CHAPTER IV

PROBLEMS AND PROSPECTS OF BRICK KILN
INDUSTRY IN HUBLI-DHARWAD TALUKAS
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IN HUBLI-DHARWAD TALUKAS

A: Production of bricks in the twin talukas of Hubli-Dharwad:
General factors:

Brick-making is not something new to the twin talukas of Hubli and Dharwad. There are century-old houses and other buildings made of burned bricks and the bricks were locally manufactured. The Hubli bricks are supplied even to distant places like Hospet, Bellary, Bijapur and Gulbarga.

The brick industry of the area has undergone a structural change over the years. The producers themselves opine that a large number of small producers are found today, but it was the other way round 25-30 years ago i.e., then there were a small number of large producers.

The industry is seasonal and works for about 4 to 5 months every year. The industry is unorganised and provides seasonal employment to the landless and agricultural labourers of the area. The industry comes under the category of cottage industry and mainly run by the village artisans in the past. But gradually, the businessmen and building contractors started brick-making as they found it to be highly profitable.
and at the same time cost saving. The building contractors otherwise have to buy the bricks from other producers at the prevailing market rates and the price may sometimes be very high. Besides, they cannot rely upon the quality of the bricks supplied. The technology and the capital requirement and organisational problems being very simple, more and more entrepreneurs were attracted towards the brick-making activity and for some families in the villages, it became the only alternative, when the basic occupation of their families came to a grinding halt due to the development of science and technology. The introduction of power looms gave a powerful challenge to the cottage handloom industry and the families in the villages depending upon handlooms were thrown out and they started brick-making on a small scale for their living. With the introduction of aluminium, hindalium and steel utensils and cook-wares, the potters in the villages became jobless. They, too took to brick-making as that was the only alternative before them. A majority of these people were having their own paddy fields from which they could get the necessary soil for brick-making and they were having wells and other sources of water which are the basic requirements of the brick industry and the brick-making process being very simple, they found brick-making the only alternative before them for their survival. Gradually the building contractors started brick-making for meeting their large scale requirements of quality bricks.
Some businessmen took to brick-making just with the intention of utilisation of the waste materials available from their existing industry. One such instance in Dharwad is the owner of a lime industry. The owner of the said lime industry used to dispose of reject coal of the lime industry at a throwaway price and to avoid this he started brick-making and thus the coal reject of the lime industry is now put to good use and the loss on account of disposal of the reject coal at very cheap rates is avoided. There are other business people who have taken to brick-making just with the intention of employing their idle funds for earning further profits. The brick units of these businesspeople are situated by the side of the main roads, particularly Kalgatgi road, Haliyal road, Hubli-Karwar road, and Dharwad-Belgaum road.

Different categories of people who have taken to brick-making are given in Table-1.

From Table - 1 it is clear that the brick industry is dominated by businessmen and contractors in these two talukas. The agriculturists and village artisans constitute only 40 per cent of the aggregate. These units are run as joint Hindu family units. Businessmen and contractors are having two or more than two units.

Thirty percent of the total units are within five kilometres (59 units) from the city and the rest of the units
Table 1
Table showing different categories of people in brick-making industry:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Category of people</th>
<th>No. of units</th>
<th>Percentage to total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Agriculturists and village artisans</td>
<td>81</td>
<td>40%</td>
</tr>
<tr>
<td>2.</td>
<td>Businessmen</td>
<td>62</td>
<td>31%</td>
</tr>
<tr>
<td>3.</td>
<td>Other categories including building contractors.</td>
<td>57</td>
<td>29%</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

are 6 to 10 kilometres away from the main city both in Hubli and Dharwad. (Table No.2) Remaining 70 per cent units (141 units) are either by the road-side or very near motorable road. The units in the interiors face severe transportation problems as the roads are not motorable.

Table 2
Table showing distance of brick units from the main cities of Hubli and Dharwad.

<table>
<thead>
<tr>
<th>Distance from the city</th>
<th>Number of units</th>
<th>Percentage to total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within five kms</td>
<td>59</td>
<td>30%</td>
</tr>
<tr>
<td>6 kms and above</td>
<td>141</td>
<td>70%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>
A majority of the units have no fixed place of production. This poses a great problem in analysing the feature of the industry, like the distance of the units from the main city. Fourteen units on Hubli-Karwar road and eight units on Dharwad Haliyal road have fixed places of production. Thus, only 11 per cent of the units are found to have fixed places of production. These units usually carry out the production constantly in the same place (Table 3).

Table 3
Table showing brick units with & without fixed place of production

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Number of units</th>
<th>Percentage to total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units not having fixed place of production</td>
<td>178</td>
<td>89%</td>
</tr>
<tr>
<td>Units having fixed place or production</td>
<td>22</td>
<td>11%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

Of the 14 units surveyed located on Hubli-Karwad road, three units are large producing 25 to 30 lakhs per season. Two big units on Dharwad-Alnavar road produce in the range of 25 to 30 lakh bricks each year. These big units produce bricks every year in 7 to 8 kilns and they have their own trucks to
transport the bricks and the raw materials like the soil, coal ash etc.

A majority of the producers started brick-manufacturing on the basis of the past experience. Fifty per cent of the total units are started by those who were working in the bricks units in the past. This fifty per cent consists of 30 per cent (60 units) units which are completely independent and 20 per cent units (41 units) which are started by the workers having experience in brick-making in collaboration with businessmen.

Ten per cent of the producers have entered this line out of their own urge and desire. Other producers are building contractors who produce bricks for use in their own construction work. The details of the split is shown in Table 4.

The big manufacturers have maintained their own lorries. They are mainly building contractors and business people having good contacts and they supply bricks even to distant markets like Bellary, Hospeth, Bijapur and Gulbarga.

B. Input Analysis:

1. The most important and basic input for brick-making is the soil of proper quality. This is the main reason which has made 90 per cent of the brick units move from place to place. The mobile nature of these 90 per cent of the brick units is
Table 4

Table showing the background of brick producers in Hubli-Dharwad Talukas

<table>
<thead>
<tr>
<th>Background of the producers</th>
<th>Number of units</th>
<th>percentage to total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Labourers turned entreprenuers.</td>
<td>101</td>
<td>50%</td>
</tr>
<tr>
<td>2. Those who started brick production on own urge.</td>
<td>19</td>
<td>10%</td>
</tr>
<tr>
<td>3. Building contractors and businessmen.</td>
<td>80</td>
<td>40%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

mainly due to the non-availability of suitable soil in a particular area over a given period to time in required quantities. To the south of Hubli and East of Dharwad only black cotton soil is found, which is not useful for brick production. The rest of the area in the twin talukas contain red soil but the clay soil of the paddy fields and the nearby forest land are the main source of supply for the brick units of the area.

None of the units conduct soil test for the production of bricks. The suitability of the soil is judged by past experience. The soil of the paddy fields is considered to be ideal for brick production and in vernacular language this soil is called "KANAPI" soil. The big units with a fixed place of production have their own lorries for bringing soil
and these trucks are also used for transportation of the manufactured bricks to the site of the buyer.

In the past the brick manufacturers used to get the soil freely. The agriculturists used to allow the brick-makers to use their paddy fields for brick production during the summer. This used to be beneficial to both the parties. The removal of the soil in the paddy field was done in such a way that the agricultural land was automatically levelled for the owner of the land and that was the only consideration for the owner of the land. Thus the brick-maker used to get the soil completely free.

Historical studies show that in the past the brick-producers used to get the permission for brick production from the concerned king or queen and the permission given by the king or the queen was subject to certain restrictions imposed with the intention of safeguarding the adverse effects of brick production on the environment. The very fact that the king/queen used to take so much of care about the environment is really a great wonder and is to be much appreciated. This is also indicative of the awareness about environment and the dangers of pollution. The brick-producers were permitted to lift the soil from the top of the hill or were permitted to lift the mud in the harbour, so that the removal of the soil would not affect adversely the useful agricultural land. The
harbours were thus automatically de-silted. The pits formed due to excavation of land in residential area are likely to become accident spots for the dwellers in the area. The brick units were not permitted to destroy the forests. There are cases of brick units changing the very courses of the rivers as it has happened in Manjari of Chikkodi where brick-production has created a grave problem as too much excavation has changed the course of the river Krishna.

The brick-manufacturers of the twin talukas of Hubli-Dharwad are required to take necessary permission from the Geological department situated in Dharwad. At present (1992 rates) the rate of tax to be paid to the Geological department is Rs.10/- per 1000 bricks produced by the manufacturers. In addition to this the manufacturers have to take the permission from the Tahasildar for the excavation of land by paying Rs.1.20 per square feet of land to be excavated. The digging is permitted only upto a depth of 3 feet.

The units with fixed places of production and with their own vehicle (trucks) store soil in large quantities sufficiently well in advance usually after Diwali (Hindu festival which falls in the month of October).

A mixed soil is considered to be better for brick production. The soil is rarely subjected to chemical test and no producer is found to mix salt, Barium Carbonate etc., for
treatment of the soil for brickmaking. The soil is selected on the basis of the experience of the manufacturer and the fitness of the soil and its contents etc are judged only on the basis of experience. This results in deterioration of the quality of the bricks and increases the chances of loss. Limeblowing of the bricks was found in some of the units visited. Usually the purchasers decide the quality of the brick by keeping one or two sample bricks in water for a day or two and if the brick dissolves that particular lot will not be purchased. Because of the lack of accurate testing of the soil, the chances of loss will be more but the manufacturers of this area are not keen on chemical testing of the soil. The losses are not seriously viewed by these manufacturers. Thus even controllable losses are not controlled by the brick-manufacturers.

The rate for the supply of the soil at the time of the study, was Rs.180/- per truck load (in vernacular language they call it as two brass of soil) and this is sufficient for production of about 2,400 bricks (as per the data supplied by the manufacturers). A negligible percentage of manufacturers (2 to 3 percent use their own paddy fields and so the soil will be completely free except the fees payable to the Geological department and the charges payable to the Tahasildar's office for getting permission. The farmers permit the licenced manufacturers to remove the soil of their paddy
field and even some farmers permit the manufacture of the brick in their paddy field itself and for this they charge about Rs.5,000 to Rs.8,000 for the use of the land for one season. This will be used by the manufacturer for production of 4 to 5 lakh bricks depending upon the availability of labour and the capacity of the producer to employ the sacha (moulding) teams. Thus the cost of the soil varies with the terms of procurement and the situation of the units. The cost once again increases if the brick unit is situated far away (more than 10 kms) from the source of supply of soil as the cost of transportation is added. Mobile units have more advantage in this respect as some of these units get the soil free of cost only with the condition that the land should be levelled for agricultural purpose.

Usually two or three labourers are employed to cut the soil in the paddy field and these workers are to cut the soil, remove the stones and other foreign materials, (cleaning), mix the coal ash and knead the soil so that the soil will be ready for moulding. These labourers are paid on piece rate basis. They are paid usually Rs.50 to Rs.60 per 1000 bricks. In a day, a labourer can make enough soil ready for making about 2000 bricks. No crushers and mixers are used. So the process is completely manual. Even the sieving of the soil is not done. Only water and coal ash are added and the soil is prepared one day in advance. The soil ready for moulding is in
thick paste form and is put in the form of a mound and is covered with a plastic or polythene sheet to avoid evaporation of moisture.

ii. COAL-ASH:

Another important ingredient used in brick-making is the coal ash. This is used for the burning of bricks in this area. Coal ash purchased in truck-loads is separated manually with the help of sievers into three categories viz., large, medium, and small. The major suppliers of coal-ash to the brick-producers of this area are Dandeli paper mills limited., Harihar Polyfibres Ltd., and the factories in Hyderabad and Kurnool. The coal ash supplied from Hyderabad is said to be of good quality. In the past the railways were the main source of supply of coal-ash as they used to use coal for running the steam engines. This supply of coal ash by the railways has come down due to dieselisation of the Indian Railways. It is said that the main brick production activity in Dharwad was the area near the Railway station itself. The coal ash was available freely from the railway stations and even nominal charges were paid to the agency for removing the coal-ash from the railway stations.

The brick units today are finding it very difficult to get good quality coal at reasonable prices. The cost of the coal-ash has gone up. The brick manufacturers have to depend
on the middlemen who stock coal-ash by purchasing it at auctions from the factories, railways etc. These agents supply coal-ash in truck-loads directly to the brick site.

The prevailing rate for supply of coal ash (1992) is in the range of Rs.5800 to Rs.6100 per truck load, each weighing approximately 9 to 10 tonnes. Two truck loads i.e., one truck load of small size powder and one truck load of big size powder will be sufficient for the production of about 80,000 bricks.

The small powder is mixed with the soil. The medium size powder is used in between the brick layers of the kiln and the big particles are put beneath to form a bed of about 6" to 7" thick, on which usually bricks are laid one above the other in approximately 27-28 layers. After preparing a layer for three bricks i.e., 6 to 7 inches in height, the coal ash is spread in the middle of the square so formed with the help of burned bricks. Thus the bricks will form the boundary and the coal-ash spread in between forms a bed for laying the bricks.

The small producers usually contact the agents for the supply of coal-ash and purchase about 4 to 5 truck loads of coal ash in a season. After purchasing, the coal ash is sieved to separate the small, medium and large size particles. Usually 9 baskets (steel or aluminium baskets that are used by
workers for carrying concrete, jelly, etc.) of coal-ash is mixed per 1000 bricks. If the coal-ash is not mixed in suitable proportions, the bricks will not burn to the required degree and the quality of the brick deteriorates. In Hubli-Dharwad talukas coal is exclusively used for burning of bricks and it is opined that bricks burnt by using coal are of good quality. In the nearby cities like Mundgod, the brick is burnt by using firewood and the quality of the bricks so manufactured are not as good as the bricks manufactured in these two talukas.

The big manufacturers can purchase coal-ash directly from the factories but such instances were not reported by the respondents. Separate payment is to be made for sieving the coal ash, and usually the worker employed for this purpose is paid either on day rate basis or per truck load of coal. One or two workers employed in the brick unit are entrusted with this task when they have no other work to do in the brick unit and are paid at Rs.70 per truck load of coal ash sieved. Thus it acts as extra earning for the workers employed in the brick units.

iii. WATER:

Another important ingredient for brick production is water. The availability of water in sufficient quantities is so essential that in very many cases it becomes the key factor and the place (location) of a brick unit is decided by the
availability of local water. Thus it becomes a vital factor in the location of the brick unit.

Wells and ponds are the main source of water for the brick manufacturers of Hubli-Dharwad talukas. A few units in Hubli and Dharwad rely on ponds with assured water supply even during the off-season. Some units reported that they were forced to stop production in April itself due to acute water shortage. Of the 200 units surveyed, 20 units reported such bottlenecks. Big ponds in Hubli look like huge tanks and they store rain water in sufficiently large quantities. The units in the interior depend mainly on wells in the paddy fields or in the agriculture lands (Table 5).

Table 5
Table showing the source of water supply

<table>
<thead>
<tr>
<th>Source of supply</th>
<th>Number of units</th>
<th>Percentage to total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Big ponds with sufficient water</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>2. Units which depend on water in small ponds</td>
<td>20</td>
<td>10%</td>
</tr>
<tr>
<td>3. Units which depend on bore well etc.</td>
<td>78</td>
<td>39%</td>
</tr>
<tr>
<td>4. Units which depend on sources like tankers and open wells etc.</td>
<td>100</td>
<td>50%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>200</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Of the units surveyed, eight units were found to be paying for supply of water through tankers. The production of bricks will be very costly, almost inviable when the water is brought in tankers. A tanker of water costing Rs.100/- (1992 price) will be sufficient for just two days i.e., for the production of about 4,000 bricks. Once again payment is to be made for carrying water from the storage tank to the actual place of production at the rate of Rs.20/- per day. Thus if the water is brought in tankers, it increases the cost by almost Rs. 30/- per thousand bricks.

Seventy units situated in the interiors were found to be using electric pumps for lifting water from the well and other units numbering 60 using diesel pumps for the purpose. These units were incurring on an average Rs.200/- (electricity charges per month) or Rs.90/- (20 to 23 litres of diesel at the rate of Rs.4.32 per litre at 1992 rates) But this works out more economical (and even the work will be faster) than employing labour for fetching water at the rate of Rs.20/- per labourer per day and minimum two workers will be essential for fetching water from the storage tank or well or pond.

iv. Labour:

The ultimate success of any business activity depends upon the efficiency of its workers. As it is said, other resources are inert and and these inert resources are to be
put to the best use and this depends on the workers who work with these resources. Personnel management is key to the success of any business unit. Personnel management is key to the success of any business unit. Efficient workers are considered as very important assets in every successful business concern. Selection of suitable and efficient workers and their placement and extracting good work from them determine the efficiency of an enterprise. Management is defined as the art of getting things done through people. Thus labour management decides the success or failure of an organisation and it is specially so with labour intensive industries like brick units.

A medium size brick unit producing bricks in the range of 5-10 lakhs in a season employs about 16 to 20 workers consisting of about 6 to 7 male workers, an equal number of female workers and 4 to 5 child labourers. Little skill is required except in moulding and in staking the brick in the kiln.

The moulding team usually consists of members of the same family. Each moulding team requires three members, one member for preparing the ball from the pre-mixed clay, and another to put the same in the mould and a child labour to remove the green brick that is removed from the mould for placing the same on level ground for drying. The green bricks are laid side by side in rows for initial drying. The moulding
team is paid on piece rate system at the rate of Rs. 60/- per 1000 bricks (1992 rates). One team is quite capable of producing about 2000 bricks per day and distribution of the total earning among the members of the group is left to the discretion of the group leader. The brick production of a particular brick unit depends upon the number of moulding teams employed in that brick unit.

Table 6 shows the number of moulding teams employed by the brick units in Hubli-Dharwad talukas. A majority of the units employ three teams. (90 units out of 200 were found to have employed three teams).

Table 6

<table>
<thead>
<tr>
<th>Number of moulding teams employed during the season</th>
<th>Number of units</th>
<th>Percentage to total</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 teams</td>
<td>12</td>
<td>6%</td>
</tr>
<tr>
<td>4 teams</td>
<td>26</td>
<td>13%</td>
</tr>
<tr>
<td>3 teams</td>
<td>90</td>
<td>45%</td>
</tr>
<tr>
<td>2 teams</td>
<td>36</td>
<td>18%</td>
</tr>
<tr>
<td>1 team</td>
<td>36</td>
<td>18%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

Units employing 5 moulding teams produce almost 18 to 20 lakh bricks in a season. In a majority of the cases, the workers employed in the brick units are from the same or
nearby villages and they belong to one family or relatives and friends of known families. No formal recruitment procedures are followed for the recruitment of the workers. There are many cases where labourers have taken advance from the brick-producer and decamped. In some cases they have taken money from one producer and thereafter started working with another producer for comparatively higher wages. Thus, good workers are enticed away by rival brick units by payment of higher wages. In 20 per cent of the units, the workers have taken money as advance and they have gone to Goa, Bombay etc., for entertainment or in search of better work opportunities. This poses a great problem to the brick-manufacturers.

The producers employing their own relatives, friends and family members can be sure of the reliability and integrity of the workers. Usually a family is provided with a makeshift shed to keep continuous watch at the brick site. The family members who stay in these sheds are fully employed in the brick-making activity.

Except moulding and stacking of the bricks in the kiln, the other activities involved in brick-making are extremely simple and can be managed by workers without experience. Some of the tasks are so simple that they can be carried out by the children. This is the reason for employment of children in large numbers in the brick industry.
There is so much of talk about the abuses of child labour. But the brick industry provides an exception to this general tendency. Child-labourers working in brick units are so happy and proud of the work that they are not ready to leave their work. The very nature of the work entrusted to the child-labourers in the brick industry attracts them to the industry. The work is neither very heavy nor troublesome. The child-labourers work only for limited hours and they are never harassed as it usually happens in other industries, like the hotel and construction industry. Of course, these other industries find it difficult to retain child labourers, but once they are attracted by the brick industry, they never go back to other industries. The masons in the construction industry usually employ children for assisting them but they find it difficult to retain them. As soon as the brick kilns start functioning, these child labourers go there, leaving the construction activity. The main reason for this is the attractions in the brick industry. They will be in a position to earn more wages with less exertion and there is no harassment particularly in the area under study. Most of those, who started independent brick units at the time of this study, have worked in the past as child labourers in the brick units. They acquire the skill in the most natural way and thus the brick industry naturally prepares the future entrepreneurs by employing child-labourers.
The child-labourers working in the brick units are not ready to go to the school. When they were asked about the reason for not going to school, they declared that there they could earn money and need not depend on their parents for their livelihood. Usually the children of the age group of 10 to 16 years are employed in the brick units and all these children are quite happy there. They say that they are going to films, dramas etc., after working and on holidays. When asked about their future plan, confidently they say that they would start some brick unit.

During the visit to the brick units, it was really a different type of experience to the researcher to ask questions to the child labourers and the response given by these child labourers were quite surprising. The confidence with which they were talking and the information and the experience and the hope with which they were talking were all quite amazing.

Child labour is used for carrying the wet bricks for drying or for turning the bricks or for carrying sun dried bricks to the kiln. Thus very simple and light activities are entrusted to these workers. They are usually paid on piece rate basis. Mostly the child labourers work with their parents and relatives. This is another good reason for their happiness.
A rough list of the workers and their attendance is entered in a small note book and the work done on each day is recorded and the wages are paid on Tuesday every week or on the market day of the place where they work.

v. Financial management:

The implementation of plans and the realisation of the desired results require the support of money and credit. So many of the plans at even national and international level are never implemented for lack of funds. Money is the basic input that is required for the purchase of other inputs. Money is required for purchase of coal-ash, for payment of labour charges and for payment to other inputs like soil, water etc., in the brick industry.

The brick units in Hubli-Dharwad area are labour intensive and as such their investment in fixed capital is very much negligible. A large portion of the funds is utilised for labour payment. Labour cost is the major cost factor in the cost of brick production in this area.

Very few big producers use the soil available in their own paddy fields, for which they pay only the fees payable to the geological department of the state government, which is nominal. Previously the royalty so payable was Rs.400 per 1,00,000 bricks and it was raised to Rs.1000 afterwards. At
the time of the study it was Rs.1000 per 1,00,000 bricks produced. Thus it works out to just Rs.10 per 1000 bricks. The analysis of the cost of production of the bricks shows that the conversion cost is the major cost factor in the brick production in this area. Fixed cost investment is very negligible. The wooden mould, the pickaxe and showel for cutting and mixing the soil, a few steel buckets and vessels and pots are the necessary equipments needed in brick production. Then they have to provide for the wire mesh and frame for the sieving operation for the separation of the coal ash of different sizes. Normally the fixed investment comes Rs.600 to Rs.800 in the units which have not maintained their own trucks.

Weekly labour payment is the only major burden for the brick producer. Even a small unit employing one moulding team has to keep about Rs.1800 to Rs.2000 every week for labour payment, as detailed in Table 7.

Thus labour cost itself comes to around Rs.142.50 per 1000 bricks (1710×12), which constitutes almost 27.563 percent of the total cost of production of bricks.

The rates vary a little from unit to unit and therefore the average prevailing rate based on the data collected is taken for the preparation of the above estimates. Thus, even for a small scale producer, maintenance of minimum
Table 7
Table showing labour payment in a brick unit employing one mould team.

<table>
<thead>
<tr>
<th>Particulars of labour payment</th>
<th>Rate (1992)</th>
<th>Payment per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Payment to soil cutting and mixing team</td>
<td>Rs.50 per 1000 bricks</td>
<td>600.00</td>
</tr>
<tr>
<td>2. Payment to the mould team</td>
<td>Rs.50 per 1000 bricks</td>
<td>600.00</td>
</tr>
<tr>
<td>3. Brick arrangement in the kiln</td>
<td>lump sum per week</td>
<td>150.00</td>
</tr>
<tr>
<td>4. Carrying bricks to the kiln</td>
<td>Rs.10 per 1000 bricks</td>
<td>120.00</td>
</tr>
<tr>
<td>5. Water carrying charges at Rs.20 per day for six days</td>
<td>20 per day</td>
<td>120.00</td>
</tr>
<tr>
<td>6. Watchman wages</td>
<td>at Rs.120 per week</td>
<td>120.00</td>
</tr>
</tbody>
</table>

Total cost for about 12,000 bricks: Rs.1710.00

A cash balance of about Rs.2000 per week is essential. Besides this, additional funds may be required for other activities like purchase of soil, for paying other expenses like royalty, licence fees etc., and for payment for coal, water etc.

Once the sale of the brick starts, the funds can be recycled and for this at least the kiln should be completely
burnt. The sale of bricks is again quite a challenging task and a major part of the sales are likely to be on credit and under such circumstances the funds are blocked and mobilization of additional funds becomes necessary.

Seventy percent of the units surveyed reported that they took loans from private money-lenders (mainly business people) at very high rates of interest and this resulted in forced sales of bricks to the money lenders or their agents at very low prices. Forced sales are found to be a common phenomenon in brick industry. Many of the producers were not in a position to continue their production activity because of the financial difficulties. Just like the agriculturist, the brick-producers are very much exploited by the private money-lenders. The banks and other financial institutions are not in a position to help the brick manufacturers because of their own difficulties. The main difficulties before such lending institutions are:

i. A majority of the brick units are mobile in nature and go on changing the place of production every year and the lenders will not be in a position to trace the whereabouts of these producers.

ii. The brick units of the area are not having necessary fixed assets. The presence of fixed assets is very important for the lender and the lender can rely upon
the borrower, as he will be in a position to create charges on the fixed assets and the lender can feel safety about his funds.

In spite of all these hurdles, some of the producers have borrowed funds from banks in their personal capacities, giving personal guarantees. But the brick-manufacturer will not be in a position to borrow funds in the name of the brick unit. This is one strong reason for dominance of business people and the contractors in brick manufacturing activity.

vi. Marketing of bricks:

The most important function in any business venture is the sale of its final products. The ultimate aim of all economic activities is the satisfaction of human wants through supply of the goods and services. Putting the goods in the hands of the consumer is the last and the ultimate part of the marketing function. The producer will be in a position to recover the cost of production and earn his margin only when the goods are sold and the sales price is recovered. But selling the goods is not an easy task. Many factors affect the sale of a product. But the most important of all factors will be the quality of the product and its want satisfying power.

The golden rule in the sale of any product is usually expressed as "goods well bought are half sold". For bricks,
this can be slightly altered and can be expressed as "bricks well produced are half sold". A visit to the brick kilns in this area after the production season and before the beginning of the next production season is quite revealing. Unsold bricks are found in big heaps and these unsold bricks tell their tragic story. They represent the bricks not sold because of their bad quality. The main reason for this quality deterioration is the negligence of the producers.

Good quality bricks are easily sold and they command a good price. Maintainance of quality will be possible only if good care is taken at the time of production. Use of good quality soil, separation of unwanted materials in the soil, mixing right quality coal ash in right quantities, careful moulding, proper baking etc. will definetely contribute in improving the quality of the brick.

The buyers are very choosy in the selection of the bricks. They prefer to buy well burnt and well-cut bricks. The quality of bricks decides the quality of the structure. A sample of the brick is put in water for about two to three days and bad quality bricks usually dissolve in water and are rejected. Well-cut bricks reduce the wastage in the process of construction and reduce the requirement of cement and other materials. Bricks of uneven size require more effort in plastering and they consume more materials in rendering etc.
In spite of all these hurdles, a few big producers are in a position to sell bad quality bricks to government departments and big contractors by virtue of their high level contacts with the authorities and by using nefarious means like palming the hands of the officials.

There are agent middlemen for selling the bricks. These agents usually visit the sights where the construction is going on. They bring samples and supply them to the owners of the building for conducting necessary tests, and then bargain the price and supply the bricks to the sight of the owners and they keep their margin. Their margin will be the difference between the buying price and the selling price. This margin varies form Rs.30 to Rs.50 per 1000 bricks. The rate quoted will be usually inclusive of the transportation charges, and loading and unloading charges.

Five per cent of the producers have their own trucks. They are mainly very large manufacturers. There are units producing bricks in the range of 7 to 12 lakh bricks in a season and as already analysed, they constitute forty per cent of the total units surveyed and of this forty per cent ninety per cent (i.e., 70 units) are the units having an agricultural background and have their own tractors and they use the tractors for transportation of the bricks. Other producers have to depend mainly on hired vehicles. Table 8 shows the
percentage of brick-manufacturers depending on their own trucks and tractors and those who depend on hired vehicles.

**Table 8**

Table showing details about brick units depending on own vehicles and those depending on hired vehicles.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Number of units</th>
<th>Percentage to total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units having their own trucks</td>
<td>10</td>
<td>5%</td>
</tr>
<tr>
<td>Units having their own tractors</td>
<td>70</td>
<td>35%</td>
</tr>
<tr>
<td>Units depending on hired vehicles</td>
<td>120</td>
<td>60%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>200</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Dealers engaged in the supply of building materials usually supply the bricks also, along with other building materials like sand, black sand, jelly cement blocks, etc. A few of these dealers are affluent businessmen and they have their own trucks. They enter into contract for purchase of bricks in large quantities. But these middlemen never take the risk incidental to the production and sale of bricks. They sell the bricks and make payment to the brick-manufacturer after recovering the amount from the buyer of the bricks. Five to eight per cent commission is charged by the middlemen for selling the bricks.
Forced sales constitutes a major portion of the total sales of bricks. This is specially so with the small and medium producers. Seventy per cent of the sales of the small and medium producers are forced sales to the private moneylenders at very low prices. Big producers are financially strong and are not in the clutches of the money lenders.

Seventy to seventy-five per cent of the sales will be on credit. Recovery of the debts is a major problem with the brick-manufacturer. Twenty-five per cent of the credit sales are never recovered. The price amount is paid by the purchaser of the brick only after testing the quality of the brick. The bricks which dissolve in water and the bricks of inferior quality are rejected. The agents and the suppliers are forced to lift the bricks from the site of the buyer under such circumstances. Even when the buyer is supplied with the sample, he is likely to reject the bricks supplied to him as in many instances the brick supplied will be different from the sample given. The reason for this difference is sometimes due to the selling tactics employed by the agents and sometimes it is due to negligence of the producers. Because of uneven burning, the bricks taken from the same kiln are likely to contain bricks of different qualities. The producers, the agents and even the middlemen supply well-burnt bricks as samples and the bricks actually supplied contain half burnt, and unburnt bricks in them. Sometimes bad and good bricks and
broken bricks are mixed together and the customers are cheated by the producers/the middlemen. Because of such happenings and unethical practices, the buyers are made to doubt the integrity of the suppliers. Hubli bricks are considered to be better in this respect when compared to Dharwad bricks.

Medium and small producers have opined that the village sales constitute forty per cent of the total sales. Large producers mostly sell their bricks to the contractors and Government departments directly. The government departments also use the bricks produced by the land army but they are not usually sufficient for the government. In all these cases the producer or the supplier of the bricks has to wait for some time for recovery of the price amount.

Large producers who directly supply bricks to the building contractors and government departments can afford to wait for recovery of the price amount may be even upto six months or more. They are financially very strong. But small and medium producers insist on payment of the price amount within 15 to 20 days.

The producers or the agents or the middlemen personally contact the potential buyers and request such buyers to buy the bricks from them. Thus personal salesmanship is predominant in selling the bricks and impersonal
salesmanship is not found in this area. Usually, within the local limits of Hubli-Dharwad Corporation area the transportation cost while supplying the bricks is borne by the producers but if the distance between the brick kiln and the construction site (where the buyer wants the bricks to be delivered) is more than 20 kilometers, extra charges are to be borne by the buyer. If the brick is purchased at the kiln itself and if the buyer himself is to arrange for the transportation of the bricks, then the price of the bricks is reduced to the extent of Rs.90 to Rs.110 per 1000 bricks. Transporting the bricks in trucks is costlier than transporting them in tractors. The usual charge for transportation of the bricks in trucks comes to Rs.90 or even upto Rs.110 depending upon the contacts with the truck owners. In tractors, it comes to around Rs.75/- per 1,000 bricks. The producers having their own tractors or the buyers having their own tractors or trucks will be in a position to save the cost of transportation of the bricks.

vii. Cost Analysis:

As the brick units of the area are working under varying conditions and the scale of operation of the units are different it is difficult to ascertain the cost of production of the bricks. An attempt is made here to analyse the cost structure of the bricks.
There are small producers producing bricks using the soil of their own paddy fields and therefore they will be in a position to save the cost of the soil. Similarly, there are producers who work on their own along with their family members and take very few workers by paying necessary wages and such producers are in a position to save the labour cost. Producers having their own wells do not pay for the supply of water. Thus, the cost of production is different for different producers. To overcome this problem, cost analyses is made on the basis of certain ideal presumptions. The presumptions are listed below:

1. That the producers have to purchase everything from the outside market and nothing is available to them free. Thus, even when a producer uses the soil of his own paddy field, imputed cost of the soil will be treated as the cost of the soil.

2. Labour rate varies from unit to unit and even it varies from place to place. In Hubli area they say the labour rate is a little more than the labour rate in Dharwad area. To overcome this problem, an average rate on the basis of the wages paid by a majority of the brick units is used for the purpose of cost ascertainment.

3. Variable cost constitutes a major part of the total cost and, therefore, the cost of production is not
much affected by the size of the unit. The big units have definitely some advantages. They are financially strong. As such they are not dependent upon the private money-lenders from whom the small manufacturers of bricks borrow at high rates of interest. Also, the big units having their own lorries or trucks may save a little in the cost of transportation. But this difference will be very much negligible as the cost of maintaining the lorry, payment of the wages of the drivers and cleaners and the depreciation of the lorries etc., will almost be equal to the hire charges payable when the manufacturer uses the service of hired vehicles. In the purchase of coal-ash a big producer will be in a favourable position to bargain with the supplier as he purchases the coal-ash in large quantities. But such advantages are only marginal and are not likely to have any impact on the cost calculated for a small or medium-sized brick unit.

The cost of production of the bricks is ascertained taking the cost of production of a unit producing on an average 2,000 bricks per day and the cost so calculated is taken as representative for the brick industry as a whole in the area of the study. Also the cost calculation is made taking 1992 prices into consideration.
### COST ANALYSIS

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Weekly expenditure for production of 12,000 bricks</th>
<th>Per 1000 bricks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Material cost:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Soil (5 truck loads at the rate of Rs.180/- per truck load)</td>
<td><strong>Rs. 900.00</strong></td>
<td><strong>Rs. 75.00</strong></td>
</tr>
<tr>
<td>b. Coal Ash (2 truck loads of mixed ash sufficient for the production of 80,000 bricks and the cost per truck load of coal ash is Rs.6000/-)</td>
<td><strong>Rs. 1,800.00</strong></td>
<td><strong>Rs. 150.00</strong></td>
</tr>
<tr>
<td>c. Water supply (imputed at the rate of Rs.80/- per tanker and 6 tanker per week)</td>
<td><strong>Rs. 480.00</strong></td>
<td><strong>Rs. 40.00</strong></td>
</tr>
<tr>
<td><strong>Labour charges:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Soil cutting and mixing</td>
<td><strong>Rs. 600.00</strong></td>
<td><strong>Rs. 50.00</strong></td>
</tr>
<tr>
<td>b. Water supply (from storage place to work spot) (at Rs.20/- per day for 6 days for 2 workers)</td>
<td><strong>Rs. 240.00</strong></td>
<td><strong>Rs. 20.00</strong></td>
</tr>
<tr>
<td>c. Carrying bricks to kiln (at Rs.10 per 1000)</td>
<td><strong>Rs. 120.00</strong></td>
<td><strong>Rs. 10.00</strong></td>
</tr>
<tr>
<td>d. Staking labour (weekly labour)</td>
<td><strong>Rs. 150.00</strong></td>
<td><strong>Rs. 12.50</strong></td>
</tr>
<tr>
<td>e. Moulding team (mud rolling, moulding and laying the bricks on open ground for drying) (at Rs.50/- per 1000)</td>
<td><strong>Rs. 600.00</strong></td>
<td><strong>Rs. 50.00</strong></td>
</tr>
<tr>
<td>f. Seiving coal ash (at Rs.80 per truck load which is sufficient for the production of 40000 bricks)</td>
<td><strong>Rs. 24.00</strong></td>
<td><strong>Rs. 2.00</strong></td>
</tr>
<tr>
<td><strong>C/F Rs.</strong></td>
<td><strong>4,914.00</strong></td>
<td><strong>409.50</strong></td>
</tr>
</tbody>
</table>
B/F Rs. 4,914.00 409.50

Other variable expenses:

Royalty payable to the Government Geological department at Rs.10/-
per 1000 120.00 10.00

Transportation cost (within
20 kilometres radius at Rs.60/-
per 1000/-) 720.00 60.00

Total variable cost Rs. 5754.00 479.50

Note: Fixed costs: Depreciation on fixed assets, licence fees payable to the Tahasildar's office before starting production etc., which is approximated to a lump sum of about Rs.120 for the entire season being very much negligible is not included in the above cost analysis statement.

The above analysis is quite revealing. The profit margin in the brick industry is not that attractive. The selling price of the brick per 1000 is Rs.550 to Rs.580 depending upon the quality of the brick. If the bricks are sold through agents they keep a margin of Rs.15/- to Rs.30/- per 1000 bricks soils. Thus the producer is likely to be left with small margin of Rs.40/- to Rs.60/- depending upon the circumstances. A medium-sized brick unit producing about 5,00,000 bricks may be in a position to have a net earning of Rs.20,000/- to 25,000/- (at an average rate of Rs.50/- per 1000 bricks). This is once again likely to go down if the credit sales are not fully recovered. Particularly, the small producers are put to more trouble as they are forced to borrow.
money from private money-lenders at 3 per cent or more interest per month.

In spite of all these negative factors, brick production is undertaken by a large number of entrepreneurs. The easiness with which the traditional bricks can be manufactured is the main factor that is inducing the entrepreneurs to take to brick manufacturing. They will be in a position to widen the margin by saving on some items like the cost of the soil, water etc. For example, some producers either use the soil in their own paddy field or they use the soil in the paddy field of their relatives. The small producers shift the production activity every year to a place where they get the soil at very cheap cost. Majority of the small and medium producers were not willing to answer the questions of the researcher and the reason for this unwillingness is the fact that they never take licence for production of the bricks. Even the royalty payable to the Government Geological department is evaded in very many instances. Actual quantity produced will be more than the quantity for which the royalty is paid. Accurate records are not available about the production and as such it is difficult for the government authorities to control such manoeuvres. Small mobile units are always established near the water reservoirs or in places where both the soil and water are freely available and thus the cost of production is reduced.
The producers also try to reduce the cost of production by mixing coal ash in less than required proportions and this will have an adverse effect on the quality of the bricks. These are the different ways how the brick-manufacturers try to increase their margin.

RETURN ON INVESTMENT (ROI)

Return on investment is very important in taking investment decisions. Return on investment and the risk involved in an industry are closely related. A higher rate of return is expected from industries with high risk. Lower the risk, lower the returns. Other factors to be taken into consideration in undertaking a particular venture are the nature and the amount of capital to be invested, and the gestation period (time taken for generation of income) of the industry. In case of brick kilns the above factors may be analysed as follows:

1. Fixed capital requirement of brick industry is very much negligible. In case the producer has his own paddy field, he need not pay any amount for procuring the soil. Some of the producers take the paddy fields on the condition that the field will be levelled and in this case the brick manufacturer will get soil free of cost. In a few instances the brick manufacturer pays a lump sum for the entire season, and this lump
sum is very much negligible. Rs.1000 to Rs.1500 is paid for the entire season and nearly 5,00,000 bricks are produced during the season which comes to Rs.2 or Rs.3 per 1000 bricks. Trucks and tractors for transportation of the brick are available on hire and therefore unnecessary investment on trucks or tractors is not required.

As the industry is labour intensive, investment in plant, machinery etc., is not required. Fixed capital investment in the industry is mainly for the purchase of moulds, shovels, buckets, pickaxes, tumblers etc., which may come to Rs.1000 or less than that. Tractor is common with most of the farmers and they will be available on hire for carrying bricks. The tractors are used by the farmers for agriculture purpose only during the agricultural season. Thus, the purchase of tractor or truck for transportation of the bricks is only optional.

2. A major portion of the capital is in the form of working capital. The same amount of working capital can be cycled and recycled only when the selling process starts. The firing of the kiln is possible only when 70,000 to 80,000 bricks are put in the kiln. Thereafter, the bricks ready for sale can be drawn
from one end of the kiln and simultaneously new green bricks can be put in the kiln from the opposite end. As already analysed, 70 per cent of the total sales being credit sales, only part of the initial working capital is recovered by the manufacturer by such sale. Thus, out of nearly Rs. 60,000 initially invested in the industry. Rs. 10,000 to Rs. 12,000 will be recovered after two months and the balance amount is blocked for about 4 to 5 months. After the kiln is fired, it takes 8 to 10 days for burning and then for 3 to 4 days for cooling after which the bricks can be drawn for the purpose of sale. During this period, the entrepreneur, has to invest on working capital for payment of the labour charges, for purchase of coal-ash, for procurement of soil etc. Even in case of a small operator employing one moulding team, the labour payment alone comes to around Rs. 6,000 per week.

3. Since financial institutions like banks insist on security in the form of charge on fixed assets, the brick-manufacturer will not be in a position to get financial assistance from banks. Few producers are in a position to get financial assistance through the co-operative societies, but a majority of the producers have not become the members of the co-operative societies. They borrow at high rates varying from 3
per cent to 6 per cent per month from private money-lenders.

4. Original investment of about Rs.50,000 (minimum capital requirement) for the production of 1,00,000 bricks, will thus generate an income of around 58,000 to Rs.60,000, (including credit sale). This calculation is based on 1992 prices and once again it also depends upon the quality of the bricks. Thus the return on the capital invested will be less than 20 per cent. Even this 20 per cent is not certain as it is subject to problems of sales realisation. The risk of bad debt, destruction of bricks due to unforeseen rain-fall, destruction of bricks by cows, dogs etc., when they are laid on open ground for drying, are the factors which increase the chances of loss to the manufacturers. In case of forced sales to the private money-lenders, the producer will be fully in loss as he is forced to sell at very low prices. This is common with most of the small producers.

5. The big and medium producers who are financially strong, sell their bricks directly to the final users or to the contractors or to the government contractors. They give credit facility to the contractors who buy regularly from these producers.
depending upon the integrity of the contractors. Such manufacturers succeed in recovering 70 to 80 per cent of the credit sales.

PROSPECTS:

In spite of the above hurdles, the industry has flourished very well in the twin talukas and more and more entrepreneurs are taking to brick-making every year. The major reasons for this kind of development are listed below.

1. The cost of bricks as a construction material is less than the cost of other substitutes. This is the feeling of the users of brick. Even table moulded bricks are quoted at Rs.2.50 (1992 price). Traditional bricks cost 50 to 60 paise per brick at 1992 prices. Cement blocks are costly when compared to traditional bricks or table moulded bricks. Even the cement hollow blocks of 4"x12"x16" cost Rs.4.25 (at 1992 price). The size of the cement blocks is nearly five times the size of traditional bricks. But the price of the cement block is seven times the cost of traditional bricks. Thus the user feels that the substitutes are costlier than the traditional bricks. The cement blocks are, no doubt, costlier than traditional bricks. But the total cost of construction will be
less with the use of the cement blocks as they do not require plastering etc.

2. Easy accessibility of the traditional bricks is another major reason for the user to go in for traditional bricks. The brick kilns are very near to the place of construction and as such the user will be in a position to approach the brick producers or the brick kilns very easily. Brick-manufacturers and their agents contact the buyer on their own and supply sample bricks to the user. They also give credit facility to the buyer for payment.

3. The convenience in construction work when the bricks are used in the construction work is not found when other substitutes are used for the construction work. The brick can be easily cut into small parts according to work requirements. Canalisation work for concealed wiring and plumbing work etc will be easy, when the walls are made of bricks.

4. The contractors and other users are not ready to accept new substitutes for the bricks. They are not ready to try new materials, being too traditional minded.

5. Fixed capital requirement of the brick industry is very much negligible. Investment in plant machinery
etc., is not needed for brick production. A small or a medium brick unit can be started with a fixed capital investment of about Rs.1500/-.

6. The industry is liked by the village people of the area as it provides seasonal employment to the agricultural unskilled labourers during the off-season.

7. Brick-making being very easy, it is within the reach of ordinary entrepreneurs. The brick production process is extremely simple. Except the coal ash, all materials used in brick-making are locally available.

8. Gestation period of the industry is very short. The brick selling process starts within two months and the producer will be in a position to recover his investment part by part. Thus he can reduce his working capital requirements also.

9. Lengthy and rigid bureaucratic procedures need not be followed for the setting up of a brick unit. What is needed is a licence to be obtained from the Tahasildar for brick production and the royalty to be paid to the Geological department of the Government.

10. Labour welfare Acts and other regulations under different Acts like the Factories Act, Payment of
Wages Act etc., are not applicable to the brick industry. Thus the employer is saved from the burden of spending on labour welfare. The workers are employed on temporary basis only during the period of production and they are paid by results. Payment of pension, payment of bonus etc., are not there, in this industry.

11. Detailed records and maintenance of documents etc., are not done in this line of activity. A small notebook is maintained for the purpose of recording the attendance of workers. No details are maintained about even wage payment. Wages paid are usually recorded in the small diary of the employer. The brick-producers never take the signature of the employee for the wages paid, and they never keep stamped receipts for showing wage payment details.

12. There are no rigid government controls on the brick industry and in almost all units, it is difficult to understand the ownership of the brick units. The workers at the kilns are 'strictly advised, not to give any information to any outsider about the name and address of the owner of the brick unit. This has given scope for the establishment of benami brick units and this has resulted in generation of black money and
also it has given scope for tax evasion. These things have attracted the business people to invest in brick production.

13. Risk of bad debt is the only major risk in the industry. The industry, when compared to other types of industries is less risky. The gestation period too is very short.

14. The masons and other workers engaged in the construction work prefer to work with bricks. They are of the opinion that the construction work will be easier when bricks are used in the concerned work. They are not so happy with the cement hollow blocks. They opine that the use of cement blocks affect the skin of their hands adversely.

15. Multiple uses to which the bricks can be put is another reason as to why the bricks are having more demand. They can be used for covering the telephone cables. Concealed wiring of the building, plumbing work in the building etc., will be easy when the construction is done with bricks. Even brick pieces (broken bricks) are useful in coba work. Because of these reasons, the traditional bricks have no demand problems.
16. Stabilised Mud Blocks (SMB) are said to be cheaper but manufacturing of Stabilised Mud Blocks requires very close supervision and the workers are to be specially trained in the process of production of the SMBs. Special mud block moulding machines are to be purchased by the manufacturer and therefore the investment will be more in the form of fixed capital. Depending upon the type of the soil used in the production of SMB the ratio of sand, cement etc., are to be properly adjusted and because of this the manufacturing of the SMB is not within the capacity of ordinary entrepreneurs. In other respects the SMBs have definite advantages over the traditional bricks. Coal ash is not necessary for the production of the SMBs. Cement is used as the binding material and sun drying, firing etc., are not needed. The load-bearing strength of the SMBs is said to be better, when compared to the traditional bricks. Dry strength of the SMB is said to be 30 to 35 Kg/cm², whereas the strength of the traditional bricks is said to be 20 to 30 Kg/cm². The SMBs will be ready for delivery if they are cured with water for 6 to 8 days after their removal from the mould. The cost of manufacturing the SMB is said to be almost half of the cost of production of the traditional bricks. The use of coal-
ash in manufacturing traditional bricks results in air pollution. This can be overcome by the production of SMBs. The use of timber for burning the bricks in the talukas of Haliyal and Kittur etc., has resulted in cutting of the trees and their use has added to environment pollution. It is said the use of SMB reduces 3/4 ton of fuel for every 10 square metre of the house construction.\(^1\)

17. Different organisations like the ASTRA (Application of Science and Technology to Rural Areas), HUDCO are trying to develop and popularise a cheaper and better substitute for the traditional brick. They are also interested in reducing the air pollution caused in the process of manufacturing of the traditional bricks. But so far the substitutes have not become popular and the stronghold of the traditional brick is still there.

18. Gradually the manufacturers of traditional bricks have started showing interest in manufacturing traditional bricks throughout the year. One manufacturer has already started in 1993 this activity by providing sheds for drying and burning bricks even during the rainy season.
19. The rising population in the country has increased the density of population resulting in more pressure on land and naturally the demand for land and housing has increased. The population of the country which was just 361.09 millions in 1951 increased to 439.23 millions in 1961 and to 548.16 millions in 1971 and further it increased to 685.15 millions in 1981. At present (1991) it is estimated to be 844 million. Thus, during the period (1951 to 1991) the population of the country has more than doubled. The population in 1991 is 2.34 times the population of 1951. The population data for the period 1951 to 1991 is given in table 9 below.

Table 9

<table>
<thead>
<tr>
<th>Year</th>
<th>Population (in millions)</th>
<th>Density of population per square kilometre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951</td>
<td>361.09</td>
<td>117</td>
</tr>
<tr>
<td>1961</td>
<td>439.23</td>
<td>142</td>
</tr>
<tr>
<td>1971</td>
<td>548.16</td>
<td>177</td>
</tr>
<tr>
<td>1981</td>
<td>685.15</td>
<td>216</td>
</tr>
<tr>
<td>1991</td>
<td>844.00</td>
<td>267</td>
</tr>
</tbody>
</table>

The density of population was just 77 per square kilometre has become 117 in the year 1951 and further it has increased to 267 in the year 1991. The density of population has increased 3.57 times by 1991 when compared to 1901 population density.

The population of the twin talukas of Hubli-Dharwad as included in the HDMC population statistics shows that the population of Hubli-Dharwad Municipal Corporation area in 1961 was 2,48,489, 5,27,100 in 1981 and estimated to be 6,48,298 in 1991. Here too we find a growth of 2.6 times in 1991 when compared to the 1961 population.

The above developments have increased the pressure on land and naturally given a fillip to the construction activity in the twin cities and consequently in the twin talukas also.

20. Increasing loan facilities for construction activity in the area has equally contributed towards the increase in the construction activity in the area. Liberalisation of housing loan facilities and setting up of more and more institutions for providing housing loans like the L.I.C. Housing Finance Limited, establishment of the branches of housing finance companies like the Housing Development Finance Corporation, Diwan Housing Finance Ltd., in the twin
cities have contributed towards the increasing construction activity.

Because of these factors, the brick producers of the twin talukas have not faced any demand problems and the substitutes have not until now made their way into the hearts of the users as also the producers of bricks.
REFERENCES

