders are compelled to get out of the salt trade. In the last five years, as many as 15 small traders have been kicked out of the salt trade.

Once the salt is extracted from the pans, procurement starts. The salt is brought from the pans in trucks to the heaping centres at Halvad, Kuda, and Kharagoda situated 30 to 65 km away from the centres of production. This operation is either supervised by the trader himself or by a transport contractor. Here too, the big traders are in an advantageous position since most of them have a requisite number of trucks to procure the entire produce from the Rann before water enters the desert after monsoon rains. The ingress of the sea water is highly unpredictable. It has been observed that a cyclone with a velocity of 60-80 km per hour lasting over two days is enough to draw in the sea water and completely wash off the salt. This warrants the completion of procurement in a very short period of time—-30-40 days to avoid the risk of the salt being washed away. It also does not give much flexibility to the small traders who have to largely depend upon the availability of trucks for procurement. Losses in transit are borne not by the trader or the transport contractor but by the *agarias.*

The lands in the heaping centres are taken on lease by the *agarias* either from the village *panchayat* or private landlords at a fixed rent, and the lease contract renewed annually. Different rates exist for leasing out these lands. An annual rent of 3 5 **paise/sq.ft.** is charged by the *panchayat* whereas 50-75 **paise/sq.ft.** by the private land owners. Estimation of total salt production is also done on this basis by the Salt Department. The product sold as industrial salt accounts for 45% to 60% of the total production. It is mainly transported by trucks to user organisations such as Gujarat Heavy Chemicals **Ltd.,** Dhrangodra Chemical Works and other industrial houses engaged in manufacturing soda ash, The product sold as table salt is mainly **transported by** railways. Every' trader having authorised procurement (i.e., produce procured from the authorised co-ops, or **10-acre-holders** or other licensed producers mentioned earlier) is allocated a quota of railway wagons. The quota is equivalent to 25% of the total authorised procurement of a trader. The. traders contact different markets all over the country and assess the demand for their produce. Thereafter, they book the railway wagons as per their requirement for transporting their produce. However, the railway wagons are made available at a very short notice. Hence, the traders have to keep their stocks of iodised salt ready for immediate despatch. Any delays attract high rate of demmurage charges.

One of the most crucial factors determining the success in salt business is marketing. By forming an oligopsonistic market structure, big traders exploit the *agarias.* Due to lack of **inf**rastructural facilities, even the co-ops are compelled to sell their produce to these private traders at very low prices. The private lenders present themselves as an easily accessible source of loans. A pre-requisite for granting the loans is an agreement stipulating that the borrower will sell all his produce to. the lender only. The price paid by the **trader-cum-money** lender is usually lower than the prevailing market price. In addition, manipulations of records and accounts by traders with the intention of cheating the salt producer is also very common. In fact, the traders never allow the poor *agarias* to get out of their clutches. Hence, the agarias is damned to indebtedness and poverty generation after generation and the trader-cum-money lender becomes richer and richer.

The net margin of the traders is as high as 52% whereas the *mgarias* get only 2% to 4% of the **consumer's** rupee on branded salt. There are several ways by which the big traders manipulate and regulate the market forces. For example, in 1990-91, the private traders initially quoted a very high price of Rs.72 per mt for a few selected pans. This apparently increased the market price. The SSFS got misguided so they had to increase their procurement price also which was earlier fixed at Rs. 52 per mt. Due to the limited funds available with it, **the** SSFS could purchase only a limited quantity at the increased price. As soon as

the SSFS's procurement stopped, the traders lowered the price drastically to Rs. 38 per mt. In the case of allocation of quota of wagons too, the big traders got away with the major proportion by colluding together.

Most of the times, the traders contact the Chairmen of co-ops for procuring the required number of salt pans from the member *agarias* of their co-ops. Due to this, it so happens that at times the *agaria* is not at all aware of the actual bargains. This system gives enough scope for misappropriation by a dishonest Chairman. The traders employ other tactics too to control the market forces. For instance, when they find that the production in a certain year is much more than the estimated demand, they do not lift the produce from the Rann itself- Consequently, they save the transportation cost which is almost equal to the cost of salt itself and also save on the money paid to the *agaria;* the saving being as much as 20%~30% of the total value of the produce. In the process, the poor *agaria* suffers as he is paid only for the amount of salt that is actually lifted by the trader. To maintain the. balance of demand and supply in the market, the big traders form a cartel and restrict the supply through manipulating the transportation arrangements. It was reported that they bribe the railway authorities, so that less number of rakes (than the allocated) are made available. Again, when the demand is very high they can manage to have more railway wagons allocated to themselves. To ensure high procurement and to wipe off the small traders from the competition, the cartel announces very high rates for procurement of the pans. They allow this inflated rate to prevail for a good number of days. As soon as the news spreads, the *agarias* swarm in to offer their produce. However, only very little amount and that too from those producers who have the reputation of producing high quality salt is accepted. The others are not given any final word but left with optimism. In the meantime, the small traders find it very difficult to make deals with the *agarias*. As they cannot afford to delay their procurement contracts, they are bound to make deals on a higher price. After having done so, they find that the big traders have now lowered the price. Ail this explains a good part of the salt trade practices prevalent in the area.

An in-depth study of five selected traders was done to develop further insights about the trade. It was found that all these traders were in this profession for the last 20-30 years. The average volume of transaction was estimated to be 42,000 MT/year/trader. The average quality of the salt produced in this area face tremendous competition in the market from the sea salt. Besides, most of the times in a year, the supply exceeds the demand. As a result, as much as 30%-35% of the stock remains heaped in the heaping centres throughout the year. This is highly prone to be washed off by the rains and ingress of sea water during storms. Also a substantial amount of capital remains locked up and consequently the interest cost keeps mounting up.

To find out the net profit enjoyed by the traders in the area,an exploratory study was done on a sample of five traders operating in the area. The results of the study are presented in Table-3. The average price paid by the traders to the *agarias* was Rs. 40 per mt. The traders sold table salt at prices ranging from Rs. 230 to Rs. 275 per mt and industrial salt at prices varying from Rs. 140 to Rs. 190 per mt. Taking the average price of table salt at Rs., 250 per mt. and industrial salt at Rs. 165 per mt and their proportions at 55% and 45% respectively, we estimated the weighted average price of salt at Rs, 212 per mt. At this sale price, the average net profit margin of the traders without any allowance made for the risks borne by the traders was Rs. 62.68 per mt. After making an allowance of Rs. 35 per mt for the various risks borne by the traders, the net profit margin of the traders works to Rs, 27.68 per mt, or about .8% of the weighted sale price..', Thus, a trader handling the average volume of 42,000 mt of salt earns a minimum profit of Rs. 11.53 lakh per annum (to be precise in in every season). It should be noted that there are traders in the LRK handling as much salt as 90,000 mt.

Some scholars hold that the margin of this magnitude enjoyed by the traders is quite normal They argue that this is justified by the amount of risk borne by the traders at various stages. Given the limited scope of the present study, we did not quantify the various risks involved and borne by the traders. Although estimate of the allowance needed to offset the various risks borne by the traders worked to Rs. 35 per mt [4].

Due to the limited time available for completion of this study, we could not study the entire marketing channel from the producer to the consumer and the price spread. However, we estimated the salt producer's share in the consumer's price based on the average price of unbranded salt in 1991-92 at four per cent. This indeed is very low considering the back-breaking and hazardous work involved in salt production. There is therefore need for intervention in the present marketing system to enhance the producer's share in the consumer's price.

Member Participation in Salt co-ops

An attempt was made to measure the level of members' participation in the activities and management of the sample co-ops. *Prima facie* it appeared that the main reason for 36 salt co-ops out of the 116 becoming defunct was the low level of members' participation, deficient marketing system and an inappropriate design of the co-ops. We designed a questionnaire comprising 11 questions to elicit from the sample *agarias* the information necessary for determining the extent of members' participation (Annexure 1). We employed the People's Participation Index (PPI) developed by Singh (1992) to measure members' participation.

Each of the questions was framed so as to have responses that could be assigned values of either 1 or 0; or 1, 0.5, or 0. 'Yes' and 'No' answers were assigned the values of 1 and 0 respectively and the responses 'Always', 'Sometimes' and 'Never' were assigned the values of 1,0.5 and 0 respectively, A total of 65 respondents were interviewed. Their responses are summarised in Annexure 2. Each of the questions was assigned a weight showing its relative importance as a measure of participation. The relative importance of the different factors was estimated on the basis of our preliminary surveys. The sum of the weights assigned to all the questions was 1.00 and thus the scale assumed values ranging from 0 to 100. Using this method we computed a score for each of the sample respondents and all the scores thus computed were added and then divided by 65 to compute the mean participation rate. This expressed in percentage terms yielded the PPI which was estimated at 38% which was judged to be low as the norms indicated by Singh (1992). We believe this explains quite a good part of the low performance of the sample co-ops. However, how much of the low performance level could be attributed to this factor is difficult to estimate.

Conclusions and Implications

On the basis of our research findings and their analysis presented in this paper, we can draw many conclusions. Some of the Important conclusions and their implications are briefly stated in the following paragraphs.

1, Most of the salt miners In the LRK lead a precarious existence devoid of bare necessities of life. It is an irony that those who produce *one* of the basic necessities of the life, i.e., salt are denied the access to the other basic necessities of life such as potable water, safe shelter, health care, education, transport and communication. Establishment of salt miners' co-ops was a good measure undertaken by the Government of Gujarat to improve their social and economic condition but it failed to achieve its objectives. The *agarias* are still in the clutches of the traders and money lenders and therein the consumer's price continues to be deplorably low at around four per cent.

2. The brine from which salt is made is a natural resource owned by the GOI and GOG. Therefore, the government can play an important role In regulating its use in such a way that most of the benefits from this resource go to the poor salt miners. For this to happen, it is necessary that the lease of salt lands are made exclusively to the salt miners' co-ops or at least the highest preference be given to them in the leasing out. of such lands.

3. As the findings of this study show the salt miners' co-ops are not going to succeed so easily. The salt miners are pawns in the hands of the traders and money lenders. They need to be unshackled from the clutches of the private traders and money lenders. This is possible only if the existing co-ops are reorganised on the **Anand** pattern of dairy co-ops and are financially supported initially to come out of the red. The intervention made by the SSFS with the aims of improving the marketing and credit systems and reorganising and revitalising the existing co-ops is a right step in this direction. But much more needs to be done on a bigger scale to make a significant dent on the problems of the salt miners.

4, A lot of revenue is earned by the GDI from the salt cess. Part of the cess is supposed to be utilised for the welfare of the salt miners but very little amount is released to the Gujarat Government by the GOI, There is a need for allocation of higher share of the cess revenue to the state government so that the latter could use the money for improving the basic infrastructural facilities including supply of potable water, health care, schools, transport and communication in the area.

5. The salt miners have to bear a lot of drudgery besides health hazards, in doing various activities like digging wells, breaking the salt crust manually, padding the surface of pans by feet and so on. Both the drudgery and health hazards could be reduced significantly if scientific methods for detecting brine reserves and scientific techniques for breaking salt crust and crystals and padding the surface of pans are developed and made available to the salt miners,

6. Most often, sea water washes away the salt collected in heaps by the salt miners resulting in substantial losses to them. These losses could be reduced if a number of platforms sufficiently raised above the ground level are constructed in the area for storage of salt. The cost of constructing such platforms could be met out of the cess funds or such works could be taken up under the Jawahar Rozgar Yojana.

Table 1
Average Cost of Salt Production per Pan for Sample Members of the Co-ops, 1991-92

Item	Cost (Rs.)	% of total cost
1. Cost of moving into the area	325	3.19
2. Digging of well	840	8.25
3. Crude oil	1,610	15.82
4. Land preparation	870	8.55
5. Hired labour	610	5.99
6. Water	910	8.94
7. Hire charge for pump	830	8.15
8. Repair and maintenance of pumps	1,205	11.84
9. Administrative expenses	890	8.74
10. Imputed wage of family labour	465	15.96
11. Miscellaneous	1,625	4.57
Total expenditure	10,180	100.00

Table 2
Comparative Economics of Salt Production by Members of the Salt Co-ops and Selected Private Producers, 1991-92

Particular	Members of salt co-ops	Private producers
1. Average size of salt land holding (acre)	2	10
2. Average cost of production (Rs./pan)	10,180	8,385
3. Average yield of salt (mt/pan)	408	565
4. Average price realised (Rs./mt)	40.65	44.25
5. Average cost of production (Rs./mt)	24.95	14.84
6. Average net profit (Rs./mt)	15.70	29.41
7. Average net profit (Rs./pan)	6,406	16,617

Table 3
Price Spread between Salt Producers and Traders in LRK, 1991-92

Sl. No.	Item	Cost (Rs./mt)	Percent of total cost
1.	Average price paid to *agarias*	40.00	26.79
2.	Transportation (LRK to Halvad)	35.00	23.44
3.	Loading, unloading and heap making	9.00	6.03
4.	Iodisation	17.52	11.73
5.	Plant charges for iodisation	6.80	4.55
6.	Loading in wagons	16.75	11.22
7.	Bagging	18.25	12.22
8.	Cost of additional *tukris*	5.00	3.35
9.	Wagon demmurage	0.90	0.60
10.	Tips and miscellaneous	0.10	0.07
11.	Total cost borne by the traders	149.32	100.00
12.	Risk allowance	35.00	
13.	Total cost + risk allowance	184.32	
14.	Average weighted price received by the traders	212.00	
15.	Traders' average net profit margin without risk allowance	62.68	
16.	Traders' average net profit margin with risk allowance	27.68	
17.	Percentage Share of the *agarias* in the weighted price received by the traders	18.86	

Annexure 1
Questionnaire used for collection of information about Members' Participation in Co-op Management.

1. Are you a member of any registered Mandali? (Y/N)

2. Did you participate in any meetings called by the Mandali? (Always/Sometimes/Never)

3. Are you a member of the Management Committee ? (Y/N)

4. Did you make any significant contribution towards implementation of any existing norms or towards introducing a change in the rules and regulations?

5. Do you abide by the norms and regulations of the *Mandali*? (Always/Sometimes/Never)

6. Did you ever consult your fellow producers about your problems? (Y/N)

7. Did you hire the pump from the *Mandali*? (Always/Sometimes/Never)

8. Did you contribute towards building a corpus fund of the *Mandali* to meet the contingencies? (Y/N)

9. Did you contribute any money or labour towards construction or repair of the roads in the LRK? (Always/Sometimes/Never)

10. Did you contact the traders for marketing your produce through the *Mandali*? (Always/Sometimes/Never)

11. Did you participate in the Health Training Programme organised by SSFS in TF? (Y/N)

Annexure 2
Percentage of Sample Agarias Responding to the Questions about their Participation in Co-op Management

Q.No.*	Yes (1)	No (0)	Always (1)	Sometimes (0.5)	Never (0)	Weight assigned
1	71	29	--	--	--	12
2	--	--	12	20	68	12
3	8	92	--	--	--	5
4	5	95	--	--	--	10
5	--	--	12	29	59	12
6	43	57	--	--	--	9
7	--	--	22	31	47	5
8	19	81	--	--	--	9
9	--	--	11	17	72	9
10	--	--	22	19	59	7
11	34	66	--	--	--	10
All						100

* The questions are listed in Annexure 1.

Notes

[1] There is a need for development of scientific techniques/methods for predicting the availability of brine and its extent. This would save the *agarias* a lot of money and energy that they spend on digging wells that do not have brine.

[2] It is estimated that the *agarias* spend about Rs. 8 lakh annually on purchase of water (Joshi 1989).

[3] The working conditions in the Rann are horrible and tell upon the already poor health of the *agarias*. Since they are poor they cannot afford gumboots which are necessary for protection of their feet and legs from getting lesions and sores. Similarly, they cannot afford sunglasses which are required for protection of their eyes from the glaze of salt pans as well as the blazing sun light.

[4] A rough idea of the risks and losses borne by the traders can be had from the following observations that we made on the basis of our discussions with the sample traders.

a) On the average, 10% of the total amount lent to the *agarias* could not be recovered in the same year.

b) On the average, the traders did not intentionally lift 5% of their total procurement to regulate the supply.

c) About 8% of the accumulated account receivables (of the year 1991) had to be written off as bad debts.

d) Loss of salt due to washing by rains/sea water was about 8%.

e) About 5% and 4% of the total quantity contracted is lost in the transit from the Rann to the heaping centres and from the heaping centres to the market respectively.

f) Loss of weight due to evaporation of moisture from salt is estimated at 12%.

g) About 20% of the residual stock in the *ganja* (market) had to be sold off at a price that was lower by Rs. 60 per mt than the market price due to degradation of the quality.

These losses amount to about Rs. 35 per mt for an operation handling 10,000 mt of salt per year.

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